Pact Series
MasterPact NT and NW
Catalog 2020
LV air circuit breakers and switch-disconnectors
se.com
Green Premium

More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

- RoHS compliance
- REACH substance information
- Industry leading # of PEP’s*
- Circularity instructions

Discover what we mean by green
Check your products!

The Green Premium program stands for our commitment to deliver customer valued sustainable performance. It has been upgraded with recognized environmental claims and extended to cover all offers including Products, Services and Solutions.

CO₂ and P&L impact through… Resource Performance
Green Premium brings improved resource efficiency throughout an asset’s lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO₂ emissions.

Cost of ownership optimization through… Circular Performance
We’re helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

Peace of mind through… Well-being Performance
Green Premium products are RoHS and REACh compliant. We’re going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

Improved sales through… Differentiation
Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)
MasterPact NT and NW

The standard for power circuit breakers around the world.

Over the years, other major manufacturers have tried to keep up by developing products incorporating MasterPact’s most innovative features, including the breaking principle, modular design and the use of composite materials.

In addition to the traditional features of power circuit breakers (withdrawability, selectivity and low maintenance), MasterPact NT and NW ranges offer built-in communications and metering functions, all in optimised frame sizes.

MasterPact NT and NW incorporate the latest technology to enhance both performance and safety. Easy to install, with user-friendly, intuitive operation and environment-friendly design, MasterPact NT and NW are, quite simply, circuit breakers of their time.
Covering all your applications

MasterPact meets the needs of all types of LV electrical distribution networks.

Building
- Hotels
- Hospitals
- Offices
- Retail

Data Centres and Networks

Industry
- Mining and minerals
- Automotive
- Food and beverage
- Chemical industry

Energy and Infrastructures
- Airports
- Oil and gas
- Water
- Electrical energy
- Marine

An answer to specific applications

- 1000 V for mining applications
- Direct current networks
- Corrosion protection
- Switch-disconnectors and earthing switches
- Automatic transfer switching equipment (ATSE) for emergency power systems
- High electrical endurance applications: MasterPact NT H2 is a high performance device offering high breaking capacity (Icu: 50 kA/480 V) and a high level of selectivity, all in a small volume.

Whenever high short circuit is involved

MasterPact UR is a low voltage ultra rapid opening circuit breaker. Its fault detection rate and its reaction speed mean that it will stop a short circuit from developing. As a result, this is the key component in very high power installations equipped with a number of power sources connected in parallel.

MasterPact UR truly comes into its own when short circuit currents can reach very high levels and when continuity of service is a must: offshore installations, cement plants, petrochemical industry. It is also especially suited to electrical installations on board merchant.

All standards
Different MasterPact offers complying with different international standards are available:
- IEC 60947
- UL489 / CSA C22.2 No. 5
- ANSI C37 / UL1066

CCC, EAC and other local certifications are available for the IEC rated products.
Two families and three frame sizes

The range of power circuit breakers includes two families:

- MasterPact NT, the world’s smallest true power circuit breaker, with ratings from 630 to 1600 A.
- MasterPact NW, in two frame sizes, one from 800 to 4000 A and the other from 4000 to 6300 A.

5 performance levels

- **N1** - for standard applications with low short-circuit levels.
- **H1** - for industrial sites with high short-circuit levels or installations with two parallel-connected transformers.
- **H2** - high-performance for heavy industry where very high short-circuits can occur.
- **H3** - for incoming devices supplying critical applications requiring both high performance and a high level of selectivity.
- **L1** - for high current-limiting capability and a selectivity level (37 kA) as yet unequalled by any other circuit breaker of its type; intended for the protection of cable-type feeders or to raise the performance level of a switchboard when the transformer power rating is increased.

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**3 sizes:**

- **MasterPact NT 630 to 1600 A**
- **MasterPact NW 800 to 4000 A**
- **MasterPact NW 4000 to 6300 A**
Optimised volumes and ease of installation

Aiming at standardising electrical switchboards at a time when installations are increasingly complex, MasterPact provides an unequalled simplicity, both concerning choice and installation.

The smallest circuit breaker in the world
MasterPact NT innovates by offering all the performance of a power circuit breaker in an extremely small volume. The 70 mm pole pitch means a three-pole drawout circuit breaker can be installed in a switchboard section 400 mm wide and 400 mm deep.

Maximum security
The arc chutes absorb the energy released during breaking, thus limiting the stresses exerted on the installation. They filter and cool the gases produced, reducing effects perceptible from the outside.

Optimised volumes
Up to 4000 A, MasterPact NW circuit breakers are all the same size, the same as the old M08 to 32 range. From 4000 to 6300 A, there is just one size.

Retrofit solutions
>
Special connections terminals are available to replace a fixed or a drawout MasterPact M08 to 32 with a MasterPact NW, without modifying the busbars or the door cut-out.

> "Plug and Play" retrofit solution: this solution enables retrofitting of MasterPact M units with considerably reducing on-site intervention time and getting the performance of last generation device.

30 minutes and 2 easy operations
The retrofit solutions use a factory modified and adapted MasterPact NW which is installed in MasterPact M’s original chassis.

More than 60 patents are used to design MasterPact
**Standardisation of the switchboard**

With optimised sizes, the MasterPact NT and NW ranges simplify the design of switchboards and standardise the installation of devices:

- a single connection layout for MasterPact NT
- three connection layouts for MasterPact NW:
  - one from 800 to 3200 A
  - one for 4000 A
  - one up to 6300 A
- horizontal or vertical rear connections can be modified on-site by turning the connectors 90° or they can even be replaced by front connection terminals
- identical connection terminals for the fixed or draw-out version for each rating (MasterPact NW)
- front connection requires little space because the connectors not increase the depth of the device.

**Practical installation solutions**

The MasterPact NW range further improves the installation solutions that have built the success of its predecessors:

- incoming connection to top or bottom terminals
- no safety clearance required
- connection:
  - horizontal or vertical rear connection
  - front connection with minimum extra space
  - mixed front and rear connections
- 115 mm pole pitch on all versions
- no derating up to 55 °C and 4000 A.

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**Compliance with environmental requirements**

The materials used for MasterPact are not potentially dangerous to the environment and are marked to facilitate sorting for recycling.

Production facilities are non-polluting in compliance with the ISO 14001 standard.
Keep your MasterPact NT/NW features year after year by performing requested maintenance

To maintain MasterPact’s operating and safety characteristics from the beginning to the end of its service life, Schneider Electric requests that systematic checks and periodic maintenance be carried out by qualified personnel, as indicated in the “MasterPact Maintenance Guide”.

The Maintenance Guide defines 3 types of maintenance:

>, the corrective maintenance repairs a system in view of fulfilling a required function

>, the preventive maintenance consists in carrying out, at predetermined intervals, checks intended to reduce the probability of a failure or deterioration in the operation of a system

>, the predictive maintenance, based on the recording and analysis of system parameters, is the means to detect drift from the initial state and significant trends. Using predictive maintenance makes possible to anticipate on the corrective action required to ensure equipment safety and continuity of service, and plan the action for the most convenient time.
The Maintenance Guide is available on Internet (www.schneider-electric.com) and provides detailed information on:

- the types of maintenance required, depending on the criticality of the protected circuit
- the risks involved if the component ceases to operate correctly
- what is understood by the terms normal, improved and severe environment and operating conditions
- the periodic preventive maintenance operations that should be carried out under normal environment and operating conditions as well as the level of competence required for the operations
- the environment and operating conditions that accelerate device ageing.
Ethernet-ready Smart Panels enable electrical distribution control and expertise. ‘Protect’ - ‘Measure’ - ‘Connect’ are the 3 pillars of their technology.

1- Protect
Electrical protection is at the core of Smart Panel
Reliable and high-performance technology is present in every breaker and every residual current device.

2- Measure
Keeping a close eye on energy flows
The switchboard plays a key role in capturing building-related data, by gathering the critical protection and metering components.

3- Connect
Give a voice to the panel
Safe Ethernet network data transmission is now part of the intrinsic design of protection and metering devices.

4- Act
Future savings, peace-of-mind

Access to Smart Panel status, values, is essential for taking advantages of monitoring and management services, locally or remotely.

Act in small/medium buildings

with FDM 128, Com’X 510, Power View, EcoStruxure™ Facility Expert

Optimizing energy-efficiency

- Visualize, record energy consumption and WAGES.
- Comply with regulation.

Improving continuity of service

- Get instant notifications
- Manage with assets-maintenance platform
- Get and analyze data for quick crisis-recovery

Increasing maintenance efficiency

- Operate preventive maintenance tools
- Follow maintenance & planning
- Provide business owner instant access to maintenance reports
Architecture overview

Day-to-day energy management

>> Power availability & quality, energy performance

For simply dealing with building user’s needs and energy constraints. EcoStruxure™ Building Management provides electrical management, monitoring and energy accounting. Energy decisions are often crucial in large critical buildings, they must be informed. EcoStruxure™ Power Monitoring Expert (software for PC) collects Smart Panels values to provide expert analysis.

Act in large non-critical buildings

with EcoStruxure™ Energy Expert

Managing equipment & key assets
- Check operating status, faults on custom on-line diagrams.

Monitoring electrical network
- Observe voltage disturbances, harmonics on graphics.
- Read power factor.

Accounting energy
- Record power meter data on dashboards.
- Allocate energy consumption with costs.
- Follow conservation goals.

Act in large critical buildings

with EcoStruxure™ Power Monitoring Expert[1]

Analysing Power Events
- Speed up downtime crisis recovery
- Determine incident root cause, events sequence.
- Troubleshoot power quality issues.

Monitoring Power quality
- Be alerted of equipment affected by power quality issue.
- Compare power quality against industry standards.
- Collect facts for future discussion with Utility.

Analysing Energy Performance
- Evaluate building energy saving performance;
- Identify underperforming loads;
- Analyze Energy Conservation Measures (ECMs) according ISO50001 program.

MasterPact NT and NW

General contents

- Presentation
- Functions and characteristics
- Installation recommendations
- Dimensions and connection
- Electrical diagrams
- Additional characteristics
- Catalog numbers and order form
This overview describes all the functions offered by MasterPact NT and NW devices. The two product families have identical functions implemented using the same or different components depending on the case.

### Circuit breakers and switch-disconnectors

- **Ratings:**
  - MasterPact NT 630 to 1600 A
  - MasterPact NW 800 to 6300 A.
- **Types:**
  - Circuit breakers type N1, H1, H2, H3, L1.
  - Switch-disconnectors type NA, HA, HF, HH.
  - 3 or 4 poles.
  - Fixed or drawout versions.
  - Option with neutral on the right.
  - Protection derating.

### MicroLogic control units

**Ammeter A and Energy E**
- 2.0 basic protection
- 5.0 selective protection
- 6.0 selective + earth-fault protection
- 7.0 (1) selective + earth-leakage protection

**Power meter P**
- 5.0 selective protection
- 6.0 selective + earth-fault protection
- 7.0 selective + earth-leakage protection

**Harmonic meter H**
- 5.0 selective protection
- 6.0 selective + earth-fault protection
- 7.0 selective + earth-leakage protection
- External sensor for earth-fault protection.
- Rectangular sensor for earth-leakage protection.
- Setting options (long-time rating plug):
  - low setting 0.4 to 0.8 x Ir
  - high setting 0.8 to 1 x Ir
  - without long-time protection.
- External AD power-supply module.
- Battery module.
  - (1) Only for ammeter A.

### Power meter functions

MasterPact equipped with MicroLogic 2 / 5 / 6 / 7 trip units offer type A (ammeter) or E (energy) metering functions as well as communication. Using MicroLogic sensors and intelligence, MasterPact provides access to measurements of all the main electrical parameters on the built-in screen, on a dedicated FDM display unit or via the communication system.

### Operating assistance functions

Integration of measurement functions provides operators with operating assistance functions including alarms tripped by user-selected measurement values, time-stamped event tables and histories, and maintenance indicators.

### Switchboard display unit functions

The main measurements can be read on the built-in screen of MicroLogic 2 / 5 / 6 / 7 trip units. They can also be displayed on the FDM switchboard display unit along with pop-up windows signalling the main alarms.

### Communication

- COM option in MasterPact.
- MasterPact in a communication network.
- IFM: Modbus interface module.
- IFE: Ethernet interface module.
- I/O application module.
- EcoStruxure Power Commission.

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(1) Only for ammeter A.
Connections  > page A-48
- Rear connection (horizontal or vertical).
- Front connection.
- Mixed connections.
- Optional accessories:
  - bare-cable connectors and connector shields
  - terminal shields
  - vertical-connection adapters
  - cable-lug adapters
  - interphase barriers
  - spreaders
  - disconnectable front-connection adapter
  - safety shutters, shutter locking blocks, shutter position indication and locking.

Remote operation  > page A-56
- Remote ON/OFF:
  - gear motor
  - XF closing or MX opening voltage releases
  - PF ready-to-close contact options:
    - RAR automatic or RES electrical remote reset
    - BPFE electrical closing pushbutton.
- Remote tripping function:
  - MN voltage release
    - standard
    - adjustable or non-adjustable delay
  - or second MX voltage release.

Accessories  > page A-60
- Auxiliary terminal shield.
- Operation counter.
- Escutcheon.
- Transparent cover for escutcheon.
- Escutcheon blanking plate.

Locking  > page A-52
- Pushbutton locking by padlockable transparent cover.
- OFF-position locking by padlock or keylock.
- Chassis locking in disconnected position by keylock.
- Chassis locking in connected, disconnected and test positions.
- Door interlock (inhibits door opening with breaker in connected position).
- Racking interlock (inhibits racking with door open).
- Racking interlock between crank and OFF pushbutton.
- Automatic spring discharge before breaker removal.
- Mismatch protection.

Indication contacts  > page A-54
- Standard or low-level contacts:
  - ON/OFF indication (OF)
  - “fault trip” indication (SDE)
  - carriage switches for connected (CE) disconnected (CD) and test (CT) positions.
- Programmable contacts:
  - 2 contacts (M2C).
MasterPact NT and NW
Functions and characteristics

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# Functions and characteristics

## Circuit breakers and switch-disconnectors

### NT06 to NT16 and NW08 to NW63

### NT and NW selection criteria

<table>
<thead>
<tr>
<th></th>
<th>MasterPact NT</th>
<th>MasterPact NW</th>
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<tbody>
<tr>
<td>Type of application</td>
<td>Standard applications</td>
<td>Limiting circuit breaker for protection of cable-type feeders or upgraded transformer ratings</td>
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<tr>
<td></td>
<td>Applications with low short-circuit currents</td>
<td>Standard applications with low short-circuit currents</td>
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<td></td>
<td>Applications with medium-level short-circuit currents</td>
<td>Circuit breaker for industrial sites with high short-circuit currents</td>
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<tr>
<td>Icu/Ics at 440 V</td>
<td>42 kA</td>
<td>50 kA</td>
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<tr>
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<td>130 kA</td>
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<td>Rear connection</td>
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<td>Type of MicroLogic control unit</td>
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<td>A, E, P, H</td>
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### MasterPact NT06 to NT16 installation characteristics

<table>
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<th>Circuit breaker</th>
<th>NT06, NT08, NT10</th>
<th>NT12, NT16</th>
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<tr>
<td>Type</td>
<td>H1</td>
<td>H2</td>
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<tr>
<td>Drawout</td>
<td>FC</td>
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<td>RC</td>
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<tr>
<td>Fixed</td>
<td>FC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RC</td>
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</tr>
<tr>
<td>Dimensions (mm)</td>
<td>H x W x D</td>
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<tr>
<td>Drawout</td>
<td>3P</td>
<td>322 x 288 x 277</td>
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<td>Fixed</td>
<td>4P</td>
<td>322 x 358 x 277</td>
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### MasterPact NW08 to NW63 installation characteristics

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<th>NW08, NW10, NW12, NW16</th>
<th>NW20</th>
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<tr>
<td>Fixed</td>
<td>FC</td>
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<tr>
<td></td>
<td>RC</td>
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</tr>
<tr>
<td>Dimensions (mm)</td>
<td>H x W x D</td>
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</tr>
<tr>
<td>Drawout</td>
<td>3P</td>
<td>439 x 441 x 395</td>
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<tr>
<td></td>
<td>4P</td>
<td>439 x 556 x 395</td>
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<tr>
<td>Fixed</td>
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<tr>
<td></td>
<td>4P</td>
<td>352 x 537 x 297</td>
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(1) Except 4000.
### Special applications

<table>
<thead>
<tr>
<th>H2</th>
<th>H3</th>
<th>L1</th>
<th>NW H10</th>
<th>NW H2 with</th>
<th>NW10...NW40</th>
<th>NW earthing switch</th>
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<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>corrosion</td>
<td>N DC</td>
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<td></td>
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<td></td>
<td></td>
<td>protection</td>
<td>H DC</td>
<td>Installation</td>
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<td></td>
<td></td>
<td>earthing</td>
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</tbody>
</table>

- **High-performance circuit breaker for heavy industry with high short-circuit currents**
- **Incoming device with very high performance for critical applications**
- **Limiting circuit breaker for protection of cable-type feeders or upgraded transformer ratings**
- **1000 V systems, e.g. mines and wind power**
- **Environments with high sulphur contents**
- **DC system**
- **Installation earthing**

<table>
<thead>
<tr>
<th>Icu/Ics at 440 V</th>
<th>42 kA</th>
<th>50 kA</th>
<th>130 kA</th>
<th>42 kA</th>
<th>65 kA</th>
<th>100 kA</th>
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### MasterPact NW08 to NW63 installation characteristics

<table>
<thead>
<tr>
<th>NW H2</th>
<th>NW H3</th>
<th>NW H10</th>
<th>NW H2 with</th>
<th>NW10...NW40</th>
<th>NW earthing switch</th>
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<td></td>
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<td>corrosion</td>
<td>N DC</td>
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</table>

- **Circuit breaker**
- **Type**
- **Connection**
- **Dimensions (mm) H x W x D**
- **Weight (kg) (approximate)**

<table>
<thead>
<tr>
<th>H2</th>
<th>H3</th>
<th>L1</th>
<th>NW H10</th>
<th>NW H2 with</th>
<th>NW10...NW40</th>
<th>NW earthing switch</th>
</tr>
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<tbody>
<tr>
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<td>corrosion</td>
<td>N DC</td>
<td>Installation</td>
</tr>
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<td></td>
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<td></td>
<td>protection</td>
<td>H DC</td>
<td>earthing</td>
</tr>
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</table>

### NW25, NW32, NW40

<table>
<thead>
<tr>
<th>H1</th>
<th>H2</th>
<th>H3</th>
<th>H10</th>
<th>NW40b, NW50, NW63</th>
<th>H1</th>
<th>H2</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions (mm) H x W x D</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW25, NW32, NW40</td>
</tr>
<tr>
<td>NW40b, NW50, NW63</td>
</tr>
</tbody>
</table>

| 479 x 767 x 297 |
| 352 x 997 x 297 |

| 225/300 |
| 120/160 |
## Functions and characteristics

### Circuit breakers and switch-disconnectors characteristics

#### NT06 to NT16

#### Common characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3/4</td>
</tr>
<tr>
<td>Rated insulation voltage (V)</td>
<td>1000</td>
</tr>
<tr>
<td>Impulse withstand voltage (kV)</td>
<td>12</td>
</tr>
<tr>
<td>Rated operational voltage (V AC 50/60 Hz)</td>
<td>690</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>IEC 60947-2</td>
</tr>
<tr>
<td>Degree of pollution</td>
<td>IEC 60664-1 3</td>
</tr>
</tbody>
</table>

#### Basic circuit breaker

**Circuit breaker as per IEC 60947-2**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current (A)</td>
<td>In</td>
</tr>
<tr>
<td>Rating of 4th pole (A)</td>
<td></td>
</tr>
<tr>
<td>Sensor ratings (A)</td>
<td></td>
</tr>
<tr>
<td>Type of circuit breaker</td>
<td></td>
</tr>
<tr>
<td>Ultimate breaking capacity (kA rms)</td>
<td>Icu</td>
</tr>
<tr>
<td>V AC 50/60 Hz</td>
<td>220/415 V</td>
</tr>
<tr>
<td></td>
<td>440 V</td>
</tr>
<tr>
<td></td>
<td>525 V</td>
</tr>
<tr>
<td></td>
<td>690 V</td>
</tr>
<tr>
<td>Rated service breaking capacity (kA rms)</td>
<td>Ics</td>
</tr>
<tr>
<td>Utilisation category</td>
<td>% Icu</td>
</tr>
<tr>
<td>Rated short-time withstand current (kA rms)</td>
<td>Icw</td>
</tr>
<tr>
<td>V AC 50/60 Hz</td>
<td>0.5 s</td>
</tr>
<tr>
<td></td>
<td>1 s</td>
</tr>
<tr>
<td></td>
<td>3 s</td>
</tr>
<tr>
<td>Integrated instantaneous protection (kA peak ±10 %)</td>
<td>Icm</td>
</tr>
<tr>
<td>V AC 50/60 Hz</td>
<td>220/415 V</td>
</tr>
<tr>
<td></td>
<td>440 V</td>
</tr>
<tr>
<td></td>
<td>525 V</td>
</tr>
<tr>
<td></td>
<td>690 V</td>
</tr>
</tbody>
</table>

#### Break time (ms) between tripping order and arc extinction

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing time (ms)</td>
<td></td>
</tr>
</tbody>
</table>

#### Switch-disconnector as per IEC 60947-3 and Annex A

**Type of switch-disconnector**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated making capacity (kA peak)</td>
<td>Icm</td>
</tr>
<tr>
<td>AC23A/AC3 category V AC 50/60 Hz</td>
<td>220 V</td>
</tr>
<tr>
<td></td>
<td>440 V</td>
</tr>
<tr>
<td></td>
<td>525 V</td>
</tr>
<tr>
<td></td>
<td>690 V</td>
</tr>
<tr>
<td>Rated short-time withstand current (kA rms)</td>
<td>Icw</td>
</tr>
<tr>
<td>AC23A/AC3 category V AC 50/60 Hz</td>
<td>0.5 s</td>
</tr>
<tr>
<td></td>
<td>1 s</td>
</tr>
<tr>
<td></td>
<td>3 s</td>
</tr>
<tr>
<td>Ultimate breaking capacity Icu (kA rms) with an external protection relay</td>
<td>690 V</td>
</tr>
<tr>
<td>Maximum time delay: 350 ms</td>
<td></td>
</tr>
</tbody>
</table>

#### Mechanical and electrical durability as per IEC 60947-2/3 at In/Ie

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durability</td>
<td>Mechanical</td>
</tr>
<tr>
<td>C/O cycles x 1000</td>
<td></td>
</tr>
<tr>
<td>Type of circuit breaker</td>
<td></td>
</tr>
<tr>
<td>Rated current</td>
<td>in (A)</td>
</tr>
<tr>
<td>C/O cycles x 1000</td>
<td>Electrical without maintenance</td>
</tr>
<tr>
<td>IEC 60947-2</td>
<td>440 V</td>
</tr>
<tr>
<td></td>
<td>690 V</td>
</tr>
<tr>
<td>Type of circuit breaker or switch-disconnector</td>
<td>Electrical without maintenance</td>
</tr>
<tr>
<td>Rated operational current</td>
<td>ie (A)</td>
</tr>
<tr>
<td>C/O cycles x 1000</td>
<td>IEC 60947-2</td>
</tr>
<tr>
<td></td>
<td>440 V</td>
</tr>
<tr>
<td></td>
<td>690 V</td>
</tr>
<tr>
<td>Type of circuit breaker or switch-disconnector</td>
<td>Electrical without maintenance</td>
</tr>
<tr>
<td>Rated operational current</td>
<td>ie (A)</td>
</tr>
<tr>
<td>C/O cycles x 1000</td>
<td>IEC 60947-3</td>
</tr>
<tr>
<td></td>
<td>380/415 V (kW)</td>
</tr>
<tr>
<td></td>
<td>440 V</td>
</tr>
<tr>
<td>Type of circuit breaker or switch-disconnector</td>
<td>Electrical without maintenance</td>
</tr>
<tr>
<td>Rated operational current</td>
<td>ie (A)</td>
</tr>
<tr>
<td>C/O cycles x 1000</td>
<td>IEC 60947-3 Annex M/IEC 60947-4-1</td>
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<tr>
<td></td>
<td>440 V</td>
</tr>
<tr>
<td></td>
<td>690 V</td>
</tr>
</tbody>
</table>

---

(1) 50 °C: rear vertical connected. Refer to temperature derating tables for other connection types.
(2) See the current-limiting curves in the “additional characteristics” section.
(3) SELLIM system.
(4) Suitable for motor control (direct-on-line starting).
### Sensor selection

<table>
<thead>
<tr>
<th>Sensor rating (A)</th>
<th>250</th>
<th>400</th>
<th>630</th>
<th>800</th>
<th>1000</th>
<th>1250</th>
<th>1600</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ir threshold setting (A)</th>
<th>100 to 250</th>
<th>160 to 400</th>
<th>250 to 630</th>
<th>320 to 800</th>
<th>400 to 1000</th>
<th>500 to 1250</th>
<th>640 to 1600</th>
</tr>
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</table>

(1) For circuit breaker NT02, please consult us.

### Basic circuit breaker

<table>
<thead>
<tr>
<th>NT06</th>
<th>NT08</th>
<th>NT10</th>
<th>NT12</th>
<th>NT16</th>
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<tbody>
<tr>
<td>630</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
</tr>
<tr>
<td>630</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
</tr>
<tr>
<td>400 to 630</td>
<td>400 to 800</td>
<td>400 to 1000</td>
<td>630 to 1250</td>
<td>800 to 1600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H1</th>
<th>H2</th>
<th>L1</th>
<th>H1</th>
<th>H2</th>
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<td>100 %</td>
<td>100 %</td>
<td>8</td>
<td>B</td>
<td>A</td>
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<td>42</td>
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<td>50</td>
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<td>105</td>
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<td>25</td>
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<table>
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<tbody>
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<th>H2</th>
<th>L1</th>
<th>H1</th>
<th>H2</th>
<th>L1</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>3</td>
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<td>2</td>
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<table>
<thead>
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</thead>
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<tr>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>H1/H2/HA</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>3</td>
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</tbody>
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<table>
<thead>
<tr>
<th>500</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>H1/H2/HA</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

| 6 |

For circuit breaker NT02, please consult us.
Circuit breakers and switch-disconnectors
characteristics
NW08 to NW63

**Common characteristics**

<table>
<thead>
<tr>
<th>Number of poles</th>
<th>3/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage (V) UI</td>
<td>1000</td>
</tr>
<tr>
<td>Impulse withstand voltage (kV) Uimp</td>
<td>12</td>
</tr>
<tr>
<td>Rated operational voltage (V AC 50/60 Hz) Ue</td>
<td>690</td>
</tr>
<tr>
<td>Suitability for isolation IEC 60894-2-1</td>
<td>4 (100 V) / 3 (1250 V)</td>
</tr>
<tr>
<td>Degree of pollution IEC 60664-1</td>
<td>105</td>
</tr>
</tbody>
</table>

**Basic circuit breaker**

**Circuit breaker as per IEC 60947-2**

<table>
<thead>
<tr>
<th>Rated current (A)</th>
<th>at 40 °C / 50 °C (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating of 4th pole (A)</td>
<td>Sensor ratings (A)</td>
</tr>
</tbody>
</table>

**Type of circuit breaker**

<table>
<thead>
<tr>
<th>Ultimate breaking capacity (kA rms) Icu V AC 50/60 Hz</th>
<th>220/415/440 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated service breaking capacity (kA rms) Isc % Icu V AC 50/60 Hz</td>
<td>690 V</td>
</tr>
<tr>
<td>Rated short-time withstand current (kA rms) Icw 1 s V AC 50/60 Hz</td>
<td>525 V</td>
</tr>
<tr>
<td>Integrated instantaneous protection (kA peak ±10 %)</td>
<td>3 s</td>
</tr>
<tr>
<td>Rated making capacity (kA peak) Icm V AC 50/60 Hz</td>
<td>1150 V</td>
</tr>
</tbody>
</table>

Break time (ms) between tripping order and arc extinction
Closing time (ms)

**Unprotected circuit breaker**

**Tripping by shunt trip as per IEC 60947-2**

<table>
<thead>
<tr>
<th>Type of circuit breaker</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultimate breaking capacity (kA rms) V AC 50/60 Hz Icu</td>
<td>220/690 V</td>
</tr>
<tr>
<td>Rated service breaking capacity (kA rms) Isc % Icu</td>
<td>1 s</td>
</tr>
<tr>
<td>Rated short-time withstand current (kA rms) Icw 1 s V AC 50/60 Hz</td>
<td>3 s</td>
</tr>
</tbody>
</table>

Overload and short-circuit protection
External protection relay: short-circuit protection, maximum delay: 400 ms (5)

**Rated making capacity (kA peak) V AC 50/60 Hz Icm 220/690 V**

**Switch-disconnector as per IEC 60947-3 and Annex A**

**Type of switch-disconnector**

<table>
<thead>
<tr>
<th>Rated making capacity (kA peak) Icm AC23A/AC3 category V AC 50/60 Hz</th>
<th>1150 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated short-time withstand current (kA rms) Icw 1 s V AC 50/60 Hz</td>
<td>3 s</td>
</tr>
</tbody>
</table>

**Earthing switch**

<table>
<thead>
<tr>
<th>Latching capacity (kA peak)</th>
<th>135</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated short time withstand (kA rms) Icw</td>
<td>1 s</td>
</tr>
</tbody>
</table>

**Mechanical and electrical durability as per IEC 60947-2/3 at In/le**

<table>
<thead>
<tr>
<th>Durability</th>
<th>Mechanical with maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/O cycles x 1000</td>
<td></td>
</tr>
<tr>
<td>Rated current</td>
<td>In (A)</td>
</tr>
<tr>
<td>C/O cycles x 1000</td>
<td>Electrical without maintenance 440 V</td>
</tr>
<tr>
<td>IE C 60947-2</td>
<td>690 V</td>
</tr>
<tr>
<td>1150 V</td>
<td></td>
</tr>
</tbody>
</table>

**Type of circuit breaker or switch-disconnector**

<table>
<thead>
<tr>
<th>Rated operational current</th>
<th>AC23A</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/O cycles x 1000</td>
<td>Electrical without maintenance 440 V</td>
</tr>
<tr>
<td>IE C 60947-3</td>
<td>690 V</td>
</tr>
</tbody>
</table>

**Type of circuit breaker or switch-disconnector**

<table>
<thead>
<tr>
<th>Rated operational current</th>
<th>AC3 (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor power</td>
<td>340/415 V (kW)</td>
</tr>
<tr>
<td>440 V (kW)</td>
<td></td>
</tr>
<tr>
<td>690 V (kW)</td>
<td></td>
</tr>
<tr>
<td>C/O cycles x 1000</td>
<td>Electrical without maintenance 440/690 V</td>
</tr>
<tr>
<td>IE C 60947-3 Annex M/IEC 60947-4-1</td>
<td></td>
</tr>
</tbody>
</table>

---

(1) 50 °C: rear vertical connected. Refer to temperature derating tables for other connection types.
(2) See the current-limiting curves in the "additional characteristics" section.
(3) Equipped with a trip unit with a making current of 90 kA peak.
(4) External protection must comply with permissible thermal constraints of the circuit breaker (please consult us).
(5) No fault-trip indication by the SDE or the reset button.
(6) Equipped with an instantaneous making over-current protection of 187 kA peak.
**Sensor selection**

<table>
<thead>
<tr>
<th>Sensor rating (A)</th>
<th>250(1)</th>
<th>400</th>
<th>630</th>
<th>800</th>
<th>1000</th>
<th>1250</th>
<th>1600</th>
<th>2000</th>
<th>2500</th>
<th>3200</th>
<th>4000</th>
<th>5000</th>
<th>6300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current threshold setting (A)</td>
<td>100</td>
<td>160</td>
<td>250</td>
<td>320</td>
<td>400</td>
<td>500</td>
<td>630</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
<td>2000</td>
<td>2500</td>
</tr>
<tr>
<td>to 250</td>
<td>to 400</td>
<td>to 630</td>
<td>to 800</td>
<td>to 1000</td>
<td>to 1250</td>
<td>to 1600</td>
<td>to 2000</td>
<td>to 2500</td>
<td>to 3200</td>
<td>to 4000</td>
<td>to 5000</td>
<td>to 6300</td>
<td></td>
</tr>
</tbody>
</table>

(1) For circuit breaker NW02, please consult us.
All MasterPact circuit breakers are equipped with a MicroLogic control unit that can be changed on site. Control units are designed to protect Power circuits and loads. Alarms may be programmed for remote indications. Measurements of current, voltage, frequency, power and power quality optimise continuity of service and energy management.

**Dependability**
Integration of protection functions in an ASIC electronic component used in all MicroLogic control units guarantees a high degree of reliability and immunity to conducted or radiated disturbances. On MicroLogic A, E, P and H control units, advanced functions are managed by an independent microprocessor.

**Accessories**
Certain functions require the addition of MicroLogic control unit accessories, described on page A-30. The rules governing the various possible combinations can be found in the documentation accessible via the Products and services menu of the www.schneider-electric.com web site.

**MicroLogic name codes**

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

- **X**: type of protection
  - 2 for basic protection
  - 5 for selective protection
  - 6 for selective + earth-fault protection
  - 7 for selective + earth-leakage protection

- **Y**: control-unit generation
  Identification of the control-unit generation. ‘0’ signifies the first generation.

- **Z**: type of measurement
  - A for “ammeter”
  - E for “energy”
  - P for “power meter”
  - H for “harmonic meter”

**Current protection**

- **MicroLogic 2: basic protection**
  - Protection: long time + instantaneous
  - 2.0 A

- **MicroLogic 5: selective protection**
  - Protection: long time + short time + instantaneous
  - 5.0 A

- **MicroLogic 6: selective + earth-fault protection**
  - Protection: long time + short time + instantaneous + earth fault
  - 6.0 A

- **MicroLogic 7: selective + earth-leakage protection**
  - Protection: long time + short time + instantaneous + earth leakage up to 3200A
  - 7.0 A
All MasterPact circuit breakers are equipped with a MicroLogic control unit that can be changed on site. Control units are designed to protect power circuits and loads. Alarms may be programmed for remote indications.

Measurements of current, voltage, frequency, power and power quality optimise continuity of service and energy management.

Dependability

Integration of protection functions in an ASIC electronic component used in all MicroLogic control units guarantees a high degree of reliability and immunity to conducted or radiated disturbances.

On MicroLogic A, E, P and H control units, advanced functions are managed by an independent microprocessor.

Accessories

Certain functions require the addition of MicroLogic control unit accessories, described on page A-30. The rules governing the various possible combinations can be found in the documentation accessible via the Products and services menu of the www.schneider-electric.com web site.

<table>
<thead>
<tr>
<th>A: ammeter</th>
<th>E: Energy</th>
<th>P: A + power meter + programmable protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>I, I*, I, Iearth-fault, Iearth-leakage and maximeter for these measurements</td>
<td>incorporates all the rms measurements of MicroLogic A, plus voltage, power factor, power and energy metering measurements</td>
<td>measurements of V, A, W, VAR, VA, Wh, VARth, VArh, Hz, Vpeak, Apeak, power factor and maximeters and minimeters</td>
</tr>
<tr>
<td>fault indications</td>
<td>calculates the current demand value</td>
<td>IDMTL long-time protection, minimum and maximum voltage and frequency, voltage and current imbalance, phase sequence, reverse power</td>
</tr>
<tr>
<td>settings in amperes and in seconds.</td>
<td>&quot;Quickview&quot; function for the automatic cyclical display of the most useful values (as standard or by selection).</td>
<td>load shedding and reconnection depending on power or current</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 A</td>
<td>2.0 E</td>
<td></td>
</tr>
<tr>
<td>5.0 A</td>
<td>5.0 E</td>
<td></td>
</tr>
<tr>
<td>6.0 A</td>
<td>6.0 E</td>
<td></td>
</tr>
<tr>
<td>7.0 A</td>
<td>7.0 E</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H: P + harmonics</th>
</tr>
</thead>
<tbody>
<tr>
<td>power quality: fundamentals, distortion, amplitude and phase of harmonics up to the 31st order</td>
</tr>
<tr>
<td>waveform capture after fault, alarm or on request</td>
</tr>
<tr>
<td>enhanced alarm programming: thresholds and actions.</td>
</tr>
</tbody>
</table>
Functions and characteristics

MicroLogic control units

MicroLogic A “ammeter”

MicroLogic A control units protect power circuits. They also offer measurements, display, communication and current maximeters. Version 6 provides earth-fault protection, version 7 provides earth-leakage protection.

"Ammeter" measurements
MicroLogic A control units measure the true (rms) value of currents. They provide continuous current measurements from 0.2 to 1.2 In and are accurate to within 1.5 % (including the sensors).

A digital LCD screen continuously displays the most heavily loaded phase (Imax) or displays the I1, I2, I3, IN, Ig, I∆n, stored-current (maximeter) and setting values by successively pressing the navigation button.

The optional external power supply makes it possible to display currents < 20 % In. Below 0.1 In, measurements are not significant. Between 0.1 and 0.2 In, accuracy changes linearly from 4 % to 1.5 %.

Communication option
In conjunction with the COM communication option, the control unit transmits the following:
- settings
- all “ammeter” measurements
- tripping causes
- maximeter readings.

Protection
Protection thresholds and delays are set using the adjustment dials.

Overload protection
True rms long-time protection.
Thermal memory: thermal image before and after tripping.
Setting accuracy may be enhanced by limiting the setting range using a different long-time rating plug.

Overload protection can be cancelled using a specific LT rating plug "Off".

Short-circuit protection
Short-time (rms) and instantaneous protection.
Selection of I2t type (ON or OFF) for short-time delay.

Earth-fault protection
Residual or source ground return earth fault protection.
Selection of I2t type (ON or OFF) for delay.

Residual earth-leakage protection (Vigi)
Operation without an external power supply.
Protected against nuisance tripping.
DC-component withstand class A up to 10 A.

Neutral protection
On three-pole circuit breakers, neutral protection is not possible.
On four-pole circuit breakers, neutral protection may be set using a three-position switch: neutral unprotected (4P 3d), neutral protection at 0.5 Ir (4P 3d + N/2), neutral protection at Ir (4P 4d).

Zone selective interlocking (ZSI)
A ZSI terminal block may be used to interconnect a number of control units to provide total selectivity for short-time and earth-fault protection, without a delay before tripping.

Overload alarm
A yellow alarm LED goes on when the current exceeds the long-time trip threshold.

Fault indications
LEDs indicate the type of fault:
- overload (long-time protection Ir)
- short-circuit (short-time Isd or instantaneous li protection)
- earth fault or earth leakage (Ig or I∆n)
- internal fault (Ap).

Battery power
The fault indication LEDs remain on until the test/reset button is pressed. Under normal operating conditions, the battery supplying the LEDs has a service life of approximately 10 years.

Test
A mini test kit or a portable test kit may be connected to the test connector on the front to check circuit breaker operation. For MicroLogic 6.0 A and 7.0 A control units, the operation of earth-fault or earth-leakage protection can be checked by pressing the test button located above the test connector.

Note: MicroLogic A control units come with a transparent lead-seal cover as standard.
## Protection

### MicroLogic 2.0 A

**Long time**
- ANSI Code 49

<table>
<thead>
<tr>
<th>Current setting (A)</th>
<th>0.4</th>
<th>0.5</th>
<th>0.6</th>
<th>0.7</th>
<th>0.8</th>
<th>0.9</th>
<th>0.95</th>
<th>0.98</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tripping between 1.05 and 1.20 x Ir</td>
<td>Other ranges or disable by changing long-time rating plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time setting</th>
<th>( tr ) (s)</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time delay (s)</td>
<td>Accuracy: 0 to -30 %</td>
<td>1.5 x Ir</td>
<td>12.5</td>
<td>25</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Accuracy: 0 to -20 %</td>
<td>6 x Ir</td>
<td>0.7</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Accuracy: 0 to -20 %</td>
<td>7.2 x Ir</td>
<td>0.7</td>
<td>0.69</td>
<td>1.38</td>
<td>2.7</td>
<td>5.5</td>
<td>8.3</td>
<td>11</td>
<td>13.8</td>
</tr>
<tr>
<td>Thermal memory</td>
<td>20 minutes before and after tripping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) 0 to -40 % - (2) 0 to -60 %

### Instantaneous
- ANSI Code 50

<table>
<thead>
<tr>
<th>Pick-up (A)</th>
<th>( Isd = Ir \times \cdots )</th>
<th>1.5</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: ±10 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time delay</th>
<th>Max resettable time: 20 ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max break time: 80 ms</td>
<td></td>
</tr>
</tbody>
</table>

### MicroLogic 5.0 / 6.0 / 7.0 A

**Long time**
- ANSI Code 49

<table>
<thead>
<tr>
<th>Current setting (A)</th>
<th>0.4</th>
<th>0.5</th>
<th>0.6</th>
<th>0.7</th>
<th>0.8</th>
<th>0.9</th>
<th>0.95</th>
<th>0.98</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tripping between 1.05 and 1.20 x Ir</td>
<td>Other ranges or disable by changing long-time rating plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time setting</th>
<th>( tr ) (s)</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time delay (s)</td>
<td>Accuracy: 0 to -30 %</td>
<td>1.5 x Ir</td>
<td>12.5</td>
<td>25</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Accuracy: 0 to -20 %</td>
<td>6 x Ir</td>
<td>0.7</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Accuracy: 0 to -20 %</td>
<td>7.2 x Ir</td>
<td>0.7</td>
<td>0.69</td>
<td>1.38</td>
<td>2.7</td>
<td>5.5</td>
<td>8.3</td>
<td>11</td>
<td>13.8</td>
</tr>
<tr>
<td>Thermal memory</td>
<td>20 minutes before and after tripping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) 0 to -40 % - (2) 0 to -60 %

### Short time
- ANSI Code 51

<table>
<thead>
<tr>
<th>Pick-up (A)</th>
<th>( Isd = Ir \times \cdots )</th>
<th>1.5</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: ±10 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time delay</th>
<th>Max resettable time: 20 ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max break time: 80 ms</td>
<td></td>
</tr>
</tbody>
</table>

### Earth fault
- ANSI Code 51N

<table>
<thead>
<tr>
<th>Pick-up (A)</th>
<th>( Ig = In \times \cdots )</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: ±10 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time setting</th>
<th>( Ig ) (s)</th>
<th>Settings</th>
<th>P</th>
<th>Off</th>
<th>0</th>
<th>0.1</th>
<th>0.2</th>
<th>0.3</th>
<th>0.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time delay (ms) at 10 x Ir</td>
<td>( Ig ) (max resettable time)</td>
<td>20</td>
<td>80</td>
<td>140</td>
<td>230</td>
<td>350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( Ig ) (max break time)</td>
<td>80</td>
<td>140</td>
<td>200</td>
<td>320</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Residual earth leakage (Vigi)
- ANSI Code 51G

<table>
<thead>
<tr>
<th>Sensitivity (A)</th>
<th>( Ig )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: 0 to -20 %</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time delay</th>
<th>( Ig ) (max resettable time)</th>
<th>20</th>
<th>80</th>
<th>140</th>
<th>230</th>
<th>350</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( Ig ) (max break time)</td>
<td>80</td>
<td>140</td>
<td>200</td>
<td>320</td>
<td>500</td>
</tr>
</tbody>
</table>

### Ammeter
- MicroLogic 2.0 / 5.0 / 6.0 / 7.0 A

**Type of measurements**

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous currents</td>
<td>( I_1, I_2, I_3, \text{IN} )</td>
</tr>
<tr>
<td></td>
<td>( Ig (6.0 \text{A}) )</td>
</tr>
<tr>
<td></td>
<td>( Ig (7.0 \text{A}) )</td>
</tr>
<tr>
<td>Current maximeters</td>
<td>( I_1, I_2, I_3 )</td>
</tr>
</tbody>
</table>

**Note:** all current-based protection functions require no auxiliary source.

*The test / reset button resets maximeters, clears the tripping indication and tests the battery.*

---

*www.se.com*
Functions and characteristics

MicroLogic control units

MicroLogic E “energy”

MicroLogic E control units protect power circuits. They also offer measurements, display, communication and current maximeters. Version 6 provides earth-fault protection.

"Energy meter" measurements

In addition to the ammeter measurements of MicroLogic A, MicroLogic E control units measure and display:
- current demand
- voltages: phase to phase, phase to neutral, average (1) and unbalanced (1)
- instantaneous power: P, Q, S
- power factor: PF
- power demand: P demand
- energy: Ep, Eq (1), Es (1).

Accuracy of active energy Ep is 2 % (including the sensors). The range of measurement is the same as current with MicroLogic A, depending on the external power supply module (24 V DC).

Communication option

In conjunction with the COM communication option, the control unit transmits the following:
- settings
- all “ammeter” and “energy” measurements
- enable connection to FDM
- tripping causes
- maximeter / minimeter readings.

Protection

Protection thresholds and delays are set using the adjustment dials.

Overload protection

True rms long-time protection.
Thermal memory: thermal image before and after tripping.
Setting accuracy may be enhanced by limiting the setting range using a different long-time rating plug. Overload protection can be cancelled using a specific LT rating plug “Off”.

Short-circuit protection

Short-time (rms) and instantaneous protection.
Selection of I2t type (ON or OFF) for short-time delay.

Earth-fault protection

Residual or source ground return earth fault protection.
Selection of I2t type (ON or OFF) for delay

Neutral protection

On three-pole circuit breakers, neutral protection is not possible.
On four-pole circuit breakers, neutral protection may be set using a three-position switch: neutral unprotected (4P 3d), neutral protection at 0.5 Ir (4P 3d + N/2), neutral protection at Ir (4P 4d).

Zone selective interlocking (ZSI)

A ZSI terminal block may be used to interconnect a number of control units to provide total selectivity for short-time and earth-fault protection, without a delay before tripping.

Overload alarm

A yellow alarm LED goes on when the current exceeds the long-time trip threshold.

M2C programmable contacts

The M2C (two contacts) programmable contacts may be used to signal events (Ir, Isd, Alarm Ir, Alarm Ig, Ig). They can be programmed using the keypad on the MicroLogic E control unit or remotely using the COM option (BCM ULP).

Fault indications

LEDs indicate the type of fault:
- overload (long-time protection Ir)
- short-circuit (short-time Isd or instantaneous li protection)
- earth fault (Ig)
- internal fault (Ap).

Trip history

The trip history displays the list of the last 10 trips. For each trip, the following indications are recorded and displayed:
- the tripping cause: Ir, Isd, li, Ig or Auto-protection (Ap) trips
- the date and time of the trip (requires communication option).

Battery power

The fault indication LEDs remain on until the test/reset button is pressed. Under normal operating conditions, the battery supplying the LEDs has a service life of approximately 10 years.

Test

A mini test kit or a portable test kit may be connected to the test connector on the front to check circuit breaker operation. For MicroLogic 6.0 E control units, the operation of earth-fault or earth-leakage protection can be checked by pressing the test button located above the test connector.

Note: MicroLogic E control units come with a transparent lead-seal cover as standard.
### Protection

#### MicroLogic 2.0 E

<table>
<thead>
<tr>
<th>Long time</th>
<th>ANSI Code 49</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current setting (A)</td>
<td>0.4 0.5 0.6 0.7 0.8 0.9 0.95 0.98 1</td>
</tr>
<tr>
<td>Tripping between 1.05 and 1.20 x Ir</td>
<td>Other ranges or disable by changing long-time rating plug</td>
</tr>
</tbody>
</table>

#### Time setting

<table>
<thead>
<tr>
<th>tr (s)</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: 0 to -30%</td>
<td>1.5 x Ir</td>
<td>12.5</td>
<td>25</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>Accuracy: 0 to -20%</td>
<td>6 x Ir</td>
<td>0.7</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Accuracy: 0 to -20%</td>
<td>7.2 x Ir</td>
<td>0.7</td>
<td>0.69</td>
<td>1.38</td>
<td>2.7</td>
<td>5.5</td>
<td>8.3</td>
<td>11</td>
<td>13.8</td>
</tr>
</tbody>
</table>

#### Thermal memory

20 minutes before and after tripping

1. 0 to -40% -
2. 0 to -60%

#### Instantaneous

Pick-up (A) \( t_{sd} = I_{r} \times \ldots \)

<table>
<thead>
<tr>
<th>Accuracy: ±10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
</tr>
</tbody>
</table>

#### Time delay

Max resettable time: 20 ms
Max break time: 80 ms

### Protection

#### MicroLogic 5.0 / 6.0 E

<table>
<thead>
<tr>
<th>Long time</th>
<th>ANSI Code 49 / MicroLogic 5.0 / 6.0 E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current setting (A)</td>
<td>0.4 0.5 0.6 0.7 0.8 0.9 0.95 0.98 1</td>
</tr>
<tr>
<td>Tripping between 1.05 and 1.20 x Ir</td>
<td>Other ranges or disable by changing long-time rating plug</td>
</tr>
</tbody>
</table>

#### Time setting

<table>
<thead>
<tr>
<th>tr (s)</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: 0 to -30%</td>
<td>1.5 x Ir</td>
<td>12.5</td>
<td>25</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>Accuracy: 0 to -20%</td>
<td>6 x Ir</td>
<td>0.7</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Accuracy: 0 to -20%</td>
<td>7.2 x Ir</td>
<td>0.7</td>
<td>0.69</td>
<td>1.38</td>
<td>2.7</td>
<td>5.5</td>
<td>8.3</td>
<td>11</td>
<td>13.8</td>
</tr>
</tbody>
</table>

#### Thermal memory

20 minutes before and after tripping

1. 0 to -40% -
2. 0 to -60%

#### Short time

Pick-up (A) \( t_{sd} = I_{r} \times \ldots \)

<table>
<thead>
<tr>
<th>Accuracy: ±10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
</tr>
</tbody>
</table>

#### Time delay

Max resettable time: 20 ms
Max break time: 50 ms

#### Instantaneous

Pick-up (A) \( t_{sd} = I_{r} \times \ldots \)

<table>
<thead>
<tr>
<th>Accuracy: ±10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
</tr>
</tbody>
</table>

### Earth fault

#### MicroLogic 6.0 E

<table>
<thead>
<tr>
<th>Pick-up (A)</th>
<th>( I_{g} = I_{n} \times \ldots )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: ±10%</td>
<td></td>
</tr>
<tr>
<td>In ≤ 400 A</td>
<td>0.3 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1</td>
</tr>
<tr>
<td>400 A &lt; In ≤ 1250 A</td>
<td>0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1</td>
</tr>
<tr>
<td>In &gt; 1250 A</td>
<td>500 640 720 800 880 960 1040 1120 1200</td>
</tr>
</tbody>
</table>

#### Time setting

<table>
<thead>
<tr>
<th>tg (s)</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>0 0.1 0.2 0.3 0.4</td>
</tr>
<tr>
<td>On</td>
<td>- 0.1 0.2 0.3 0.4</td>
</tr>
</tbody>
</table>

#### Time delay

20 80 140 230 350 (max resettable time)
80 140 200 320 500 (max break time)

### Energy

#### MicroLogic 2.0 / 5.0 / 6.0 E

#### Type of measurements

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous currents</td>
<td>( I_{i}, I_{l}, I_{c}, I_{n} )</td>
</tr>
<tr>
<td>Current maximeters of</td>
<td>( I_{i}, I_{l}, I_{c}, I_{n} )</td>
</tr>
<tr>
<td>Demand currents of</td>
<td>( I_{i}, I_{l}, I_{c}, I_{n} )</td>
</tr>
<tr>
<td>Voltages</td>
<td>( V_{12}, V_{23}, V_{31}, V_{1N}, V_{2N}, V_{3N} )</td>
</tr>
<tr>
<td>Active power</td>
<td>( P )</td>
</tr>
<tr>
<td>Power factor</td>
<td>( PF )</td>
</tr>
<tr>
<td>Demand power</td>
<td>( P_{demand} )</td>
</tr>
<tr>
<td>Active energy</td>
<td>( Ep )</td>
</tr>
</tbody>
</table>

**Note:** All current-based protection functions require no auxiliary source. The test / reset button resets maximeters, clears the tripping indication and tests the battery.
MicroLogic P control units

MicroLogic P control units include all the functions offered by MicroLogic A. In addition, they measure voltages and calculate power and energy values. They also offer new protection functions based on currents, voltages, frequency and power reinforce load protection in real time.

Protection

Protection settings

The adjustable protection functions are identical to those of MicroLogic A (overloads, short-circuits, earth-fault and earth-leakage protection).

Fine adjustment

Within the range determined by the adjustment dial, fine adjustment of thresholds (to within one ampere) and time delays (to within one second) is possible on the keypad or remotely using the COM option (BCM ULP).

IDMTL (Inverse Definite Minimum Time lag) setting

Coordination with fuse-type or medium-voltage protection systems is optimised by adjusting the slope of the overload-protection curve. This setting also ensures better operation of this protection function with certain loads.

Neutral protection

On three-pole circuit breakers, neutral protection may be set using the keypad or remotely using the COM option (BCM ULP), to one of four positions: neutral unprotected (4P 3d), neutral protection at 0.5 Ir (4P 3d + N/2), neutral protection at Ir (4P 4d) and neutral protection at 1.6 Ir (4P 3d + 1.6N). Neutral protection at 1.6 Ir is used when the neutral conductor is twice the size of the phase conductors (major load imbalance, high level of third order harmonics).

On four-pole circuit breakers, neutral protection may be set using a three-position switch or the keypad: neutral unprotected (4P 3d), neutral protection at 0.5 Ir (4P 3d + N/2), neutral protection at Ir (4P 4d). Neutral protection produces no effect if the long-time curve is set to one of the IDMTL protection settings.

Programmable alarms and other protection

Depending on the thresholds and time delays set using the keypad or remotely using the COM option (BCM ULP), the MicroLogic P control unit monitors currents and voltage, power, frequency and the phase sequence. Each threshold overrun is signalled remotely via the COM option (BCM ULP). Each threshold overrun may be combined with tripping (protection) or an indication carried out by an optional M2C programmable contact (alarm), or both (protection and alarm).

Load shedding and reconnection

Load shedding and reconnection parameters may be set according to the power or the current flowing through the circuit breaker. Load shedding is carried out by a supervisor via the COM option (BCM ULP) or by an M2C programmable contact.

M2C / M6C programmable contacts

The M2C (two contacts) auxiliary contacts may be used to signal threshold overruns or status changes. They can be programmed using the keypad on the MicroLogic P control unit or remotely using the COM option (BCM ULP).

Communication option (COM)

The communication option may be used to:
- remotely read and set parameters for the protection functions
- transmit all the calculated indicators and measurements
- signal the causes of tripping and alarms
- consult the history files and the maintenance-indicator register.
- maximeter reset.

An event log and a maintenance register, stored in control-unit memory but not available locally, may be accessed in addition via the COM option (BCM ULP).

Note: MicroLogic P control units come with a non-transparent lead-seal cover as standard.
Protection

**MicroLogic 5.0 / 6.0 / 7.0 P**

### Long time (rms)

<table>
<thead>
<tr>
<th>ANSI Code 49</th>
<th>MicroLogic 5.0 / 6.0 / 7.0 P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current setting (A)</strong></td>
<td>Ir = In x …</td>
</tr>
<tr>
<td><strong>Tripping between 1.05 and 1.20 x Ir</strong></td>
<td>Other ranges or disable by changing long-time rating plug</td>
</tr>
<tr>
<td><strong>Time setting (tr) (s)</strong></td>
<td>0.5 1 2 4 8 12 16 20 24</td>
</tr>
<tr>
<td><strong>Time delay (s)</strong></td>
<td>Accuracy: 0 to -30 % 1.5 x Ir</td>
</tr>
<tr>
<td><strong>IDMTL (EIT)</strong></td>
<td>Accuracy: 0 to -20 % 0.7 x Ir</td>
</tr>
<tr>
<td><strong>IDMTL setting</strong></td>
<td>Curve slope SIT VIT EIT HVFuse DT</td>
</tr>
<tr>
<td><strong>Thermal memory</strong></td>
<td>20 minutes before and after tripping</td>
</tr>
</tbody>
</table>

### Short time (rms)

<table>
<thead>
<tr>
<th>ANSI Code 51</th>
<th>MicroLogic 5.0 / 6.0 / 7.0 P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current setting (A)</strong></td>
<td>Isd = Ir x …</td>
</tr>
<tr>
<td><strong>Time setting (tsd) (s)</strong></td>
<td>0.5 1 2 4 8 12 16 20 24</td>
</tr>
<tr>
<td><strong>Time delay (ms) at 10 Ir</strong></td>
<td>td (max resettable time) 20 80 140 230 350</td>
</tr>
<tr>
<td><strong>Instantaneous</strong></td>
<td>td (max break time) 80 140 200 320 500</td>
</tr>
</tbody>
</table>

### Earth fault

<table>
<thead>
<tr>
<th>ANSI Code 51N</th>
<th>MicroLogic 6.0 P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current setting (A)</strong></td>
<td>Ig = In x …</td>
</tr>
<tr>
<td><strong>Time setting (tg) (s)</strong></td>
<td>0.01 0.1 0.2 0.3 0.4</td>
</tr>
<tr>
<td><strong>Time delay (ms) at 1200 A (I2t Off or I2t On)</strong></td>
<td>Ig (max break time) 80 140 200 320 500</td>
</tr>
</tbody>
</table>

### Earth fault alarm

<table>
<thead>
<tr>
<th>ANSI Code 51G</th>
<th>MicroLogic 7.0 P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sensitivity (A)</strong></td>
<td>Idn</td>
</tr>
<tr>
<td><strong>Time delay (Δt) (ms)</strong></td>
<td>60 140 230 350 800</td>
</tr>
</tbody>
</table>

### Alarms and other protection

<table>
<thead>
<tr>
<th>ANSI Code 46</th>
<th>MicroLogic 5.0 / 6.0 / 7.0 P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current unbalance</strong></td>
<td>Inbalance</td>
</tr>
<tr>
<td><strong>Max. demand current</strong></td>
<td>Imax demand : I1, I2, I3, In,</td>
</tr>
<tr>
<td><strong>Earth fault alarm</strong></td>
<td>In</td>
</tr>
<tr>
<td><strong>Voltage unbalance</strong></td>
<td>Unbalance</td>
</tr>
<tr>
<td><strong>Minimum voltage</strong></td>
<td>Umin</td>
</tr>
<tr>
<td><strong>Maximum voltage</strong></td>
<td>Umax</td>
</tr>
</tbody>
</table>

### Load shedding and reconnection

<table>
<thead>
<tr>
<th>MicroLogic 5.0 / 6.0 / 7.0 P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measured value</strong></td>
</tr>
<tr>
<td><strong>Current</strong></td>
</tr>
<tr>
<td><strong>Power</strong></td>
</tr>
</tbody>
</table>

**Note:** All current-based protection functions require no auxiliary source. Voltage-based protection functions are connected to AC power via a voltage measurement input built into the circuit breaker.

---

(1) 0 to -40 %
(2) 0 to -60 %
(3) In ≤ 400 A 30 %
400 A < In < 1250 A 20 %
In ≥ 1250 A 10 %
(4) For 690 V applications, a step-down transformer must be used if the voltage exceeds the nominal value of 690 V by more than 10 %.
MicroLogic control units
MicroLogic P “power”

Measurements
The MicroLogic P control unit calculates in real time all the electrical values (V, A, W, VAR, VA, Wh, VARh, VAh, Hz), power factors and cosφ factors.
The MicroLogic P control unit also calculates demand current and demand power over an adjustable time period. Each measurement is associated with a minimeter and a maximeter.

In the event of tripping on a fault, the interrupted current is stored. The optional external power supply makes it possible to display the value with the circuit breaker open or not supplied.

Instantaneous values
The value displayed on the screen is refreshed every second.
Minimum and maximum values of measurements are stored in memory (minimeters and maximeters).

<table>
<thead>
<tr>
<th>Currents</th>
</tr>
</thead>
<tbody>
<tr>
<td>I rms A 1 2 3 N</td>
</tr>
<tr>
<td>I max rms A 1 2 3 N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltages</th>
</tr>
</thead>
<tbody>
<tr>
<td>U rms V 12 23 31</td>
</tr>
<tr>
<td>U average rms V (U12 + U23 + U31) / 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power, energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>P active, Q reactive, S apparent W, Var, VA Totals</td>
</tr>
<tr>
<td>E active, E reactive, E apparent Wh, VARh, VAh Totals consumed - supplied</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power factor PF Total</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>F Hz</td>
</tr>
</tbody>
</table>

Demand metering
The demand is calculated over a fixed or sliding time window that may be programmed from 5 to 60 minutes. According to the contract signed with the power supplier, an indicator associated with a load shedding function makes it possible to avoid or minimise the costs of overrunning the subscribed power. Maximum demand values are systematically stored and time stamped (maximeter).

<table>
<thead>
<tr>
<th>Currents</th>
</tr>
</thead>
<tbody>
<tr>
<td>I demand A 1 2 3 N</td>
</tr>
<tr>
<td>I max demand A 1 2 3 N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>P, Q, S demand W, Var, VA Totals</td>
</tr>
<tr>
<td>P, Q, S max demand W, Var, VA Totals</td>
</tr>
</tbody>
</table>

Minimeters and maximeters
Only the current and power maximeters may be displayed on the screen.

Time-stamping
Time-stamping is activated as soon as time is set manually or by a supervisor. No external power supply module is required (max. drift of 1 hour per year).

Reset
An individual reset, via the keypad or remotely, acts on alarms, minimum and maximum data, peak values, the counters and the indicators.

Additional measurements accessible with the COM option (BCM ULP)
Some measured or calculated values are only accessible with the COM communication option:
- I peak r/√2, (I1 + I2 + I3)/3, I unbalance
- load level in % Ir
- total power factor

The maximeters and minimeters are available only via the COM option (BCM ULP) for use with a supervisor.

Additional info
Accuracy of measurements (including sensors):
- voltage (V) 0.5 %
- current (A) 1.5 %
- frequency (Hz) 0.1 %
- power (W) and energy (Wh) 2 %.
Histories and maintenance indicators .................

The last ten trips and alarms are recorded in two separate history files that may be displayed on the screen:
- tripping history:
  - type of fault
  - date and time
  - values measured at the time of tripping (interrupted current, etc.)
- alarm history:
  - type of alarm
  - date and time
  - values measured at the time of the alarm.

All the other events are recorded in a third history file which is only accessible through the communication network:
- Event log history (only accessible through the communication network)
  - modifications to settings and parameters
  - counter resets
  - system faults
  - fallback position
  - thermal self-protection
  - loss of time
  - overrun of wear indicators
  - test-kit connections
  - etc.

Note: all the events are time stamped: time-stamping is activated as soon as time is set manually or by a supervisor. No external power supply module is required (max. drift of 1 hour per year).

Maintenance indicators with COM option (BCM ULP)

A number of maintenance indicators may be called up on the screen to better plan for device maintenance:
- contact wear
- operation counter:
  - cumulative total
  - total since last reset.

Additional maintenance indicators are also available through the COM network, and can be used as an aid in troubleshooting:
- highest current measured
- number of test-kit connections
- number of trips in operating mode and in test mode.

Additional technical characteristics

Safety
Measurement functions are independent of the protection functions.
The high-accuracy measurement module operates independently of the protection module.

Simplicity and multi-language
Navigation from one display to another is intuitive. The six buttons on the keypad provide access to the menus and easy selection of values. When the setting cover is closed, the keypad may no longer be used to access the protection settings, but still provides access to the displays for measurements, histories, indicators, etc. MicroLogic is also multi-language, including the following languages: English, Spanish, Portuguese, Russian, Chinese, French, German...

Intelligent measurement
Measurement-calculation mode:
- energies are calculated on the basis of the instantaneous power values, in two manners:
  - the traditional mode where only positive (consumed) energies are considered
  - the signed mode where the positive (consumed) and negative (supplied) energies are considered separately
- measurement functions implement the new “zero blind time” concept which consists in continuously measuring signals at a high sampling rate. The traditional “blind window” used to process samples no longer exists. This method ensures accurate energy calculations even for highly variable loads (welding machines, robots, etc.).

Always powered
All current-based protection functions require no auxiliary source. Voltage-based protection functions are connected to AC power via a voltage measurement input built into the circuit breaker.

Stored information
The fine setting adjustments, the last 100 events and the maintenance register remain in the control-unit memory even when power is lost.
MicroLogic H control units include all the functions offered by MicroLogic P. Integrating significantly enhanced calculation and memory functions, the MicroLogic H control unit offers in-depth analysis of power quality and detailed event diagnostics. It is intended for operation with a supervisor.

In addition to the MicroLogic P functions, the MicroLogic H control unit offers:
- In-depth analysis of power quality including calculation of harmonics and the fundamentals
- Diagnostics aid and event analysis through waveform capture
- Enhanced alarm programming to analyse and track down a disturbance on the AC power system.

**Measurements**

The MicroLogic H control unit offers all the measurements carried out by MicroLogic P, with in addition:
- Phase by phase measurements of:
  - Power, energy
  - Power factors
- Calculation of:
  - Current and voltage total harmonic distortion (THD)
  - Current, voltage and power fundamentals
  - Current and voltage harmonics up to the 31st order.

**Instantaneous values displayed on the screen**

<table>
<thead>
<tr>
<th><strong>Currents</strong></th>
<th></th>
<th>A</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I rms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I max rms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Voltages</strong></th>
<th></th>
<th>V</th>
<th>12</th>
<th>23</th>
<th>31</th>
</tr>
</thead>
<tbody>
<tr>
<td>V rms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U average rms</td>
<td></td>
<td>V</td>
<td>1N</td>
<td>2N</td>
<td>3N</td>
</tr>
<tr>
<td>U unbalance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Power, energy</strong></th>
<th></th>
<th>W</th>
<th>Var</th>
<th>VA</th>
<th>Totals</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P active, Q reactive, S apparent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E active, E reactive, E apparent</td>
<td></td>
<td>Wh</td>
<td>VARh</td>
<td>VAh</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Totals consumed - supplied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Totals consumed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Totals supplied</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Frequencies</strong></th>
<th></th>
<th>F</th>
<th>Hz</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Power-quality indicators</strong></th>
<th></th>
<th>U</th>
<th>I</th>
<th>P</th>
<th>Q</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>THD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>U and harmonics</td>
<td></td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Harmonics 3, 5, 7, 9, 11 and 13, monitored by electrical utilities, are displayed on the screen.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Demand measurements</strong></th>
<th></th>
<th>W</th>
<th>Var</th>
<th>VA</th>
<th>Totals</th>
<th>W</th>
<th>Var</th>
<th>VA</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I max demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td></td>
<td>W</td>
<td>Var</td>
<td>VA</td>
<td>Totals</td>
<td>W</td>
<td>Var</td>
<td>VA</td>
<td>Totals</td>
</tr>
<tr>
<td>P, Q, S demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P, Q, S max demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Maximeters**

Only the current maximeters may be displayed on the screen.

**Histories and maintenance indicators**

These functions are identical to those of the MicroLogic P.

---

*Note: MicroLogic H control units come with a non-transparent lead-seal cover as standard.*
With the communication option

Additional measurements, maximeters and minimeters

Certain measured or calculated values are only accessible with the COM communication option:

- $I_{\text{peak}} / \sqrt{2} (I_1 + I_2 + I_3)$, $I_{\text{relative}}$
- load level in % $I_r$
- power factor (total and per phase)
- voltage and current THD
- K factors of currents and average K factor
- crest factors of currents and voltages
- all the fundamentals per phase
- fundamental current and voltage phase displacement
- distortion power and distortion factor phase by phase
- amplitude and displacement of current and voltage harmonics 3 to 31 etc.
- the maximeters and minimeters are available only via the COM option (BCM ULP) for use with a supervisor.

Waveform capture

The MicroLogic H control unit stores the last 4 cycles of each instantaneous current or voltage measurement. On request or automatically on programmed events, the control unit stores the waveforms. The waveforms may be displayed in the form of oscillograms by a supervisor via the COM option (BCM ULP). Definition is 64 points per cycle.

Pre-defined analogue alarms (1 to 53)

Each alarm can be compared to user-set high and low thresholds. Overrun of a threshold generates an alarm. An alarm or combinations of alarms can be linked to programmable action such as selective recording of measurements in a log, waveform capture, etc.

Event log and maintenance registers

The MicroLogic H offers the same event log and maintenance register functions as the MicroLogic P. In addition, it produces a log of the minimums and maximums for each “real-time” value.

Additional technical characteristics

Setting the display language

System messages may be displayed in six different languages. The desired language is selected via the keypad.

Protection functions

All current-based protection functions require no auxiliary source. Voltage-based protection functions are connected to AC power via a voltage measurement input built into the circuit breaker.

Measurement functions

Measurement functions are independent of the protection functions. The high-accuracy measurement module operates independently of the protection module, while remaining synchronised with protection events.

Measurement-calculation mode

An analogue calculation function dedicated to measurements enhances the accuracy of harmonic calculations and the power-quality indicators. The MicroLogic H control unit calculates electrical magnitudes using $1.5 \times I_n$ dynamics ($20 \times I_n$ for MicroLogic P).

Measurement functions implement the new “zero blind time” concept

Energies are calculated on the basis of the instantaneous power values, in the traditional and signed modes.

Harmonic components are calculated using the discrete Fourier transform (DFT).

Accuracy of measurements (including sensors)

- voltage (V) 0.5 %
- current (A) 1.5 %
- frequency (Hz) 0.1 %
- power (W) and energy (Wh) 2 %
- total harmonic distortion 1 %.

Stored information

The fine-setting adjustments, the last 100 events and the maintenance register remain in the control-unit memory even when power is lost.

Time-stamping

Time-stamping is activated as soon as time is set manually or by a supervisor no external power supply module is required (max. drift of 1 hour per year).

Reset

An individual reset, via the keypad or remotely, acts on alarms, minimum and maximum data, peak values, the counters and the indicators.
In addition to protection functions, MicroLogic A/E/P/H control units offer all the functions of Power Meter products as well as operating-assistance for the circuit breaker.

MicroLogic A/E/P/H measurement functions are made possible by MicroLogic intelligence and the accuracy of the sensors. They are handled by a microprocessor that operates independent of protection functions.

### Display

**FDM121 display unit (one to one)**
The FDM121 switchboard display unit can be connected to a COM option (BCM ULP) using a breaker ULP cord to display all measurements on a screen. The result is a veritable 96 x 96 mm Power Meter. The FMD121 display unit requires a 24 V DC power supply. The COM option (BCM ULP) unit is supplied by the same power supply via the breaker ULP cord connecting it to the FDM121.

(1) See page A-32.

**FDM128 display unit (one to eight)**
Using an IFE Ethernet interface for LV breakers.

For all FDM, in addition to the information displayed on the MicroLogic LCD, the FDM screen shows demand, power quality and maximeter/minimeter values along with histories and maintenance indicators.

### Measurements

**Instantaneous rms measurements**
The MicroLogic continuously display the RMS value of the highest current of the three phases and neutral (Imax). The navigation buttons can be used to scroll through the main measurements.

In the event of a fault trip, the trip cause is displayed. The MicroLogic A measures phase, neutral, ground fault currents. The MicroLogic E offers voltage, power, Power Factor, measurements in addition to the measurements provided by MicroLogic A. The MicroLogic P/H offer frequency, cos \( \phi \) in addition to the measurements provided by MicroLogic E.

**Maximeters / minimeters**
Every instantaneous measurement provided by MicroLogic A or E can be associated with a maximeter/minimeter. The maximeters for the highest current of the 3 phases and neutral, the demand current and power can be reset via the FDM display unit or the communication system.

**Energy metering**
The MicroLogic E/P/H also measures the energy consumed since the last reset of the meter. The active energy meter can be reset via MicroLogic keypad or the FDM display unit or the communication system.

**Demand and maximum demand values**
MicroLogic E/P/H also calculates demand current and power values. These calculations can be made using a block or sliding interval that can be set from 5 to 60 minutes in steps of 1 minute. The window can be synchronised with a signal sent via the communication system. Whatever the calculation method, the calculated values can be recovered on a PC via Modbus communication. Ordinary spreadsheet software can be used to provide trend curves and forecasts based on this data. They will provide a basis for load shedding and reconnection operations used to adjust consumption to the subscribed power.

**Power quality**
MicroLogic H calculates power quality indicators taking into account the presence of harmonics up to the 15th order, including the total harmonic distortion (THD) of current and voltage.
### MicroLogic A/E/P/H Integrated Power Meter Functions

<table>
<thead>
<tr>
<th>Type</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/E</td>
<td>P/H</td>
</tr>
</tbody>
</table>

### Display of Protection Settings

**Pick-ups (A) and delays**

- All settings can be displayed
- Ir, tr, isd, tsd, li, lg, tg

<table>
<thead>
<tr>
<th>Phases and neutral</th>
<th>A/E</th>
<th>P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of phases</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Highest current of the 3 phases and neutral</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Ground fault (MicroLogic 6)</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Current unbalance between phases</td>
<td>- / -</td>
<td>P/H</td>
</tr>
</tbody>
</table>

### Measurements

#### Instantaneous rms Measurements

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Formula</th>
<th>A/E</th>
<th>P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phases and neutral</td>
<td>I1, I2, I3, IN</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Average of phases</td>
<td>Iavg = (I1 + I2 + I3) / 3</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Highest current of the 3 phases and neutral</td>
<td>Imax of I1, I2, I3, IN</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Ground fault (MicroLogic 6)</td>
<td>% Ig (pick-up setting)</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Current unbalance between phases</td>
<td>% Iavg</td>
<td>- / -</td>
<td>P/H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage (V)</th>
<th>Phase-to-phase</th>
<th>- / -</th>
<th>P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase-to-neutral</td>
<td>V12, V23, V31</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Average of phase-to-phase voltages</td>
<td>Vavg = (V12 + V23 + V31) / 3</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Average of phase-to-neutral voltages</td>
<td>Vavg = (V1N + V2N + V3N) / 3</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Ph-Ph and Ph-N voltage unbalance</td>
<td>% Vavg and % Vavg</td>
<td>A/E</td>
<td>P/H</td>
</tr>
</tbody>
</table>

| Frequency (Hz) | Power system | - / - | P/H |

<table>
<thead>
<tr>
<th>Power (W)</th>
<th>Active (kW)</th>
<th>P, total</th>
<th>- / -</th>
<th>P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactive (kVAR)</td>
<td>Q, total</td>
<td>- / -</td>
<td>P/H</td>
<td></td>
</tr>
<tr>
<td>Apparent (kVA)</td>
<td>S, total</td>
<td>- / -</td>
<td>P/H</td>
<td></td>
</tr>
</tbody>
</table>

| Power Factor | PF, total | - / - | P/H |

<table>
<thead>
<tr>
<th>Cos. φ</th>
<th>Cos. φ, total</th>
<th>- / -</th>
<th>P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cos. φ, per phase</td>
<td>- / -</td>
<td>P/H</td>
</tr>
</tbody>
</table>

#### Maximums / Minimetry

- Associated with instantaneous rms measurements
- Reset via FDM display unit and MicroLogic keypad

| Energy Metering | Active (kW), reactive (kVARh), apparent (kVAh) | Total since last reset | - / - | P/H |

#### Demand and Maximum Demand Values

<table>
<thead>
<tr>
<th>Demand current (A)</th>
<th>Phases and neutral</th>
<th>Present value on the selected window</th>
<th>- / -</th>
<th>P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Maximum demand since last reset</td>
<td>- / -</td>
<td>P/H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demand power</th>
<th>Active (kWh), reactive (kVAR), apparent (kVA)</th>
<th>Present value on the selected window</th>
<th>- / -</th>
<th>P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum demand since last reset</td>
<td></td>
<td>- / -</td>
<td>P/H</td>
</tr>
</tbody>
</table>

| Calculation window | Sliding, fixed or com-synchronised | Adjustable from 5 to 60 minutes in 1 minute steps | - / - | P/H |

#### Power Quality

- Total harmonic distortion (%)
  - Of voltage with respect to rms value
    - THDU, THDV of the Ph-Ph and Ph-N voltage
  - THDI of the phase current

- Of current with respect to rms value

---

(1) Available via the communication system only.
(2) Available for MicroLogic P/H only.
(3) FDM121 only.
Operating-assistance functions
MicroLogic A/E/P/H control unit with COM option (BCM ULP)

Histories
- Trip indications in clear text in a number of user-selectable languages.
- Time-stamping: date and time of trip.

Maintenance indicators
MicroLogic control unit have indicators for, among others, the number of operating cycles, contact wear P/H, load profile and operating times (operating hours counter) of the MasterPact circuit breaker.
It is possible to assign an alarm to the operating cycle counter to plan maintenance.
The various indicators can be used together with the trip histories to analyse the level of stresses the device has been subjected to.

Management of installed devices
Each circuit breaker equipped with a COM option (BCM ULP) can be identified via the communication system:
- serial number
- firmware version
- hardware version
- device name assigned by the user.
This information together with the previously described indications provides a clear view of the installed devices.
# MicroLogic A/E/P/H operating assistance functions

<table>
<thead>
<tr>
<th>Operating assistance</th>
<th>Type</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Trip history</td>
<td></td>
<td>MicroLogic LCD</td>
</tr>
<tr>
<td>Cause of tripping</td>
<td>-/E</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>P/H</td>
<td>-</td>
</tr>
<tr>
<td>Maintenance indicators</td>
<td></td>
<td>FDM display</td>
</tr>
<tr>
<td>Counter</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Mechanical cycles</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Assignable to an alarm</td>
<td>A/E</td>
<td>-</td>
</tr>
<tr>
<td>Assignable to an alarm</td>
<td>P/H</td>
<td>-</td>
</tr>
<tr>
<td>Total operating time (hours) (1)</td>
<td>A/E</td>
<td>-</td>
</tr>
<tr>
<td>Electrical cycles</td>
<td>P/H</td>
<td>-</td>
</tr>
<tr>
<td>Contact wear</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Indicator</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Load profile</td>
<td>A/E</td>
<td>P/H</td>
</tr>
<tr>
<td>Hours at different load levels</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>P/H</td>
<td>-</td>
</tr>
</tbody>
</table>

(1) Available via the communication system only.

### Additional technical characteristics

#### Contact wear

Each time MasterPact opens, the MicroLogic P/H trip unit measures the interrupted current and increments the contact-wear indicator as a function of the interrupted current, according to test results stored in memory. Breaking under normal load conditions results in a very slight increment. The indicator value may be read on the FDM display.

It provides an estimation of contact wear calculated on the basis of the cumulative forces affecting the circuit breaker. When the indicator reaches 100 %, it is advised to inspect the circuit breaker to ensure the availability of the protected equipment.

#### Circuit breaker load profile

MicroLogic A/E/P/H calculates the load profile of the circuit breaker protecting a load circuit. The profile indicates the percentage of the total operating time at four current levels (% of breaker In):

- 0 to 49 % In
- 50 to 79 % In
- 80 to 89 % In
- ≥ 90 % In.

This information can be used to optimise use of the protected equipment or to plan ahead for extensions.
Switchboard-display functions

MicroLogic A/E/P/H control unit with COM option (BCM ULP)

Functions and characteristics

MicroLogic measurement capabilities come into full play with the FDM121 switchboard display. It connects to COM option (BCM ULP) via a breaker ULP cord and displays MicroLogic information. The result is a true integrated unit combining a circuit breaker and a Power Meter. Additional operating assistance functions can also be displayed.

FDM121 switchboard display

An FDM121 switchboard display unit can be connected to a ULP IMU using a prefabricated cord to display all measurements, alarms, histories and event tables, maintenance indicators, management of installed devices on a screen. The result is a veritable 96 x 96 mm Power Meter.

The FDM121 display unit requires a 24 V DC power supply. The FDM121 is a switchboard display unit that can be integrated in the ComPact NSX100 to 630 A, PowerPact H/J/L/P/R, ComPact NS or MasterPact systems. It uses the sensors and processing capacity of the MicroLogic trip unit. It is easy to use and requires no special software or settings. It is immediately operational when connected to the ComPact NSX by a simple cord.

Also, it provides monitoring and control with the use of the I/O application module, the motor mecanism module, or the Breaker Status module. The FDM121 is a large display, but requires very little depth. The anti-glare graphic screen is backlit for very easy reading even under poor ambient lighting and at sharp angles.

Display of MicroLogic measurements and alarms

The FDM121 is intended to display MicroLogic 5 / 6 measurements, alarms and operating information. It cannot be used to modify the protection settings. Measurements may be easily accessed via a menu. All user-defined alarms are automatically displayed. The display mode depends on the priority level selected during alarm set-up:

- high priority: a pop-up window displays the time-stamped description of the alarm and the orange LED flashes
- medium priority: the orange “Alarm” LED goes steady on
- low priority: no display on the screen.

All faults resulting in a trip automatically produce a high-priority alarm, without any special settings required. In all cases, the alarm history is updated. MicroLogic saves the information in its non-volatile memory in the event of an FDM121 power failure.

Status indications and remote control

When the circuit breaker is equipped with the Breaker Status Module, the FDM121 display can also be used to view circuit breaker status conditions:

- O/F: ON/OFF
- SD: trip indication

When the circuit breaker system is equipped with the I/O application module, the FDM121 can monitor and control:

- cradle management
- circuit breaker operation
- light and load control
- custom application.

When the circuit breaker system is equipped with the motor mechanism module, the FDM121 offers remote closing and opening control.

Main characteristics

- 96 x 96 x 30 mm screen requiring 10 mm behind the door (or 20 mm when the 24 V power supply connector is used).
- White backlighting.
- High resolution: excellent reading of graphic symbols.
- Alarm LED: flashing orange for alarm pick-up, steady orange after operator reset if alarm condition persists.
- Operating temperature range -10 °C to +55 °C.
- CE / UL / CSA marking (pending).
- 24 V DC power supply, with tolerances 24 V -20 % (19.2 V) to 24 V +10 % (26.4 V).

When the FDM121 is connected to the communication network, the 24 V DC can be supplied by the communication system wiring system.

Consumption 40 mA.

Mounting

The FDM121 is easily installed in a switchboard.

- Standard door cut-out 92 x 92 mm.
- Attached using clips.

To avoid a cut-out in the door, an accessory is available for surface mounting by drilling only two 22 mm diameter holes.

The FDM121 degree of protection is IP54 in front. IP54 is maintained after switchboard mounting by using the supplied gasket during installation.

Connection

The FDM121 is equipped with:

- a 24 V DC terminal block:
  - plug-in type with 2 wire inputs per point for easy daisy-chaining
  - power supply range of 24 V DC -20 % (19.2 V) to 24 V DC +10 % (26.4 V).

A 24 V DC type auxiliary power supply must be connected to a single point on the ULP system. The FDM121 display unit has a 2-point screw connector on the rear panel of the module for this purpose. The ULP module to which the auxiliary power supply is connected distributes the supply via the ULP cable to all the ULP modules connected to the system and therefore also to MicroLogic.
Navigation

Five buttons are used for intuitive and fast navigation. The “Context” button may be used to select the type of display (digital, bargraph, analogue). The user can select the display language (Chinese, English, French, German, Italian, Portuguese, Spanish, etc.).

Screens

Main menu

When powered up, the FDM121 screen automatically displays the ON/OFF status of the device.

- Quick view
- Alarms
- Metering
- Services
- Control

When not in use, the screen is not backlit. Backlighting can be activated by pressing one of the buttons. It goes off after 3 minutes.

Fast access to essential information

- “Quick view” provides access to five screens that display a summary of essential operating information (I, U, f, P, E, THD, circuit breaker On / Off).

Access to detailed information

- “Metering” can be used to display the measurement data (I, U-V, f, P, Q, S, E, THD, PF) with the corresponding min/max values.
- Alarms displays active alarms and the alarm history.
- Services provides access to the operation counters, energy and maximeter reset function, maintenance indicators, identification of modules connected to the internal bus and FDM121 internal settings (language, contrast, etc.).

Communication components and FDM121 connections

Connections

- MasterPact is connected to the ULP devices (FDM121 display, IFM, IFE or I/O) unit via the breaker ULP cord.
- Cord available in three lengths: 0.35 m, 1.3 m and 3 m.
- Lengths up to 10 m possible using extensions.

- Modbus network
- Ethernet network
- NSX cord

- FDM121 display
- ULP display
- ULP cable

- Breaker ULP cord
- Customer terminal block
- IPE
- IFE
- IFM
- ULP termination
Functions and characteristics

Switchboard-display functions
MicroLogic A/E/P/H control unit with COM Ethernet gateway

MicroLogic measurement capabilities come into full play with the FDM128 switchboard display. It connects to Ethernet communication via RJ45 port and displays MicroLogic information. The result is a true integrated unit combining a circuit breaker and a Power Meter. Additional operating assistance functions can also be displayed.

FDM128 switchboard display
The FDM128 is an intelligent Ethernet display. It collects the data from up to 8 devices via Ethernet network.
The FDM128 switchboard display unit can be connected to a MicroLogic COM option (BCM ULP via IFE). It uses the sensors and processing capacity of the MicroLogic control unit. It is easy to use and requires no special software or settings.
The FDM128 is a large display, but requires very little depth. The anti-glare graphic screen is backlit for very easy reading even under poor ambient lighting and at sharp angles.
The FDM128 switchboard display is designed to manage up to 8 devices (MasterPact NT/NW, ComPact NS, ComPact NSX or Smartlink).

Display of MicroLogic measurements and trips
The FDM128 is intended to display MicroLogic A/E measurements, trips and operating information. It cannot be used to modify the protection settings.
Measurements may be easily accessed via a menu.
Trips are automatically displayed.
A pop-up window displays the time-stamped description of the trip.

Status indications
When the circuit breaker is equipped with the Breaker Status Command Module (BSCM) and NSX cord, the FDM128 display can also be used to view circuit breaker status conditions:
- O/F: ON/OFF
- SDE: Fault-trip indication (overload, short-circuit, ground fault)
- CE, CD cradle management with I/O application module.

Remote control
When the circuit breaker is equipped with the BSCM, NSX cord and Communication Motor Mechanism (MTC), the FDM128 display can also be used to control (open/close) the circuit breaker.

Main characteristics
- 115.2 x 86.4 mm with 5.7" QVGA display 320 x 240 pixels.
- Color TFT LCD, LED backlight.
- Wide viewing angle: vertical ±80°, horizontal ±70°.
- High resolution: excellent reading of graphic symbols.
- Operating temperature range -10 °C to +55 °C.
- CE / UL / CSA marking (pending).
- 24 V DC power supply, with tolerances 24 V (limit 20.4 - 28.8 V DC).
- Consumption ≤ 6.8 W.

Mounting
The FDM128 is easily installed in a switchboard.
- Standard door hole Ø 22 mm.
The FDM128 degree of protection is IP65 in front and IP54.

Connection
The FDM128 is equipped with:
- a 24 V DC terminal block:
  - power supply range of 24 V DC (limit 20.4 - 28.8 V DC). The FDM128 display unit has a 2-point screw connector on the rear panel of the module for this purpose.
  - One RJ45 Ethernet jack.
The MicroLogic connects to the internal communication terminal block on the MasterPact via the breaker ULP cord and Ethernet connection through IFE.
Navigation
Touch screen is used for intuitive and fast navigation.
The user can select the display language (Chinese, English, French, German, Italian, Portuguese, Spanish, etc.).

Screens
Main menu

- Quick view
- Alarms
- Metering
- Maintenance
- Control

When not in use, the screen is automatically shifted to low back-lighting.

Fast access to essential information
- “Quick view” provides access to five screens that display a summary of essential operating information (I, U, f, P, E, THD, circuit breaker On / Off).

Access to detailed information
- "Metering" can be used to display the measurement data (I, U-V, f, P, Q, S, E, THD, PF) with the corresponding min/max values.
- Alarms displays the trip history.
- Services provides access to the operation counters, energy and maximeter reset function, maintenance indicators, identification of modules connected to the internal bus and FDM128 internal settings (language, contrast, etc.).
Power supplies

External 24 V DC power-supply module (AD)

The external power-supply module makes it possible:

- to use the display even if the circuit breaker is open or not supplied (for the exact conditions of use, see the “electrical diagrams” part of this catalog)
- to display fault currents after tripping
- to modify settings when the circuit breaker is open (OFF position)

An external 24 V DC power supply is required for installation with communication, whatever the type of trip unit. This module is not designed to power on 24 V DC voltage releases and electric motor mechanism.

This module powers both the control unit and the M2C programmable contacts. We recommended using the AD power supply due to its low stray primary secondary capacitance. Good operation of the MicroLogic control unit in noisy environment is not guaranteed with other power supplies.

If the COM option is used, a second dedicated power supply shall be used. This module powers both the control unit and the M2C programmable contacts or ESM module.

Characteristics

- Power supply AC-to-DC or DC-to-DC
- Output voltage: 24 V DC ±5 %
- Output current: 1 A.
- DIN rail or platine Fixing with Acti9 form factor
- Conducted emissions power line: class B per EN 61000-6-3.
24 V DC Universal Phaseo™ ABL8 power supplies

The Universal Phaseo ABL8 RPS 24050 and ABL8 RPS 24030 power supplies can be connected phase-to-neutral or phase-to-phase. They deliver a voltage that is precise to 3%, whatever the load and whatever the value of the AC supply, within the ranges 85 to 132 V AC and 170 to 550 V AC. The Universal Phaseo ABL8 powers:

- circuit breaker communication module and interface
- programmable MicroLogic.

Characteristics

- Power supply AC-to-DC.
- Network frequency: 50/60 Hz (±5%).
- Output voltage: 24 V DC ±3%.
- Output current: 3 or 5 A.
- DIN rail or platine Fixing.
- Conducted emissions power line: class B per EN 61000-6-3.

To assist cooling there must be sufficient clearance around the Universal range Phaseo power supplies:

- 50 mm above and below
- 10 mm on the side.

### ABL8RPS Module AD

<table>
<thead>
<tr>
<th>Over Voltage Category</th>
<th>Cat I per VDE 0106-1</th>
<th>Cat IV per IEC 62477-1 (AC model)</th>
<th>Cat III per IEC 62477-1 (DC model)</th>
<th>Cat III per UL 61010-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of pollution as per IEC 60664-1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input supply voltage AC</td>
<td>100…120 V AC and 200…500 V AC</td>
<td>110-130 or 200-240 V AC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input supply voltage DC</td>
<td>N/A</td>
<td>24-30 or 48-60 or 100/125 V DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectric</td>
<td>4 kV rms -1 mn.</td>
<td>3 kV rms - 1 mn. (110-130 V AC and 200-240 V AC model)</td>
<td>3 kV rms - 1 mn. (110-125 V DC model)</td>
<td>2 kV rms - 1 mn. (24-30 V DC and 48-80 V DC model)</td>
</tr>
<tr>
<td>Input/Ground</td>
<td>3.5 kV rms -1 mn.</td>
<td>3 kV rms - 1 mn.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output/Ground</td>
<td>0.5 kV rms - 1 mn.</td>
<td>1.5 kV rms - 1 mn.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>50 °C</td>
<td>60 °C with 80% of the rated current maximum</td>
<td>70°C</td>
<td></td>
</tr>
<tr>
<td>Output current</td>
<td>3 A (ABL8RPS24030) 5 A (ABL8RPS24050)</td>
<td>1 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inrush current for 2 ms</td>
<td>&lt; 30 A</td>
<td>&lt; 20 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ripple</td>
<td>200 mV peak-peak</td>
<td>200 mV peak-peak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output voltage limits</td>
<td>24 to 28.8 V DC</td>
<td>22.8 to 25.2 V DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP20</td>
<td>IP4x front face / IP2x terminals / IP3x other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** For the applications requiring an over voltage category higher than 1, a surge arrester shall be associated to ABL8 RPS power supplies. The iQuick20prd type 2 surge arrester is recommended.
External sensors

External sensor for earth-fault and neutral protection
The sensors, used with the 3P circuit breakers, are installed on the neutral conductor for:
- neutral protection (with MicroLogic P and H)
- residual type earth-fault protection (with MicroLogic A, E, P and H).
The rating of the sensor (CT) must be compatible with the rating of the circuit breaker:
- NT06 to NT16: TC 400/1600
- NW08 to NW20: TC 400/2000
- NW25 to NW40: TC 1000/4000
- NW40b to NW63: TC 4000/6300.
For oversized neutral protection the sensor rating must be compatible with the measurement range: 1.6 x In (available up to NW40 and NT16).

Rectangular sensor for earth-leakage protection
The sensor is installed around the busbars (phases + neutral) to detect the zero-phase sequence current required for the earth-leakage protection. Rectangular sensors are available in two sizes.
Inside dimensions (mm)
- 280 x 115 up to 1600 A for MasterPact NT and NW / L1
- 470 x 160 up to 3200 A for MasterPact NW / L2.

External sensor for source ground return protection (SGR)
The sensor is installed around the connection of the transformer neutral point to earth and connects to the MicroLogic 6.0 control unit via an MDGF module to provide the source ground return (SGR) protection.

Voltage measurement inputs
Voltage measurement inputs are required for power measurements (MicroLogic P or H) and for earth-leakage protection (MicroLogic 7...).
As standard, the control unit is supplied by internal voltage measurement inputs placed downstream of the pole for voltages between 220 and 690 V AC. On request, it is possible to replace the internal voltage measurement inputs by an external voltage input (PTE option) which enables the control unit to draw power directly from the distribution system upstream of the circuit breaker. An 3 m cable with ferrite comes with this PTE option.

Long-time rating plug
Four interchangeable plugs may be used to limit the long-time threshold setting range for higher accuracy.
The time delay settings indicated on the plugs are for an overload of 6 Ir (for further details, see the characteristics on page A-11 and page A-15).
As standard, control units are equipped with the 0.4 to 1 plug.

<table>
<thead>
<tr>
<th>Setting ranges</th>
<th>Standard</th>
<th>Low-setting option</th>
<th>High-setting option</th>
<th>Off plug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ir = In x…</td>
<td>0.4</td>
<td>0.45</td>
<td>0.80</td>
<td>No long-time protection</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td>0.50</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>0.55</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.7</td>
<td>0.60</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.8</td>
<td>0.65</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>0.70</td>
<td>0.92</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.95</td>
<td>0.75</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.98</td>
<td>0.8</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Important: long-time rating plugs must always be removed before carrying out insulation or dielectric withstand tests.
Battery module
The battery module maintains display operation and communication with the supervisor if the power supply to the MicroLogic control unit is interrupted. It is installed in series between the MicroLogic control unit and the AD module.

Characteristics
- Battery run-time: 4 hours (approximately).
- Mounted on vertical backplate or symmetrical rail.

M2C programmable contacts
These contacts are optional equipment for the MicroLogic E, P and H control units. They are described with the indication contacts for the circuit breakers.

<table>
<thead>
<tr>
<th>MicroLogic Characteristics</th>
<th>Type E, P, H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum load</td>
<td></td>
</tr>
<tr>
<td>240 V AC</td>
<td>100 mA/24 V</td>
</tr>
<tr>
<td>380 V AC</td>
<td></td>
</tr>
<tr>
<td>24 V DC</td>
<td>1.8</td>
</tr>
<tr>
<td>48 V DC</td>
<td>1.5</td>
</tr>
<tr>
<td>125 V DC</td>
<td>0.4</td>
</tr>
<tr>
<td>250 V DC</td>
<td>0.15</td>
</tr>
</tbody>
</table>

M2C: 24 V DC power supplied by control unit (consumption 100 mA).

Spare parts

Lead-seal covers
A lead-seal cover controls access to the adjustment dials. When the cover is closed:
- it is impossible to modify settings using the keypad unless the settings lockout pin on the cover is removed
- the test connector remains accessible
- the test button for the earth-fault and earth-leakage protection function remains accessible.

Characteristics
- Transparent cover for basic MicroLogic and MicroLogic A, E control units
- Non-transparent cover for MicroLogic P and H control units.

Spare battery
A battery supplies power to the LEDs identifying the tripping causes. Battery service life is approximately ten years. A test button on the front of the control unit is used to check the battery condition. The battery may be replaced on site when discharged.

Test equipment

Hand-held test kit
The hand-held mini test kit may be used to:
- check operation of the control unit and the tripping and pole-opening system by sending a signal simulating a short-circuit
- supply power to the control units for settings via the keypad when the circuit breaker is open (MicroLogic P and H control units).
Power source: standard LR6-AA battery.

Full function test kit
The test kit can be used alone or with a supporting personal computer. The test kit without PC may be used to check:
- the mechanical operation of the circuit breaker
- the electrical continuity of the connection between the circuit breaker and the control unit
- operation of the control unit:
  - display of settings
  - automatic and manual tests on protection functions
  - test on the zone-selective interlocking (ZSI) function
  - inhibition of the earth-fault protection
  - inhibition of the thermal memory.
The test kit with PC offers in addition:
- the test report (software available on request).
Enerlin’X communication system provides access to status, electrical values and devices control using Ethernet and Modbus SL communication protocols.

Ethernet has become the universal link between switchboards, computers and communication devices inside the building. The large amount of information which can be transferred makes the connection of Enerlin’X digital system to hosted web services of Schneider Electric a reality. More advantages are offered to integrators thanks to configuration web pages available remotely or on the local Ethernet network.

Modbus SL is the most widely used communication protocol in industrial networks. It operates in master-slave mode. The devices (slaves) communicate one after the other with a gateway (master).
# Enerlin’X digital system

## Overview

### Enerlin’X digital devices and displays

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
<th>Port (to device)</th>
<th>Port (to server)</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Cial. Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Com’X 210</td>
<td>Energy data logger + Ethernet Gateway</td>
<td>Ethernet</td>
<td>Ethernet cable</td>
<td>64 devices: 6 binary 2 analog</td>
<td>-</td>
<td>EBX210</td>
</tr>
<tr>
<td><strong>B</strong> Com’X 510</td>
<td>Energy server + Ethernet Gateway</td>
<td>24 V DC + PoE</td>
<td>Ethernet Modbus Master, Zigbee (to wireless meters)</td>
<td>32 Modbus devices + other Ethernet devices (Modbus TCP)</td>
<td>-</td>
<td>EBX510</td>
</tr>
<tr>
<td>FDM128</td>
<td>Ethernet LCD colour touch screen</td>
<td>-</td>
<td>Ethernet</td>
<td>-</td>
<td>-</td>
<td>LV434128</td>
</tr>
<tr>
<td>FDM121</td>
<td>LCD display for circuit breaker</td>
<td>ULP</td>
<td>-</td>
<td>1 circuit breaker</td>
<td>-</td>
<td>TRV00121</td>
</tr>
<tr>
<td>IFE Switchboard server</td>
<td>Switchboard server</td>
<td>Modbus Master &amp; ULP</td>
<td>Ethernet</td>
<td>20 circuit breakers</td>
<td>-</td>
<td>LV434002</td>
</tr>
<tr>
<td>IFE interface</td>
<td>Ethernet interface for circuit breakers</td>
<td>ULP</td>
<td>Ethernet</td>
<td>1 circuit breaker</td>
<td>-</td>
<td>LV434001</td>
</tr>
<tr>
<td>IFM</td>
<td>Modbus interface for circuit breaker</td>
<td>ULP</td>
<td>Modbus Slave</td>
<td>1 circuit breaker</td>
<td>-</td>
<td>LV434000</td>
</tr>
<tr>
<td>I/O</td>
<td>Input/Output application module for circuit breaker</td>
<td>ULP</td>
<td>ULP</td>
<td>6 binary 1 analog (PT100 sensor)</td>
<td>3</td>
<td>LV434063</td>
</tr>
<tr>
<td><strong>G</strong> Acti 9 Smartlink SI B Ethernet wireless</td>
<td>Ethernet server for I/O and Modbus slave devices</td>
<td>Modbus Master &amp; Wireless to PowerTag</td>
<td>Ethernet</td>
<td>14 binary 2 analog</td>
<td>7</td>
<td>A9XMZA08</td>
</tr>
<tr>
<td><strong>H</strong> Acti 9 Smartlink Modbus slave</td>
<td>Modbus interface with Input/Output functions</td>
<td>-</td>
<td>Modbus Slave</td>
<td>22 binary</td>
<td>11</td>
<td>A9XMSB11</td>
</tr>
</tbody>
</table>

**Ethernet Gateway or Interface:** routes an internal traffic (ULP or other protocol) to the Internet, the outgoing messages are coded with Modbus TCP/IP protocol.

**Server (Switchboard, Energy):** routes the internal traffic to the Internet. Other complementary functions such as data logging and storage. Provides devices status and energy trends on internal web pages...

*Note: for more information please consult: Configuration & commissioning guide of connected devices & software - New buildings*
Functions and characteristics
Communication
Communication wiring system

Wiring system ULP
The wiring system is designed for low-voltage power switchboards. Installation requires no tools or special skills. The prefabricated wiring ensures both data transmission (Modbus protocol) and 24 V DC power distribution for the communications modules on the MicroLogic control units.
Overview of functions

Four functional levels
The MasterPact can be integrated into Ethernet and Modbus communication environment.
There are four possible functional levels that can be combined.

<table>
<thead>
<tr>
<th>Status indications</th>
<th>Switch-disconnectors</th>
<th>Circuit breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON/OFF (O/F)</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>Spring charged CH</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>Ready to close</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fault-trip SDE</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>Connected / disconnected / test position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE/CD/CT (I/O application module only)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Controls</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MX1 open</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>XF close</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurements</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous measurement information</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>Averaged measurement information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy metering</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>Demand for current and power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power quality</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating assistance</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection and alarm settings</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>Histories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time stamped event tables</td>
<td>A E P H</td>
<td>A E P H</td>
</tr>
<tr>
<td>Maintenance indicators</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modbus principle</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Modbus RS 485 (RTU protocol) system is an open bus on which communicating Modbus devices (ComPact NS with Modbus COM, Power Meter PM700, PM800, Sepam, Vigilohm, ComPact NSX, etc.) are installed. All types of PLCs and microcomputers may be connected to the bus.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addresses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Modbus communication parameters (address, baud rate, parity) are entered using the keypad on the MicroLogic A, E, P, H. For a switch-disconnector, it is necessary to use the Electrical Asset Manager or RSU (Remote Setting Utility) MicroLogic utility.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Number of devices                                        |                       |                 |
| The maximum number of devices that may be connected to the Modbus bus depends on the type of device (ComPact with Modbus COM, PM700, PM800, Sepam, Vigilohm, ComPact NSX, etc.), the baud rate (19200 is recommended), the volume of data exchanged and the desired response time. The RS 485 physical layer offers up to 32 connection points on the bus (1 master, 31 slaves). A fixed device requires only one connection point (communication module on the device). A drawout device uses two connection points (communication modules on the device and on the chassis). The number must never exceed 31 fixed devices or 15 drawout devices. |                       |                 |

| Length of bus                                            |                       |                 |
| The maximum recommended length for the Modbus bus is 1200 meters. |                       |                 |

| Bus power source                                         |                       |                 |
| A 24 V DC power supply is required (less than 20 % ripple, insulation class II). |                       |                 |

| Ethernet principle                                       |                       |                 |
| Ethernet is a data link and physical layer protocol defined by IEEE 802.10 and 100 Mbps specifications that connects computer or other Ethernet devices. Ethernet is an asynchronous Carrier Sense Multiple Access with Collision detection (referred as CSMA/CD) protocol. Carrier Sense means that the hosts can detect whether the medium (coaxial cable) is idle or busy. Multiple Access means that multiple hosts can be connected to the common medium. Collision Detection means a host detects whether its transmission has collided with the transmission of another host (or hosts). IFE Ethernet interface can be connected to a PC or a laptop over Ethernet. The maximum length of Ethernet cable is 100 meters. IFE Ethernet interface + gateway provides a Modbus TCP/IP gateway over Ethernet to enable Modbus TCP communication from a Modbus TCP master to any Modbus slave devices connected to it. The maximum active Modbus TCP client connection is twelve. IFE Ethernet interface has an embedded web server (web page). The Modbus RS 485 (RTU protocol) system is an open bus on which communicating Modbus devices (ComPact NS with Modbus COM, Power Meter PM700, PM800, Sepam, Vigilohm, ComPact NSX, etc.) are installed. All types of PLCs and microcomputers may be connected to the bus. |                       |                 |
Functions and characteristics

Communication
COM option in MasterPact

All the MasterPact devices can be fitted with the communication function thanks to the COM option. MasterPact uses the Ethernet or Modbus communications protocol for full compatibility with the supervision management systems. Eco COM is limited to the transmission of metering data and status. It is not used to communicate controls.

For fixed and Drawout devices, the common communication option is made up of:

- a BCM ULP module, installed behind the MicroLogic control unit and supplied with its set of sensors (OF, SDE, PF and CH micro switches) its kit for connection to XF and MX1 communicating voltage releases and its COM terminal block (inputs E1 to E6). This module is independent of the control unit. It receives and transmits information on the communication network. An infra-red link transmits data between the control unit and the communication module.
  Consumption: 30 mA, 24 V.
- IFM, this module required for connection to the network, contains the Modbus address (1 to 99) declared by the user via the two dials in front. It automatically adapts (baud rate, parity) to the Modbus network in which it is installed.
  Or
- IFE, the Ethernet interface for LV circuit breaker enables an intelligent modular unit (IMU), for example a MasterPact NT/NW or ComPact NSX circuit breaker to be connected to an Ethernet network. Each circuit breaker has its own IFE and a corresponding IP address.

For drawout device the Cradle Management option must be added:
I/O (Input/Output) application module for LV breaker, the I/O application module is delivered with withdrawable devices ordered with the COM option, for cradle management. It must be installed on a DIN rail near the device. It must be connected to the ULP system and to the position contacts (CD, CT, CE) that transmit the position of the device in the cradle.

For communicating remote control, option with XF and MX1 communicating voltage releases must be added:
The XF and MX1 communicating voltage releases are equipped for connection to the "device" communication module.
The remote-tripping function (MX2 or MN) are independent of the communication option. They are not equipped for connection to the "device" communication module.
## Communication architecture

### Electrical operated

<table>
<thead>
<tr>
<th>Fixed device</th>
<th>Drawout device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>Ethernet</td>
</tr>
<tr>
<td>Modbus</td>
<td>Modbus</td>
</tr>
</tbody>
</table>

**ULP system**

- **BCM ULP**
- **OF, SDE... microswitches**
- **COM terminal block (E1 to E6)**
- **MX1 and XF communicating voltage releases**
- **CE, CD and CT contacts**

- **Breaker ULP cord**
- **I/O application module**
- **ULP cable**
- **IFE module**
- **IFM module**

---

**Diagram:**

- **A**: BCM ULP
- **B**: OF, SDE... microswitches
- **C**: COM terminal block (E1 to E6)
- **D**: MX1 and XF communicating voltage releases
- **E**: CE, CD and CT contacts
- **F**: Breaker ULP cord
- **G**: I/O application module
- **H**: ULP cable
- **I**: IFE module
- **J**: IFM module
IFE Ethernet interface

Introduction

The IFE interface and the IFE switchboard server enable LV circuit breakers to be connected to an Ethernet network. The IFE switchboard server incorporates a Modbus gateway. The following circuit breakers can be connected to the IFE interface and to the IFE switchboard server:
- Fixed type MasterPact NT/NW
- ComPact NSX
- PowerPact

IFE interface: ref. LV434001

The IFE interface provides an Ethernet access to a single LV circuit breaker. The circuit breaker is connected to the IFE interface via its ULP port and a prefabricated ULP cord.

IFE switchboard server, ref.: LV434002

The IFE switchboard server provides an Ethernet access to one or several LV circuit breakers. It allows to:
- interface to Ethernet:
  - one single circuit breaker connected to the IFE interface via its ULP port and a prefabricated ULP cord,
  - up to 12 ComPact NSX connected through the Modbus serial line interface.

The following circuit breakers can be connected to the IFE interface and to the IFE switchboard server:
- Fixed type MasterPact NT/NW
- ComPact NSX
- PowerPact

IFE interface, IFE interface + gateway features

Network communication interface

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of interface module</td>
<td>Modbus RTU, RS485 serial connection</td>
</tr>
<tr>
<td>Modbus TCP/IP Ethernet</td>
<td>Modbus TCP/IP Ethernet</td>
</tr>
<tr>
<td>Transmission</td>
<td>Modbus RS485</td>
</tr>
<tr>
<td>Transfer rate: 9,600...19,200 Baud</td>
<td>Medium Double shielded twisted pair Impedance 120 Ω</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Transfer rate: 10/100 Mbps Medium STP, Cat5e, straight cable</td>
</tr>
<tr>
<td>Structure</td>
<td>Modbus, Ethernet</td>
</tr>
<tr>
<td>Device type</td>
<td>Modbus, Master</td>
</tr>
<tr>
<td>Turnaround time</td>
<td>Modbus 10 ms</td>
</tr>
<tr>
<td>Ethernet</td>
<td>1 ms</td>
</tr>
<tr>
<td>Maximum length of cable</td>
<td>Modbus 1000 m</td>
</tr>
<tr>
<td>Ethernet</td>
<td>100 m</td>
</tr>
<tr>
<td>Type of bus connector</td>
<td>Modbus 4-pin connector</td>
</tr>
<tr>
<td>Ethernet</td>
<td>RJ45 (Shielded)</td>
</tr>
</tbody>
</table>

Mounting

The IFE interface and the IFE switchboard server are DIN rail mounting devices. A stacking accessory enables the user to connect several IFMs (ULP to Modbus serial line interfaces) to an IFE switchboard server without additional wiring.

24 V DC power supply

The IFE interface and the IFE switchboard server must be supplied either with a 24 V DC AD or with a 24 V DC ABL8 RPS power supply. The IFMs stacked to an IFE switchboard server are supplied by the IFE, thus it is not necessary to supply them separately. Note: the connection of the +/- of the power supply on +/- terminals of the IFE device must be strictly respected. Crossing the polarities may damage the device.

IFE interface, IFE switchboard server firmware update

The firmware can be updated using the EcoStruxure Power Commission software.

Required circuit breaker communication modules

The connection to IFE interface or to IFE switchboard server requires ULP communication ports.
- MasterPact NT/NW (Fixed or drawout): BCM ULP communication module
- Drawout MasterPact NT/NW: BCM ULP and its respective I/O (Input/Output) application module.

All connection configurations for MasterPact NT/NW require the breaker ULP cord. The insulated NSX cord is mandatory for system voltages greater than 480 V AC. When the second ULP RJ45 connector is not used, it must be closed with an ULP terminator (TRV00980).
**General characteristics**

**Environmental characteristics**

Conforming to standards: IEC 60950, IEC 60947-6-2, UL 508, UL 60950, IACS E10

Certification: c UL us, CE, EAC, FCC marking

Ambient temperature:
- Storage: -40 to +85 °C
- Operation: -25 to +70 °C

Relative humidity: 5–85 %

Level of pollution: Level 3

Protective treatment: ULV0 conforming to IEC/EN 60068-2-30

**Mechanical characteristics**

Shock resistance: Conforming to IEC/EN 60068-2-27
- 15 g / 11 ms, 1/2 sinusoidal

Resistance to sinusoidal vibrations: Conforming to IEC/EN 60068-2-6
- 5 Hz < f < 8.4 Hz

**Electrical characteristics**

Consumption: 150 mA at 24 V DC

Resistance to electrostatic discharge:
- IEC/EN 61000-4-2: 8 kV air discharge
- 6 kV contact discharge

Immunity to radiated fields:
- IEC/EN 61000-4-3: 10 V/m

Immunity to fast transient perturbations:
- IEC/EN 61000-4-4: 2 kV

Immunity to surges:
- IEC/EN 61000-4-5: 2 kV common mode

Immunity to conducted radio frequency field:
- IEC/EN 61000-4-6: 10 V

**Physical characteristics**

Dimensions: 72 x 105 x 71 mm

Mounting: DIN rail

Weight: 182.5 g (0.41 lb)

Degree of protection of the installed I/O:
- On the front panel (wall mounted enclosure): IP4x
- Connectors: IP2x
- Other parts: IP3x

Connections: Screw type terminal blocks

**Technical characteristics - 24 V DC power supply**

Power supply type: Regulated switch type

Rated power: 72 W

Input voltage:
- 100–120 V AC for single phase
- 200–500 V AC phase-to-phase

PFC filter: With IEC 61000-3-2

Output voltage: 24 V DC

Power supply out current: 3 A

Note: It is recommended to use an UL listed/UL listed recognized limited voltage/Limited current or a class 2 power supply with a 24 V DC, 3 A maximum.

**IFE web page description**

Monitoring web page:
- Real time data
- Device logging

Control web page:
- Single device control

Diagnostics web page:
- Statistics
- Device information
- IMU information
- Read device registers
- Communication check

Maintenance web page:
- Circuit breaker health status
- Maintenance log
- Maintenance counters

Setup web page:
- Device localization/name
- Ethernet configuration (dual port)
- IP configuration
- Modbus TCP/IP filtering
- Date and time
- E-mail server configuration
- Alarms to be e-mailed
- Device logging
- Device log export
- SNMP parameters
- Preferences
- Advanced services control
- User accounts
- Web page access

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**A-39**
IFM Modbus communication interface

**Function**

IFM - Modbus communication interface - is required for connecting MasterPact MTZ, NT/NW or ComPact NS and NSX to Modbus network whenever the circuit breaker has an ULP port (Universal Logic Plug). The port is available on BCM ULP for MasterPact range and BSCM module for ComPact range.

*Note: IFM is defined as an IMU (Intelligent Modular Unit) within the ULP connection System documentation.*

Once connected to IFM, the circuit breaker is considered as a slave by the Modbus master. Its electrical values, alarm status, open/close signals can be monitored or controlled by a Programmable Logic Controller or any other system.

**Characteristics**

**ULP port**

- 2 RJ45 sockets, internal parallel wiring.
- Connection of a single circuit breaker.
- An ULP line terminator must be connected to the second RJ45 ULP socket. The RJ45 sockets deliver a 24 V DC supply fed from the Modbus socket.
- Built-in test function, for checking the correct connection to the circuit breaker.

**Modbus slave port**

- Modbus Serial RJ45 port - RJ45 connector provides fast and reliable wiring.
- Lateral socket, for DIN rail stackable connector.
- Both top and lateral sockets are internally parallel wired.
- Multiple IFM can be stacked, thus sharing a common power supply and Modbus line without individual wiring.
- On the front face:
  - Modbus address setting (1 to 99): 2 coded rotary switches
  - Modbus locking pad: enables or disable the circuit breaker remote control and modification of IFM parameters.
  - Self adjusting communication format (Baud rate, parity).

**24 V DC power supply**

- Screw clamp terminal block
- High electrical insulation between Modbus and 24 V DC connectors
- Separated lines provides improved communication robustness.

![IFM Modbus communication interface](Ref.: LV434000.)
**General characteristics**

**Environmental characteristics**
- Conforming to standards: IEC 61010, IEC 60950, UL 61010, UL 60950, CISPR 22, 24, 11, IACS E10
- Certification: c UL us, CE, EAC, FCC marking
- Ambient temperature: -20 to +70 °C
- Relative humidity: 5 - 85 %
- Level of pollution: Level 3
- Protective treatment: ULV0 conforming to IEC/EN 60068-2-30

**Mechanical characteristics**
- Shock resistance: Conforming to IEC/EN 60068-2-27
  15 g / 11 ms, 1/2 sinusoidal
- Resistance to sinusoidal vibrations: Conforming to IEC/EN 60068-2-6
  5 Hz < f < 8.4 Hz

**Electrical characteristics**
- Consumption: 30 mA at 24 V DC
- Resistance to electrostatic discharge: IEC/EN 61000-4-2: 8 kV AD
- Immunity to radiated fields: IEC/EN 61000-4-3: 10 V/m
- Immunity to surges: IEC/EN 61000-4-5: class 2

**Physical characteristics**
- Dimensions: 109 x 73 x 18 mm
- Mounting: DIN rail
- Weight: 120 g
- Degree of protection of the installed module: IP20 for connectors
  IP30 for other areas
- Connections: RJ45 for ULP and Modbus SL
  Screw type terminals for Power

---

**Simplified IFM installation**

**Staking IFM**

Stacking accessories

Up to 12 stacked IFM

**Stacking an IFE interface + gateway with IFMs**
I/O application module description

Description
The I/O input/output application module for LV breaker is one of the components of ULP architecture. Built in functionalities and applications enhance control and monitoring needs.

ULP system architecture including I/O modules can be built without any restrictions using a wide range of circuit breakers:
- MasterPact MTZ1/MTZ2/MTZ3/NT/NW,
- ComPact NS1600b-3200,
- ComPact NS630b-1600,
- ComPact NSX100-630 A.

The I/O application module is compliant with the ULP system specifications. Two I/O application modules can be connected in the same ULP architecture.

I/O input/output interface for LV breaker resources
The I/O application module resources are the following:
- 6 digital inputs that are self powered for either NO and NC dry contact or pulse counter,
- 3 digital outputs that are bistable relay (5 A maximum),
- 1 analog input for Pt100 temperature sensor.

Pre-defined applications
Pre-defined applications improve the IMU approach (Intelligent Modular Unit) in a simple way.
A 9-position rotary switch on the front of the I/O module allows to select the pre-defined applications. Each position is assigned to a pre-defined application except position 9 which allows the user to define a specific application by means of the customer engineering tool. The switch is set in factory to the pre-defined application 1.

For each application the input/output assignment and the wiring diagram are pre-defined. No additional setting with the customer engineering tool is required.
The I/O and other resources not assigned to the pre-defined applications are free for user specific applications.

User applications
The user applications with the corresponding resources are defined by means of EcoStruxure Power Commission engineering tool. They use the resources not assigned to the predefined applications. User applications may be required for:
- Protection improvement,
- Circuit breaker control,
- Motor control,
- Energy management,
- Monitoring.

24 V DC power supply
The I/O module must be supplied either with a 24 V DC AD or with a 24 V DC ABL8 RPS power supply.

Note: the connection of the +/- of the power supply on +/- terminals of the I/O module must be strictly respected. Crossing the polarities may damage the device.

Mounting
The I/O is a DIN rail mounting device.

Setting locking pad
The setting locking pad on the front panel of the I/O enables the setting of the I/O by EcoStruxure Power Commission engineering tool.
General characteristics

Environmental characteristics
Conforming to standards: IEC 60950, IEC 60947-6-2, UL 508, UL 60950, IACS E10
Certification: c UL us, CE, EAC, FCC marking
Ambient temperature:
- Storage: -40 to +85 °C
- Operation: -25 to +70 °C
Relative humidity: 5 - 85%
Level of pollution: Level 3
Protective treatment: ULV0 conforming to IEC/EN 60068-2-30

Mechanical characteristics
Shock resistance: Conforming to IEC/EN 60608-2-27
- 15 g / 11 ms, 1/2 sinusoidal
Resistance to sinusoidal vibrations: Conforming to IEC/EN 60608-2-6
- 5 Hz < f < 8.4 Hz

Electrical characteristics
Consumption: 165 mA at 24 V DC
Resistance to electrostatic discharge:
- IEC/EN 61000-4-2: 8 kV air discharge
- 6 kV contact discharge
Immunity to radiated fields:
- IEC/EN 61000-4-3: 10 V/m
Immunity to fast transient perturbations:
- IEC/EN 61000-4-4: 2 kV
Immunity to surges:
- IEC/EN 61000-4-5: 2 kV common mode
Immunity to conducted radio frequency field:
- IEC/EN 61000-4-6: 10 V

Physical characteristics
Dimensions: 71.7 x 116 x 70.6 mm
Mounting: DIN rail
Weight: 229.5 g (0.51 lb)
Degree of protection of the installed I/O application module:
- On the front panel (wall mounted enclosure): IP4x
- I/O parts: IP3x
- Connectors: IP2x
Connections: Screw type terminal blocks

Digital inputs
Digital input type: Self powered digital input with current limitations as per IEC 61131-2 type 2 standards (7 mA)
Input limit values at state 1 (close):
- 19.8 - 25.2 V DC, 6.1 - 8.8 mA
Input limit values at state 0 (open):
- 0 - 19.8 V DC, 0 mA
Maximum cable length: 10 m

Note: for a length greater than 10 m and up to 300 m, it is mandatory to use a shielded twisted cable. The shield cable is connected to the I/O functional ground of the I/O application module.

Digital outputs
Digital output type: Bistable relay
Rated voltage: 250 V AC maximum / 30 V DC
Rated carry current: 5 A
Contact resistance: 30 mΩ
Maximum operating frequency:
- Mechanical: 18000 operations/hr
- Electrical: 1800 operations/hr
Digital output relay protection
- by an external fuse: External fuse of 5 A or less
Maximum cable length: 10 m

Analog inputs
I/O application module analog input can be connected to a Pt100 temperature sensor.
Range:
- -30 to 200 °C
Accuracy:
- ±2 °C from -30 to 20 °C
- ±1 °C from 20 to 140 °C
- ±2 °C from 140 to 200 °C
Refresh interval: 5 s
Functions and characteristics

Connection of the IFE to a fixed or drawout MasterPact NT/NW

Connect the IFE to a fixed electrically operated MasterPact NT/NW or circuit breaker using the breaker ULP cord

Connect the IFE to a drawout MasterPact NT/NW or circuit breaker using the breaker ULP cord

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A IFE Ethernet interface for LV circuit breaker
B Breaker ULP cord
C Fixed terminal block
D BCM ULP communication module
E Fixed electrically operated circuit breaker

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A IFE Ethernet interface for LV circuit breaker
B ULP cable
C Breaker ULP cord
D Circuit breaker disconnected position contact (CD)
E Circuit breaker cradle
F BCM ULP communication module
G Drawout circuit breaker
H Drawout terminal block
I Circuit breaker connected position contact (CE)
J Circuit breaker test position contact (CT)
K I/O (Input/Output) application module for LV circuit breaker
Connection of the IFM to a fixed or drawout MasterPact NT/NW

Connect the IFM to a fixed electrically operated MasterPact NT/NW or circuit breaker using the breaker ULP cord

Connect the IFM to a drawout MasterPact NT/NW or circuit breaker using the breaker ULP cord

A IFM Ethernet interface for LV circuit breaker
B Breaker ULP cord
C Fixed terminal block
D BCM ULP communication module
E Fixed electrically operated circuit breaker

A IFM Ethernet interface for LV circuit breaker
B ULP cable
C Breaker ULP cord
D Circuit breaker disconnected position contact (CD)
E Circuit breaker cradle

F BCM ULP communication module
G Drawout circuit breaker
H Drawout terminal block
I Circuit breaker connected position contact (CE)
J Circuit breaker test position contact (CT)
K I/O (Input/Output) application module for LV circuit breaker
Introduction
Electrical Asset Manager is a software application that helps the user to manage a project as part of designing, testing, site commissioning, and maintenance of the project life cycle. It enables the user to prepare the settings of the devices offline (without connecting to the device) and configure them when connected with the devices. Also it provides lot of other value added features for the user to manage the project such as, safe repository in cloud, attach artifacts to each device or at the project level, organize devices in switchboard wise, manage a hierarchical structure of the installation etc.

Compatible devices (configuration and device management)
Electrical Asset Manager is compatible with the following devices:
- ComPact NSX100-630 (IEC)
- PowerPactTM (UL) circuit breaker
- ComPact NS630b-3200 (IEC)
- MasterPact NT/NW (IEC and UL) circuit breaker
- Acti9 Smartlink.

Compatible devices (Device Management in the project)
- Switch disconnectors (ComPact NSX, MasterPact & PowerPact Family)
- Third party devices.

References:
Electrical Asset Manager software package can be downloaded from our website www.schneider-electric.com.

Features
Electrical Asset Manager supersedes the Schneider Electric customer engineering tools such as Remote setting Utility (RSU) and Remote Control Utility (RCU) with additional features.

Electrical Asset Manager supports the connection of Schneider Electric communicable devices to:
- create projects by device discovery, selection of devices, and import Bill of Material (BOM)
- monitor the status of protection and IO status
- read information (alarms, measurements, parameters)
- check protection selectivity between two devices
- upload and download of configuration or settings in batch mode to multiple devices.
- carry out commands and tests
- generate and print device settings report and communication test report
- manage multiple devices with electrical and communication hierarchy model
- manage artifacts (project documents)
- check consistency in settings between devices on a communication network
- compare configuration settings between PC and device (online)
- download latest firmware.

Electrical Asset Manager enables the user to avail the advanced features of the software once the project is saved in Schneider Electric cloud.
Functions

Offline Mode
A project can be built in offline mode through 2 different ways:
- through BOM file import
- through Device Selection.

Additionally, the user can open an existing project and modify the settings offline. The user can do the selectivity curve check and firmware compatibility check for devices in the project.

Online Mode
A project can be built in online mode through device discovery also other than the methods possible through offline method.

Once the project is built, the following functions can be performed in addition to the functions available in offline mode:
- compare the device parameters with project parameters
- load parameters from project to the device and vice versa
- firmware downloads to the device
- monitor the measurement, maintenance, device status and I/O status
- control functions.

User Interface
Electrical Asset Manager software provides fast direct access to the project and the devices in the project through different tabs.
- Project: to provide the project information including customer details, project references and to add project artifacts (documents related to the project).
- Configuration: to build up the tree structure of the project architecture ; to have a table view of the devices added in the project ; to set the parameters of the devices ; to transfer the device settings ; to view the tripping curves; to attach device artifacts and to download the latest firmware, to do the communication test for all the devices and generate the test report.
- Monitoring: this allows the user to monitor the real time values of different devices through different sub tabs namely Monitoring, Logs and Control.
- Reports: report tab allows you to generate and print a report of the project settings from the report tab. The user details and project characteristics are automatically filled with the details entered in the Project page.
Three types of connection are available:

- vertical or horizontal rear connection
- front connection
- mixed connection.

The solutions presented are similar in principle for all MasterPact NT and NW fixed and drawout devices.

### Mounting type

MasterPact circuit breakers are available in two mounting versions:
- Fixed
- Drawout

The drawout version is preferred in most of the applications due to its following benefits:

- visible separation of the power contacts via racking out
- easy and complete access to the device for periodic maintenance
- possibility of a quick replacement of the device if necessary.

### Rear connection

#### Horizontal

Simply turn a horizontal rear connector 90° to make it a vertical connector.

For the 6300 A circuit breaker, only vertical connection is available.

#### Vertical

### Front connection

Front connection is available for NW fixed and drawout versions up to 3200 A.

### Mixed connection

Note: MasterPact circuit breakers can be connected indifferently with bare-copper, tinned-copper and tinned-aluminium conductors, requiring no particular treatment.
## Accessories

<table>
<thead>
<tr>
<th>Type of accessory</th>
<th>MasterPact NT06 to NT16</th>
<th>MasterPact NW08 to NW63</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed Front connection</td>
<td>Fixed Front connection</td>
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<tr>
<td>Vertical connection adapters</td>
<td></td>
<td></td>
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<tr>
<td>(4)</td>
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<tr>
<td>Cable lug adapters</td>
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<tr>
<td>Interphase barriers</td>
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</tr>
<tr>
<td>Spreads</td>
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<td>Disconnectable front-connection</td>
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</tr>
<tr>
<td>adapter</td>
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<tr>
<td>Safety shutters with padlocking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>standard</td>
<td></td>
<td></td>
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<tr>
<td>Shutter position indication and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>locking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arc chute screen</td>
<td></td>
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<tr>
<td>(3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Mandatory for voltages ≥ 500 V, not compatible with spreaders.
(2) Except for an NW40 equipped for horizontal rear connection, and for fixed NW40b-NW63.
(3) Mandatory for fixed NT front-connection versions with vertical-connection adapters oriented towards the front.
(4) Spreaders, vertical connection adapters and cable lug adapters are not compatible with voltages ≥ 500 V.

### MasterPact M replacement kit
A set of connection parts is available to allow replacement of a MasterPact M08 to M32 circuit breaker by a MasterPact NW without modifying the busbars (please consult us).

### Mounting on a switchboard backplate using special brackets
MasterPact NT and NW fixed front-connected circuit breakers can be installed on a backplate without any additional accessories. MasterPact NW circuit breakers require a set of special brackets.
Vertical-connection adapters (option)
Mounted on front-connected devices or chassis, the adapters facilitate connection to a set of vertical busbars.

Cable-lug adapters (option)
Cable-lug adapters are used in conjunction with vertical-connection adapters. They can be used to connect a number of cables fitted with lugs. To ensure adequate mechanical strength, the connectors must be secured together via spacers (catalog number 04691).

Interphase barriers (option)
These barriers are flexible insulated partitions used to reinforce isolation of connection points in installations with busbars, whether insulated or not. For MasterPact NT/NW devices (up to NW40), they are installed vertically between rear connection terminals. They are mandatory for NT devices at voltages > 500 V. They are not compatible with spreaders.

Spreaders (option)
Mounted on the front or rear connectors, spreaders are used to increase the distance between bars in certain installation configurations.

Arc chute screen (option)
For fixed MasterPact NT front-connection versions and with vertical-connection adapters oriented towards the front, an arc chute screen must be installed to respect safety clearances.

The arc chute screen is delivered in standard on the NT and NW drawout version.
Disconnectable front-connection adapter (option)
Mounted on a fixed front-connected device, the adapter simplifies replacement of a fixed device by enabling fast disconnection from the front.

Safety shutters (VO standard)
Mounted on the chassis, the safety shutters automatically block access to the disconnecting contact cluster when the device is in the disconnected or test positions (degree of protection IP 20). When the device is removed from its chassis, no live parts are accessible.
The shutter-locking system is made up of a moving block that can be padlocked (padlock not supplied). The block:
- prevents connection of the device
- locks the shutters in the closed position.
For MasterPact NW08 to NW63
An support at the back of the chassis is used to store the blocks when they are not used:
- 2 blocks for NW08 to NW40
- 4 blocks for NW40b to NW63.

Shutter position indication and locking on front face
(VIVC, NW only)
This option located on the chassis front plate indicates that the shutters are closed. It is possible to independently or separately padlock the two shutters using one to three padlocks (not supplied).
Locking
On the device

Pushbutton locking VBP
The transparent cover blocks access to the pushbuttons used to open and close the device. It is possible to independently lock the opening button and the closing button. The locking device is often combined with a remote operating mechanism. The pushbuttons may be locked using either:
- padlock (not supplied), 5 to 8 mm
- lead seal
- two screws.

Device locking in the OFF position VCPO by padlocks, VSPO by keylocks
The circuit breaker is locked in the OFF position by physically maintaining the opening pushbutton pressed down:
- using padlocks (one to three padlocks, not supplied), shackle diameter: 5 to 8 mm
- using keylocks (one or two different keylocks, supplied).
Keys may be removed only when locking is effective (Profalux or Ronis type locks).
The keylocks are available in any of the following configurations:
- one keylock
- one keylock mounted on the device + one identical keylock supplied separately for interlocking with another device
- two different key locks for double locking.
Profalux and Ronis keylocks are compatible with each other. A locking kit (without locks) is available for installation of one or two keylocks (Ronis, Profalux, Kirk or Castell).

Accessory-compatibility
For MasterPact NT: 3 padlocks or 1 keylock.
For MasterPact NW: 3 padlocks and/or 2 keylocks.

Cable-type door interlock IPA
This option prevents door opening when the circuit breaker is closed and prevents circuit breaker closing when the door is open.
For this, a special plate associated with a lock and a cable is mounted on the right side of the circuit breaker.
With this interlock installed, the source changeover function cannot be implemented. This option is identical for fixed and drawout version.
“Disconnected” position locking by padlocks (standard) or keylocks (VSPD option)
The circuit breaker can be locked in its disconnected position by using the locks on the chassis. This feature is accessible via the cut out door closed.
Two options are available:
- using padlocks (standard), up to three padlocks (not supplied)
- using keylocks (optional), one or two different keylocks are available.
Profalux and Ronis keylocks are available in different options:
- one keylock
- two different keylocks for double locking
- one (or two) keylocks mounted on the device + one (or two) identical keylocks supplied separately for interlocking with another device.
A locking kit (without locks) is available for installation of one or two keylocks (Ronis, Profalux, Kirk or Castell).

“Connected”, “disconnected” and “test” position locking
The “connected”, “disconnected” and “test” positions are shown by an indicator and are mechanically indexed. The exact position is obtained when the racking handle blocks. A release button is used to free it.
As standard, the circuit breaker can be locked only in “disconnected position” by padlocks or by keylocks. On request, the locking system may be modified to lock the circuit breaker in any of the three positions: “connected”, “disconnected” or “test”.

Door interlock catch VPEC
Mounted on the right or left-hand side of the chassis, this device inhibits opening of the cubicle door when the circuit breaker is in “connected” or “test” position. If the breaker is put in the “connected” position with the door open, the door may be closed without having to disconnect the circuit breaker.

Racking interlock VPOC
This device prevents insertion of the racking handle when the cubicle door is open.

Cable-type door interlock IPA
This option is identical for fixed and drawout versions.

Racking interlock between crank and OFF pushbutton IBPO (for NW only)
This option makes it necessary to press the OFF pushbutton in order to insert the racking handle and holds the device open until the handle is removed.

Automatic spring discharge before breaker removal DAE (for NW only)
This option discharges the springs before the breaker is removed from the chassis.

Mismatch protection VDC
Mismatch protection ensures that a circuit breaker is installed only in a chassis with compatible characteristics. It is made up of two parts (one on the chassis and one on the circuit breaker) offering twenty different combinations that the user may select.
Indication contacts are available:
- in the standard version for relay applications
- in a low-level version for control of PLCs and electronic circuits.
M2C contacts may be programmed via the MicroLogic E, P and H control units.

ON/OFF indication contacts OF
Two types of contacts indicate the ON or OFF position of the circuit breaker:
- micro switch type changeover contacts for MasterPact NT
- rotary type changeover contacts directly driven by the mechanism for MasterPact NW. These contacts switch when the minimum isolation distance between the main circuit breaker contacts is reached. These rotary type changeover contacts are used for both standard and low level versions for MasterPact NW.

<table>
<thead>
<tr>
<th>OF</th>
<th>NT</th>
<th>NW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplied as standard</td>
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</tr>
<tr>
<td>Maximum number</td>
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<tr>
<td>Breaking capacity (A)</td>
<td>Standard V AC</td>
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<td>480</td>
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<td></td>
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<td>690</td>
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<td>250</td>
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<tr>
<td></td>
<td>Low-level V DC</td>
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<td></td>
<td>125</td>
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<tr>
<td></td>
<td></td>
<td>250</td>
</tr>
</tbody>
</table>

(1) Standard contacts: 10 A; optional contacts: 6 A.

“Fault-trip” indication contacts SDE
Circuit breaker tripping due to a fault is signalled by:
- a red mechanical fault indicator (reset)
- one changeover contact SDE.
Following tripping, the mechanical indicator must be reset before the circuit breaker may be closed. One SDE is supplied as standard. An optimal SDE may be added. This latter is incompatible with the electrical reset after fault-trip option (RES).

<table>
<thead>
<tr>
<th>SDE</th>
<th>NT/NW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplied as standard</td>
<td>1</td>
</tr>
<tr>
<td>Maximum number</td>
<td>2</td>
</tr>
<tr>
<td>Breaking capacity (A)</td>
<td>Standard V AC</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V DC</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low-level V DC</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Combined “connected/closed” contacts EF
The contact combines the “device connected” and the “device closed” information to produce the “circuit closed” information. Supplied as an option for MasterPact NW, it is mounted in place of the connector of an additional OF contact.

<table>
<thead>
<tr>
<th>EF</th>
<th>NW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number</td>
<td>8</td>
</tr>
<tr>
<td>Breaking capacity (A)</td>
<td>Standard V AC</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V DC</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low-level V DC</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“Connected”, “disconnected” and “test” position carriage switches

Three series of optional auxiliary contacts are available for the chassis:
- changeover contacts to indicate the “connected” position CE
- changeover contacts to indicate the “disconnected” position CD. This position is indicated when the required clearance for isolation of the power and auxiliary circuits is reached
- changeover contacts to indicate the “test” position CT. In this position, the power circuits are disconnected and the auxiliary circuits are connected.

Additional actuators
A set of additional actuators may be installed on the chassis to change the functions of the carriage switches.

<table>
<thead>
<tr>
<th>Contacts</th>
<th>Standard</th>
<th>Minimum load: 100 mA/24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CE/CD/CT</td>
<td>CE/CD/CT</td>
</tr>
<tr>
<td>Maximum number</td>
<td>3 2 1</td>
<td>3 3 3</td>
</tr>
<tr>
<td>with additional actuators</td>
<td>9 0 0</td>
<td>9 0 0</td>
</tr>
<tr>
<td></td>
<td>6 3 0</td>
<td>6 0 3</td>
</tr>
<tr>
<td></td>
<td>3 6 0</td>
<td>3 6 0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breaking capacity (A)</th>
<th>Standard</th>
<th>Minimum load: 2 mA/15 V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V AC</td>
<td>V DC 24/48</td>
</tr>
<tr>
<td></td>
<td>240 8</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>360 8</td>
<td>125 0.8</td>
</tr>
<tr>
<td></td>
<td>480 8</td>
<td>250 0.3</td>
</tr>
<tr>
<td></td>
<td>690 6</td>
<td>24/48 2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>240 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>380 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>125 0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250 0.3</td>
</tr>
</tbody>
</table>

M2C programmable contacts

These contacts, used with the MicroLogic E, P and H control units, may be programmed via the control unit keypad or via a supervisory station with the COM communication option. They require an external power supply module.

The M2C (two contacts) auxiliary contacts may be used to signal threshold overruns or status changes. They can be programmed using the keypad on the MicroLogic P control unit or remotely using the COM option (BCM ULP).

<table>
<thead>
<tr>
<th>MicroLogic Characteristics</th>
<th>Type E, P, H M2C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum load</td>
<td>100 mA/24 V</td>
</tr>
<tr>
<td>Breaking capacity (A) p.f.: 0.7</td>
<td>V AC 240 5</td>
</tr>
<tr>
<td></td>
<td>380 3</td>
</tr>
<tr>
<td></td>
<td>V DC 24 1.8</td>
</tr>
<tr>
<td></td>
<td>48 1.5</td>
</tr>
<tr>
<td></td>
<td>125 0.4</td>
</tr>
<tr>
<td></td>
<td>250 0.15</td>
</tr>
</tbody>
</table>
Two solutions are available for remote operation of MasterPact devices:
- a point-to-point solution
- a bus solution with the COM communication option.

The remote ON / OFF function is used to remotely open and close the circuit breaker. It is made up of:
- an electric motor MCH equipped with a “springs charged” limit switch contact CH
- two voltage releases:
  - a closing release XF
  - an opening release MX.

Optionally, other functions may be added:
- a “ready to close” contact PF
- an electrical closing pushbutton BPFE
- remote RES following a fault.

A remote-operation function is generally combined with:
- device ON / OFF indication OF
- “fault-trip” indication SDE.

Wiring diagram of a point-to-point remote ON / OFF function

Note: an opening order always takes priority over a closing order.
If opening and closing orders occur simultaneously, the mechanism discharges without any movement of the main contacts. The circuit breaker remains in the open position (OFF).
In the event of maintained opening and closing orders, the standard mechanism provides an anti-pumping function by blocking the main contacts in open position.
Anti-pumping function. After fault tripping or intentional opening using the manual or electrical controls, the closing order must first be discontinued, then reactivated to close the circuit breaker.

When the automatic reset after fault trip (RAR) option is installed, to avoid pumping following a fault trip, the automatic control system must take into account the information supplied by the circuit breaker before issuing a new closing order or blocking the circuit breaker in the open position (information on the type of fault, e.g. overload, short-time fault, earth fault, earth leakage, short-circuit, etc.).

Note: MX communicating releases are of the impulse type only and cannot be used to lock a circuit breaker in OFF position. For locking in OFF position, use the remote tripping function (2nd MX or MN).
When MX or XF communicating releases are used, the third wire (C3, A3) must be connected even if the communication module is not installed. When the control voltage (C3-C1 or A3-A1) is applied to the MX or XF releases, it is necessary to wait 1.5 seconds before issuing an order. Consequently, it is advised to use standard MX or XF releases for applications such as TransferPact source changeover systems.
Electric motor MCH
The electric motor automatically charges and recharges the spring mechanism when the circuit breaker is closed. Instantaneous reclosing of the breaker is thus possible following opening. The spring-mechanism charging handle is used only as a backup if auxiliary power is absent.

The electric motor MCH is equipped as standard with a limit switch contact CH that signals the “charged” position of the mechanism (springs charged).

**Characteristics**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>V AC 50/60 Hz</th>
<th>V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>48/60 - 100/130 - 200/240 - 277 - 380/415 - 400/440 - 480</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24/30 - 48/60 - 100/125 - 200/250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating threshold</td>
<td>0.85 to 1.1 Un</td>
<td></td>
</tr>
<tr>
<td>Consumption (VA or W)</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Motor overcurrent</td>
<td>2 to 3 In for 0.1 s</td>
<td></td>
</tr>
<tr>
<td>Charging time</td>
<td>maximum 3 s for MasterPact NT</td>
<td></td>
</tr>
<tr>
<td>Operating frequency</td>
<td>maximum 4 s for MasterPact NW</td>
<td></td>
</tr>
<tr>
<td>CH contact</td>
<td>10 A at 240 V</td>
<td></td>
</tr>
</tbody>
</table>

Voltage releases XF and MX
Their supply can be maintained or automatically disconnected.

**Closing release XF**
The XF release remotely closes the circuit breaker if the spring mechanism is charged.

**Opening release MX**
The MX release instantaneously opens the circuit breaker when energised, the minimum duration of the pulse operating order must be 200 ms. The MX release locks the circuit breaker in OFF position if the order is maintained (except for MX "communicating" releases).

**Note:** whether the operating order is maintained or automatically disconnected (pulse-type), XF or MX "communicating" releases ("bus" solution with "COM" communication option) always have an impulse-type action (see diagram).

**Characteristics XF MX**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>V AC 50/60 Hz</th>
<th>V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 - 48 - 100/130 - 200/250 - 277 - 380/480</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating threshold</td>
<td>0.85 to 1.1 Un</td>
<td></td>
</tr>
<tr>
<td>Consumption (VA or W)</td>
<td>Hold: 4.5</td>
<td></td>
</tr>
<tr>
<td>Pick-up: 200 (200 ms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit breaker response time at Un</td>
<td>55 ms ±10 (MasterPact NT)</td>
<td></td>
</tr>
<tr>
<td>70 ms ±10 (NW &lt; 4000 A)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

"Ready to close" contact PF
The "ready to close" position of the circuit breaker is indicated by a mechanical indicator and a PF changeover contact. This signal indicates that all the following are valid:

- the circuit breaker is in the OFF position
- the spring mechanism is charged
- a maintained opening order is not present:
  - MX energised
  - fault trip
  - remote tripping second MX or MN
  - device not completely racked in
  - device locked in OFF position
  - device interlocked with a second device.

**Characteristics**

<table>
<thead>
<tr>
<th>Maximum number</th>
<th>NT/NW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Breaking capacity (A)</td>
<td>Standard</td>
</tr>
<tr>
<td>p.f.: 0.3 AC12/DC12</td>
<td>V AC</td>
</tr>
<tr>
<td>240/380 5</td>
<td>24/48 3</td>
</tr>
<tr>
<td>480 5</td>
<td>125 0.3</td>
</tr>
<tr>
<td>690 3</td>
<td>250 0.15</td>
</tr>
<tr>
<td>Low-level</td>
<td>Minimum load: 2 mA/15 V</td>
</tr>
<tr>
<td>V AC</td>
<td>V DC</td>
</tr>
<tr>
<td>24/48 3</td>
<td>24/48 3</td>
</tr>
<tr>
<td>240 3</td>
<td>125 0.3</td>
</tr>
<tr>
<td>380 3</td>
<td>250 0.15</td>
</tr>
</tbody>
</table>
Electrical closing pushbutton BPFE
Located on the front panel, this pushbutton carries out electrical closing of the circuit breaker. It is generally associated with the transparent cover that protects access to the closing pushbutton. Electrical closing via the BPFE pushbutton takes into account all the safety functions that are part of the control/monitoring system of the installation. The BPFE connects to the closing release (XF com) in place of the COM module. The COM module is incompatible with this option. Different types of voltage exist and the XF electromagnet is compulsory if the BPFE option is selected.

Remote reset after fault trip

Electrical reset after fault trip RES
Following tripping, this function resets the “fault trip” indication contacts SDE and the mechanical indicator and enables circuit breaker closing. Power supply: 110/130 V AC and 200/240 V AC. The use of XF closing release is compulsory with this option. The additional “Fault Trip” indication contact SDE2 is not compatible with RES.

Automatic reset after fault trip RAR
Following tripping, a reset of the mechanical indicator (reset button) is no longer required to enable circuit breaker closing. The mechanical (reset button) and electrical SDE indications remain in fault position until the reset button is pressed. The use of XF closing release is compulsory with this option.
Remote tripping

This function opens the circuit breaker via an electrical order. It is made up of:

- a shunt release second MX
- or an undervoltage release MN
- or a delayed undervoltage release MNR: MN + delay unit.

These releases (2nd MX or MN) cannot be operated by the communication bus. The delay unit, installed outside the circuit breaker, may be disabled by an emergency OFF button to obtain instantaneous opening of the circuit breaker.

Wiring diagram for the remote-tripping function

![Wiring diagram](image1)

Voltage releases second MX

When energised, the MX voltage release instantaneously opens the circuit breaker. A continuous supply of power to the second MX locks the circuit breaker in the OFF position.

**Characteristics**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>V AC 50/60Hz</th>
<th>V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 - 48 - 100/130 - 200/250 - 277 - 380/480</td>
<td>12 - 24/30 - 48/60 - 100/130 - 200/250</td>
</tr>
<tr>
<td>Operating threshold</td>
<td>0.7 to 1.1 Un</td>
<td>0.85 to 1.1 Un</td>
</tr>
<tr>
<td>Permanent locking function</td>
<td>0.85 to 1.1 Un</td>
<td>0.85 to 1.1 Un</td>
</tr>
<tr>
<td>Consumption (VA or W)</td>
<td>Pick-up: 200 (80 ms)</td>
<td>Hold: 4.5</td>
</tr>
<tr>
<td>Circuit breaker response time at Un</td>
<td>50 ms ±10</td>
<td></td>
</tr>
</tbody>
</table>

Instantaneous voltage releases MN

The MN release instantaneously opens the circuit breaker when its supply voltage drops to a value between 35 % and 70 % of its rated voltage. If there is no supply on the release, it is impossible to close the circuit breaker, either manually or electrically. Any attempt to close the circuit breaker has no effect on the main contacts. Circuit breaker closing is enabled again when the supply voltage of the release returns to 85 % of its rated value.

**Characteristics**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>V AC 50/60 Hz</th>
<th>V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 - 48 - 100/130 - 200/250 - 380/480</td>
<td>24/30 - 48/60 - 100/130 - 200/250</td>
</tr>
<tr>
<td>Operating threshold</td>
<td>Opening 0.35 to 0.7 Un</td>
<td>Closing 0.85 Un</td>
</tr>
<tr>
<td>MN consumption with delay unit (VA or W)</td>
<td>Pick-up: 200 (200 ms)</td>
<td>Hold: 4.5</td>
</tr>
<tr>
<td>Circuit breaker response time at Un</td>
<td>40 ms ±5 for NT</td>
<td>90 ms ±5 for NW</td>
</tr>
</tbody>
</table>

MN delay units

To eliminate circuit breaker nuisance tripping during short voltage dips, operation of the MN release can be delayed. This function is achieved by adding an external delay unit in the MN voltage-release circuit. Two versions are available, adjustable and non-adjustable.

**Characteristics**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Non-adjustable 100/130 - 200/250</th>
<th>Adjustable 48/60 - 100/130 - 200/250 - 380/480</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating threshold</td>
<td>Opening 0.35 to 0.7 Un</td>
<td>Closing 0.85 Un</td>
</tr>
<tr>
<td>Delay unit consumption</td>
<td>Pick-up: 200 (200 ms)</td>
<td>Hold: 4.5</td>
</tr>
<tr>
<td>Circuit breaker response time at Un</td>
<td>Non-adjustable 0.25 s</td>
<td>Adjustable 0.5 s - 1 s - 1.5 s - 3 s</td>
</tr>
</tbody>
</table>
Auxiliary terminal shield CB
Optional equipment mounted on the chassis, the shield prevents access to the terminal block of the electrical auxiliaries.

Operation counter CDM
The operation counter sums the number of operating cycles and is visible on the front panel. It is compatible with manual and electrical control functions. This option is compulsory for all the TransferPact source changeover systems.

Escutcheon CDP
Optional equipment mounted on the door of the cubicle, the escutcheon increases the degree of protection to IP 40 (circuit breaker installed free standing: IP30). It is available in fixed and drawout versions.

Blanking plate OP for escutcheon
Used with the escutcheon, this option closes off the door cut-out of a cubicle not yet equipped with a device. It may be used with the escutcheon for both fixed and drawout devices.

Transparent cover CCP for escutcheon
Optional equipment mounted on the escutcheon, the cover is hinged and secured by a screw. It increases the degree of protection to IP54, IK10. It adapts to drawout devices.

Grounding kit KMT
This option allows the grounding of the breaker mechanism while the front cover is removed. The grounding is made via the chassis for the drawout version and via the fixation side plate for the fixed version.
In installations requiring a high level of availability two redundant power supplies are generally used. The main supply can at any time be replaced by an emergency supply in case of power interruption. The replacement source can be an emergency power generator set or another low voltage network.

In complex low voltage architectures, up to three independent power supplies may be used to secure the installation. More than three independent sources can even be used for specific applications.

Changeover systems are required to quickly and safely switch between the power sources.

There are three ways to switch between the sources:
- manually
- automatically
- remotely

### Manual source-changeover system

**or M**: Manual Transfer Switching Equipment

The simplest way to switch between the power sources. The closing and opening operations of the circuit breakers or switches are performed by the operators. The time required to switch between the sources is variable.

**System**

Two or three mechanically interlocked circuit breakers or switch-disconnectors.

**Applications**

Small commercial buildings and small and medium industrial activities where the need for continuity of service is significant but not a priority.

### Automatic source-changeover system

**or A**: Automatic Transfer Switching Equipment

A controller is added to automatically control the switching operations. This can be done using the standard BA, UA controllers and the associated IVE electrical interlocking unit. The solution is limited to two circuit breakers or two switch-disconnectors.

The automatic switching sequence is initiated by detecting the loss of the power supply. It can also be initiated by the operators.

**System**

Two mechanically interlocked circuit breakers or switch disconnectors, associated with one BA or UA controller and the IVE electrical interlocking unit.

**Applications**

Large infrastructures.
Schneider Electric offers source change-over systems based on MasterPact NT and NW devices. They are made of up to 3 circuit breakers or switch-disconnectors linked by an electrical interlocking system that may have different configurations. Moreover, a mechanical interlocking system must be added to protect against electrical malfunctions or incorrect manual operations. In addition, a controller can be used for automatically control the source transfer. The following pages present the different solutions for mechanical and electrical interlocking and associated controllers.

For implementing the mechanical interlocking 2 different possibilities are offered:

- interlocking with rods
- interlocking with cables.

Interlocking of two MasterPact NT or NW devices using connecting rods

The two devices must be mounted one above the other (either 2 fixed or 2 drawout devices).

Combinations are possible between MasterPact NT and between MasterPact NW devices.

**Installation**

This function requires:

- an adaptation fixture on the right side of each circuit breaker or switch-disconnector
- a set of connecting rods with no-slip adjustments
- the use of a mechanical operation counter is mandatory.

The adaptation fixtures, connecting rods, circuit breakers and switch-disconnectors are supplied separately, ready for assembly by the customer.

The maximum vertical distance between the fixing planes is 900 mm.
Interlocking of two MasterPact NT/NW or up to three MasterPact NW devices using cables

For cable interlocking, the circuit breakers may be mounted one above the other or side-by-side. The interlocked devices may be fixed or drawout, three-pole or four-pole, and may have different ratings and sizes.

Interlocking between two MasterPact NT or NW
This function requires:
- an adaptation fixture on the right side of each device
- a set of cables without slip adjustments
- the use of a mechanical operation counter CDM is mandatory.
The maximum distance between the fixing planes (vertical or horizontal) is 2000 mm.

Interlocking between three MasterPact NW
This function requires:
- a specific adaptation fixture installed on the right side of each device
- two sets of cables without slip adjustments
- the use of a mechanical operation counter CDM is mandatory.
The maximum distance between the fixing planes (vertical or horizontal) is 1000 mm.

Installation
The adaptation fixtures, sets of cables and circuit breakers or switch-disconnectors are supplied separately, ready for assembly by the customer.

Installation conditions for cable interlocking systems:
- cable length: 2.5 m
- radius of curvature: 100 mm
- maximum number of curves: 3.

Possible combinations of “Normal” and “Replacement” source circuit breakers

<table>
<thead>
<tr>
<th>“Normal N”</th>
<th>“Replacement” R</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT06 to NT16</td>
<td>NW08 to NW40</td>
</tr>
<tr>
<td>Ratings 250...1600 A</td>
<td></td>
</tr>
<tr>
<td>NW08 to NW40</td>
<td>NW40b to NW63</td>
</tr>
<tr>
<td>Ratings 320...4000 A</td>
<td></td>
</tr>
<tr>
<td>NW40b to NW63</td>
<td>NW40b to NW63</td>
</tr>
<tr>
<td>Ratings 4000...6300 A</td>
<td></td>
</tr>
</tbody>
</table>

All combinations of two MasterPact NT and MasterPact NW devices are possible, whatever the rating or size of the devices.

Possible combinations of three device

<table>
<thead>
<tr>
<th>NT06 to NT16</th>
<th>NW08 to NW40</th>
<th>NW40b to NW63</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT06 to NT16</td>
<td>NW08 to NW40</td>
<td>NW40b to NW63</td>
</tr>
<tr>
<td>Ratings 250...1600 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NW08 to NW40</td>
<td>NW40b to NW63</td>
<td></td>
</tr>
<tr>
<td>Ratings 320...4000 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NW40b to NW63</td>
<td>NW40b to NW63</td>
<td></td>
</tr>
<tr>
<td>Ratings 4000...6300 A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Only MasterPact NW may be used for three-device combinations.

Types of mechanical interlocking and combinations

Choice criteria
In the applications where the continuity of service is critical (1) (data centers, airports, hospitals, marine, oil & gas, process industry, …) the mechanical interlocking by rods and the drawout version devices are strongly recommended. Mechanical interlocking by rods is preferred as less energy is consumed by friction, so it has less effect on the circuit breaker closing energy.

In terms of breaker mounting type, the drawout version is preferred as:
- it provides mechanical isolation of the circuit breaker from possible external stress on the terminals by having a flexible connection at the clusters level
- it allows simple and total access for periodic maintenance
- it allows quick replacement of the device if necessary.

When not possible, cable interlocking or fixed versions can be used, but the installation rules detailed in the 2 sections below must be strictly respected and mainly:
- the busbars or the cables used for the power connections must apply no stress on the circuit breakers terminals. Their weight must be supported by the switchboard frame.

Please refer to the “Switchboard integration – Installation rules – Power connection” section in this catalog as well as to the Data Bulletin “Installation of Fixed MasterPact NW Circuit Breakers in Electrical Equipment – Class 0613” available on www.schneider-electric.com for more details.

(1) for more details please contact your local support.

Note: for cable length higher than 2.5m please consult us before ordering the circuit breakers for a customised solution.

See catalog “Source changeover systems”, ref. LVPE216028EN.
Electrical interlocking is used with a mechanical interlocking system.

Moreover, the relays controlling the closing order to the “S1” and “S2” circuit breakers must be mechanically and/or electrically interlocked to prevent them from giving simultaneous closing commands.

Electrical interlocking is carried out by an electrical control device. For MasterPact, this function can be implemented in one of two ways:
- using the IVE unit
- by an electrician based on the diagrams in accordance with the chapter “Electric diagrams” of this catalog.

Characteristics of the IVE unit
- External connection terminal block:
  - inputs: circuit breaker control signals
  - outputs: status of the SDE contacts on the “S1” and “S2” source circuit breakers.
- 2 connectors for the two “S1” and “S2” source circuit breakers:
  - inputs:
    - status of the OF contacts on each circuit breaker (ON or OFF)
    - status of the SDE contacts on the “S1” and “S2” source circuit breakers
  - outputs: power supply for operating mechanisms.
- Control voltage:
  - 24 to 250 V DC
  - 48 to 415 V 50/60 Hz - 440 V 60 Hz.

The IVE unit control voltage must be same as that of the circuit breaker operating mechanisms.

Characteristics of the IVE unit
- External connection terminal block:
  - inputs: circuit breaker control signals
  - outputs: status of the SDE contacts on the “S1” and “S2” source circuit breakers.
- 2 connectors for the two “S1” and “S2” source circuit breakers:
  - inputs:
    - status of the OF contacts on each circuit breaker (ON or OFF)
    - status of the SDE contacts on the “S1” and “S2” source circuit breakers
  - outputs: power supply for operating mechanisms.
- Control voltage:
  - 24 to 250 V DC
  - 48 to 415 V 50/60 Hz - 440 V 60 Hz.

The IVE unit control voltage must be same as that of the circuit breaker operating mechanisms.

Necessary equipment
For MasterPact NT and NW, each circuit breaker must be equipped with:
- a remote-operation system made up of:
  - MCH gear motor
  - MX or MN opening release
  - XF closing release
  - PF “ready to close” contact
  - CDM mechanical operation counter
- an available OF contact
- one to three CE connected-position contacts (carriage switches) on drawout circuit breakers (depending on the installation).
Controller selection

By combining a remote-operated TransferPact source changeover system with an integrated BA or UA automatic controller, it is possible to automatically control source transfer according to user-selected sequences.

These controllers can be used on TransferPact source changeover systems comprising 2 circuit breakers. For TransferPact source changeover systems comprising 3 circuit breakers, the automatic control diagram must be prepared by the installer as a complement to diagrams provided in the “electrical diagrams” section of this catalog.

---

### Controller

<table>
<thead>
<tr>
<th>Controller</th>
<th>BA</th>
<th>UA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatible circuit breakers</td>
<td>All MasterPact circuit breakers</td>
<td></td>
</tr>
</tbody>
</table>

#### 4-position switch

<table>
<thead>
<tr>
<th></th>
<th>Automatic operation</th>
<th>Forced operation on “Normal” source</th>
<th>Forced operation on “Replacement” source</th>
<th>Stop (both “Normal” and “Replacement” sources off)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

#### Automatic operation

<table>
<thead>
<tr>
<th></th>
<th>Monitoring of the “Normal” source and automatic transfer</th>
<th>Generator set startup control</th>
<th>Delayed shutdown (adjustable) of generator set</th>
<th>Load shedding and reconnection of non-priority circuits</th>
<th>Transfer to the “Replacement” source if one of the phases of the “Normal” phase is absent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

#### Test

<table>
<thead>
<tr>
<th></th>
<th>By opening the P2SM circuit breaker supplying the controller</th>
<th>By pressing the test button on the front of the controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

#### Indications

<table>
<thead>
<tr>
<th></th>
<th>Circuit breaker status indication on the front of the controller:</th>
<th>on, off, fault trip</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

#### Automatic mode indicating contact

<p>| | |</p>
<table>
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<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

#### Other functions

<table>
<thead>
<tr>
<th></th>
<th>Selection of type of “Normal” source (single-phase or three-phase)</th>
<th>Voluntary transfer to “Replacement” source (e.g. energy management commands)</th>
<th>During peak-tariff periods (energy management commands)</th>
<th>forced operation on “Normal” source if “Replacement” source not operational</th>
<th>Additional contact (not part of controller). Transfer to “Replacement” source only if contact is closed. (e.g. used to test the frequency of UR).</th>
<th>Setting of maximum startup time for the replacement source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

#### Options

<table>
<thead>
<tr>
<th></th>
<th>Communication option</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

#### Power supply

<table>
<thead>
<tr>
<th>Control voltages</th>
<th>110 V</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>220 to 240 V 50/60 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>380 to 415 V 50/60 Hz and 440 V 60 Hz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Operating thresholds

| Undervoltage | 0.35 Un ≤ voltage ≤ 0.7 Un |
| Phase failure | 0.5 Un ≤ voltage ≤ 0.7 Un |
| Voltage presence | voltage ≥ 0.85 Un |
|                  |                       |

**IP degree of protection (EN 60529) and IK degree of protection against external mechanical impacts (EN 50102)**

| Front | IP40 |
| Side | IP30 |
| Connectors | IP20|
| Front | IK07 |

#### Characteristics of output contacts (dry, volt-free contacts)

| Rated thermal current (A) | 8 |
| Minimum load | 10 mA at 12 V |
| Output contacts: | |
| Position of the Auto/Stop switch | |
| Load shedding and reconnection order | |
| Generator set start order | |

#### Utilisation category (IEC 947-5-1)

| AC12 | AC13 | AC14 | AC15 |
| DC12 | DC13 |
|------|------|------|------|
| 24 V | 8    | 7    | 5    | 5    | 8    | 2    |
| 48 V | 8    | 7    | 5    | 5    | 2    | -    |
| 110 V| 8    | 6    | 4    | 4    | 0.6  | -    |
| 220/240 V | 8 | 6    | 4    | 3    | -    | -    |
| 250 V | -    | -    | -    | -    | 0.4  | -    |
| 380/415 V | 5 | -    | -    | -    | -    | -    |
| 440 V | -    | -    | -    | -    | -    | -    |
| 660/690 V | - | -    | -    | -    | -    | -    |

**Notes:**

1. For example, 220 V single-phase or 220 V three-phase.
2. The controller is powered by the ACP control plate. The same voltage must be used for the ACP plate, the IVE unit and the circuit-breaker operating mechanisms. If this voltage is the same as the source voltage, then the “Normal” and “Replacement” sources can be used directly for the power supply. If not, an isolation transformer must be used.
### MasterPact NT and NW

#### Types of mechanical interlocking

<table>
<thead>
<tr>
<th>Diagram no.</th>
<th>Possible combinations</th>
<th>Typical electrical diagrams</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 0</td>
<td>masterpact-nw.png</td>
<td>permanent replacement source (with IVE)</td>
</tr>
<tr>
<td>0 1 1</td>
<td>masterpact-nw.png</td>
<td>permanent replacement source (with IVE)</td>
</tr>
<tr>
<td>0 0 1</td>
<td>masterpact-nw.png</td>
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</tr>
</tbody>
</table>

#### MasterPact NW only

#### Types of mechanical interlocking

<table>
<thead>
<tr>
<th>Diagram no.</th>
<th>Possible combinations</th>
<th>Typical electrical diagrams</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 0</td>
<td>masterpact-nw.png</td>
<td>permanent replacement source (with IVE)</td>
</tr>
<tr>
<td>0 1 1</td>
<td>masterpact-nw.png</td>
<td>permanent replacement source (with IVE)</td>
</tr>
<tr>
<td>0 0 1</td>
<td>masterpact-nw.png</td>
<td>permanent replacement source (with IVE)</td>
</tr>
</tbody>
</table>

### Footnotes

- (1) possible by forcing operation

---

“Lockout after fault” option. This option makes it necessary to manually reset the device following fault tripping.
MasterPact NW circuit breakers with corrosion protection are designed for use in industrial environments with high concentrations of sulphur compounds. Examples include paper mills, oil refineries, steel works and water treatment plants, all of which produce large quantities of sulphur dioxide (SO2) or hydrogen sulphate (H2S). Under such conditions, silver-plated parts rapidly turn black due to the formation of silver sulphate (AgS) on the surface, an insulating material that can lead to abnormal temperature rise in electrical contacts. This phenomenon can have serious consequences on all equipment installed inside a switchboard.

Circuit breakers used in such environments generally require frequent maintenance and therefore a large number of replacement devices on the site. Furthermore, problems are often encountered even with intensive maintenance. MasterPact NW circuit breakers with corrosion protection receive special surface treatment on all parts exposed to corrosion and critical with respect to electrical continuity. In this way, the availability of electrical power and operating safety are ensured without special maintenance for the following environmental condition classes as defined by standard IEC 721-3-3:

- 3C3 for H2S (concentrations from 2.1 to 7.1 x 10^-6)
- 3C4 for SO2 (concentrations from 4.8 to 14.8 x 10^-6).

The MasterPact NW range of power circuit breakers with corrosion protection offers the following features:

- Rated current from 800 A to 4000 A
- 3 and 4-pole models
- Drawout circuit breaker
- Operational voltage up to 690 V AC
- Ics breaking capacity of 100 kA at 220/415 V AC
- Reverse feed possible
- Stored-energy mechanism for instantaneous closing (source coupling).
- 3 types of RMS electronic protection
- Adjustable long-time settings from 0.4 to 1 ln, with fine adjustment via local keypad or remote supervisor
- Electronic functions dedicated to energy management and power-quality analysis.

The MasterPact NW range complies with the main standards and certifications:

- IEC 60947-1 and 60947-2
- IEC 68230 (damp heat) and IEC 68252 severity level 2 (salt mist)
- IEC 60068-2-42 and IEC 60068-2-43 for corrosive environments:
  - SO2: tested to IEC 60068-2-42 in a 3C4 environment as defined by IEC 60721-3-3
  - H2S: tested to IEC 60068-2-43 in a 3C3 environment as defined IEC 60721-3-3.

A complete range of electrical accessories and auxiliaries:

- Motor mechanism (MCH).
- Undervoltage release (MN, MNR).
- Shunt trip unit (MX).
- Closing release (XF).
- Auxiliary contacts (OF).
- Low-level indication contacts (SDE, PF, CD, CT, CE and EF).
- Electrical closing button (BPFE).
- Locking by padlocks and/or keylocks.
- TransferPact source changeover systems for 2 or 3 devices.

Maximum safety

The MasterPact NW range with corrosion protection offers the same safety features as the standard version:

- Positive contact indication
- High impulse withstand voltage (12 kV)
- Suitable for isolation in compliance with IEC 60947-2, as indicated by the disconnector symbol on the front face.
- Front face insulation class 2, allowing class 2 installations with breaker control from outside.
### Characteristics according to IEC 60 947-2

<table>
<thead>
<tr>
<th></th>
<th>NW08H2</th>
<th>NW10H2</th>
<th>NW12H2</th>
<th>NW16H2</th>
<th>NW20H2</th>
<th>NW25H2</th>
<th>NW32H2</th>
<th>NW40bH2</th>
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</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3, 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>Ue (V)</td>
<td>1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operational voltage</td>
<td>Us (V)</td>
<td>690</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Closing time (ms)</td>
<td>&lt; 50</td>
<td></td>
<td></td>
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<tr>
<td>Rated current ln (A)</td>
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<tr>
<td>Vertical connection</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>40 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
<td>2000</td>
<td>2500</td>
<td>3200</td>
<td>4000</td>
</tr>
<tr>
<td>45 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
<td>2000</td>
<td>2500</td>
<td>3200</td>
<td>4000</td>
</tr>
<tr>
<td>50 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
<td>2000</td>
<td>2500</td>
<td>3200</td>
<td>4000</td>
</tr>
<tr>
<td>55 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1550</td>
<td>1900</td>
<td>2500</td>
<td>3150</td>
<td>4000</td>
</tr>
<tr>
<td>60 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1500</td>
<td>1800</td>
<td>2500</td>
<td>3000</td>
<td>4000</td>
</tr>
<tr>
<td>Horizontal connection</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1600</td>
<td>2000</td>
<td>2500</td>
<td>-</td>
<td>4000</td>
</tr>
<tr>
<td>45 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1550</td>
<td>1900</td>
<td>2500</td>
<td>-</td>
<td>4000</td>
</tr>
<tr>
<td>50 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1500</td>
<td>1800</td>
<td>2500</td>
<td>-</td>
<td>4000</td>
</tr>
<tr>
<td>55 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1450</td>
<td>1700</td>
<td>2400</td>
<td>-</td>
<td>4000</td>
</tr>
<tr>
<td>60 °C</td>
<td>800</td>
<td>1000</td>
<td>1250</td>
<td>1400</td>
<td>1650</td>
<td>2300</td>
<td>-</td>
<td>3900</td>
</tr>
<tr>
<td>4th pole rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated ultimate breaking capacity</td>
<td>Icu (kA rms)</td>
<td>CA 50/60 Hz</td>
<td>220/440 V</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break time (ms)</td>
<td>Total max</td>
<td>25 to 30 with no intentional delay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

### Dimensions and connection

- **MasterPact NW08 to NW32 with corrosion protection.**
- **MasterPact NW40b with corrosion protection.**

<table>
<thead>
<tr>
<th>Drawout device</th>
<th>L (mm)</th>
<th>H (mm)</th>
<th>P (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 to 3200 A</td>
<td>441</td>
<td>556</td>
<td>439</td>
</tr>
<tr>
<td>4000 A</td>
<td>786</td>
<td>1016</td>
<td>479</td>
</tr>
</tbody>
</table>

**Connections**
- Power circuits:
  - vertical rear connections as standard
  - possibility of conversion to horizontal rear connections on-site by rotating the connectors, except for NW32, available with vertical rear connections only.
- Auxiliaries connected to terminal block on circuit breaker front face.
The MasterPact Earthing Switch can be racked into any compatible MasterPact NW chassis in place of a MasterPact circuit breaker. It is used to interconnect and earth the phase and neutral conductors of an electrical installation to ensure the safety of personnel during servicing. It can be locked in earthed position.

**Main characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage</td>
<td>1000 V</td>
</tr>
<tr>
<td>Rated operational voltage</td>
<td>690 V</td>
</tr>
<tr>
<td>Rated current</td>
<td>800 to 4000 A</td>
</tr>
<tr>
<td>Latching capacity</td>
<td>135 kA peak</td>
</tr>
<tr>
<td>Rated short-time withstand current</td>
<td>60 kA/1s</td>
</tr>
<tr>
<td>Compatibility</td>
<td>50 kA/3s</td>
</tr>
<tr>
<td>Remote indication</td>
<td>12 ON/OFF indication contacts that can be used according to the chassis auxiliary wiring</td>
</tr>
</tbody>
</table>

The Earthing Switch is compatible with MasterPact NW08 to NW40 type N1, H1, NA and HA circuit breakers in both 3-pole and 4-pole versions. It has two parts:

- a chassis earthing kit for installation on the MasterPact NW chassis. Two different versions are available for 3-pole and 4-pole chassis.
- the Earthing Switch itself, which is a specific MasterPact NW device that can be racked into any chassis equipped with an earthing kit, in place of the circuit breaker. Two versions are available (3-pole and 4-pole).

An earthing kit must be installed on the chassis of each circuit breaker protecting a circuit that may require earthing while work is being carried out. However, a single earthing switch is often sufficient for an entire installation if only one circuit is to be serviced at any given time.

The standard earthing switch comes with the short-circuit bar installed across the bottom (downstream) connections for earthing of the upstream portion of the circuit. The user can easily move the short-circuit bar to the top connections if the downstream portion of the circuit needs to be earthed.

**Earthing kit** (for chassis)

**Earthing switch** (front view)

**Earthing switch** (rear view)

**Locking in earthed position by 3 padlocks**

The standard Earthing Switch can be locked in earthed position by one to three padlocks as long as the following conditions are satisfied:

- the Earthing Switch must be in “connected” position in a chassis equipped with an earthing kit
- the Earthing Switch must be in “ON” position.

Under these conditions, the installation is earthed.

When the Earthing Switch is locked in earthed position:

- it cannot be moved to “disconnected” position (a shutter prevents insertion of the racking handle)
- it cannot be turned “OFF” (a shutter prevents access to the “OFF” pushbutton).
Typical applications
The earthing switch is used to protect maintenance personnel working on an installation against the risk of accidental connection of a parallel source or energisation by reverse power. Protection is provided by earthing the part of the installation that is to be worked on.

Application n°1
Earthing of one section of a coupled busbar arrangement
When working on section B, the bus coupler is normally open. To protect personnel in the event of accidental closing of this device, an earthing switch with the upstream terminals earthed is installed in place of the circuit breaker at B. In this way section B will remain at earth potential under all circumstances and the personnel can work in complete safety.

Application n°2
Earthing an outgoer
When working on outgoer C, installation of an earthing switch with the upstream terminals earthed (in place of the circuit breaker at C) ensures complete safety even if all the other devices on the installation are closed.

Application n°3
Earthing of an MV/LV transformer
When working on an MV/LV transformer, upstream earthing is carried out by means of the usual medium voltage and high voltage procedures. Installation of an earthing switch with the downstream terminals earthed (in place of the circuit breaker at B) maintains the part of the installation between the upstream MV circuit breaker and the downstream LV circuit breaker at earth potential. In this way, the personnel can work in complete safety even if the rest of the installation is energised.
Dimensions and connection

[Diagram of dimensions and connection with measurements: 125, 284, 25, 15, Ø10.5, 138, 60, 153, 40, 36, 77, 239.5]
# MasterPact NT and NW

## Installation recommendations

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<tr>
<td><strong>Derating in switchboards</strong></td>
<td>B-15</td>
</tr>
<tr>
<td><strong>Substitution kit</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed / drawout devices 800 to 3200 A</td>
<td>B-22</td>
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<td>B-23</td>
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<td><strong>MasterPact M Retrofit</strong></td>
<td>B-24</td>
</tr>
<tr>
<td>Dimensions and connections</td>
<td>C-1</td>
</tr>
<tr>
<td>Electrical diagrams</td>
<td>D-1</td>
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<tr>
<td>Additional characteristics</td>
<td>E-1</td>
</tr>
<tr>
<td>Catalog numbers and order form</td>
<td>F-1</td>
</tr>
</tbody>
</table>
Installation recommendations
Operating conditions

MasterPact circuit breakers have been tested for operation in industrial atmospheres. It is recommended that the equipment be cooled or heated to the proper operating temperature and kept free of excessive vibration and dust.

Ambient temperature
MasterPact devices can operate under the following temperature conditions:
- the electrical and mechanical characteristics are stipulated for an ambient temperature of -25 °C to +70 °C
- circuit breaker closing is guaranteed down to -35 °C by manual operation (push button).

Storage conditions are as follows:
- -40 to +85 °C for a MasterPact device without its control unit
- -25 °C to +85 °C for the control unit.

Extreme atmospheric conditions
MasterPact devices have successfully passed the tests defined by the following standards for extreme atmospheric conditions:
- IEC 60068-2-1: dry cold at -40 °C
- IEC 60068-2-2: dry heat at +85 °C
- IEC 60068-2-30: damp heat (temperature +55 °C, relative humidity 95 %)
- IEC 60068-2-52 level 2: salt mist.

MasterPact devices can operate in the industrial environments defined by standard IEC 60947 (pollution degree up to 4).
It is nonetheless advised to check that the devices are installed in suitably cooled switchboards without excessive dust.

Vibrations
MasterPact devices have successfully passed testing in compliance with IEC 60068-2-6 for the following vibration levels:
- 2 to 13.2 Hz: amplitude ±1 mm
- 13.2 to 100 Hz: constant acceleration 0.7 g.

Vibration testing to these levels is required by merchant marine inspection organisations (Veritas, Lloyd’s, etc).

Some applications have vibration profiles outside of this standard and require special attention during application design, installation, and use. Excessive vibration may cause unexpected tripping, damage to connections or to other mechanical parts. Please refer to the MasterPact maintenance guide (causes of accelerated ageing / operating conditions / vibrations) for additional information.

Examples of applications with high vibration profiles could include:
- wind turbines
- power frequency converters that are installed in the same switchboard or close proximity to the MasterPact circuit breaker
- emergency generators
- high vibration marine applications such as thrusters, anchor positioning systems, etc.
Altitude
At altitudes higher than 2000 metres, the modifications in the ambient air (electrical resistance, cooling capacity) lower the following characteristics as follows:

<table>
<thead>
<tr>
<th>Altitude (m)</th>
<th>2000</th>
<th>3000</th>
<th>4000</th>
<th>5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impulse withstand voltage Uimp (kV)</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Rated insulation voltage (Ui)</td>
<td>1000</td>
<td>900</td>
<td>780</td>
<td>700</td>
</tr>
<tr>
<td>Maximum rated operational voltage 50/60 Hz Ue (V)</td>
<td>NT, NW except H10</td>
<td>690</td>
<td>690</td>
<td>630</td>
</tr>
<tr>
<td>NW H10</td>
<td>1000</td>
<td>890</td>
<td>795</td>
<td>700</td>
</tr>
<tr>
<td>Rated current 40 °C</td>
<td>1 x In</td>
<td>0.99 x In</td>
<td>0.96 x In</td>
<td>0.94 x In</td>
</tr>
</tbody>
</table>

Note: intermediate values may be obtained by interpolation.

Electromagnetic disturbances
MasterPact devices are protected against:
- overvoltages caused by devices that generate electromagnetic disturbances
- overvoltages caused by atmospheric disturbances or by a distribution-system outage (e.g. failure of a lighting system)
- devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- electrostatic discharges produced by users.
MasterPact devices have successfully passed the electromagnetic-compatibility tests (EMC) defined by the following international standards:
- IEC 60947-2, appendix F
- IEC 60947-2, appendix B (trip units with earth-leakage function).
The above tests guarantee that:
- no nuisance tripping occurs
- tripping times are respected.
MasterPact devices can be supplied either from the top or from the bottom without reduction in performance, in order to facilitate connection when installed in a switchboard.

It is important to distribute the weight of the device uniformly over a rigid mounting surface such as rails or a base plate. This mounting plane should be perfectly flat (tolerance on support flatness: 2 mm). This eliminates any risk of deformation which could interfere with correct operation of the circuit breaker. MasterPact devices can also be mounted on a vertical plane using the special brackets.
Partitions
Sufficient openings must be provided in partitions to ensure good air circulation around the circuit breaker; Any partition between upstream and downstream connections of the device must be made of non-magnetic material. For high currents, of 2500 A and upwards, the metal supports or barriers in the immediate vicinity of a conductor must be made of non-magnetic material A. Metal barriers through which a conductor passes must not form a magnetic loop.

Busbars (NT, NW)
The mechanical connection must exclude the possibility of formation of a magnetic loop around a conductor.

Busbars (NT)
For live busbars installed immediately above the circuit breaker (respecting the 100 mm safety clearance), the distance between bars must be 65 mm minimum. In a 1000 V system, the bars must be insulated.

Interphase barrier
If the insulation distance between phases is not sufficient (≤ 14 mm), it is advised to install phase barriers (taking into account the safety clearances). Mandatory for a MasterPact NT > 500 V.
Door interlock VPEC
Mounted on the right or left-hand side of the chassis, this device inhibits opening of the cubicle door when the circuit breaker is in “connected” or “test” position. If the breaker is put in the “connected” position with the door open, the door may be closed without having to disconnect the circuit breaker.

Dimensions (mm)

<table>
<thead>
<tr>
<th>Type</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT08-16 (3P)</td>
<td>135</td>
<td>168</td>
</tr>
<tr>
<td>NT08-16 (4P)</td>
<td>205</td>
<td>168</td>
</tr>
<tr>
<td>NW08-40 (3P)</td>
<td>215</td>
<td>215</td>
</tr>
<tr>
<td>NW08-40 (4P)</td>
<td>330</td>
<td>215</td>
</tr>
<tr>
<td>NW40b-63 (3P)</td>
<td>660</td>
<td>215</td>
</tr>
<tr>
<td>NW40b-63 (4P)</td>
<td>775</td>
<td>215</td>
</tr>
</tbody>
</table>

Breaker in “connected” or “test” position
Door cannot be opened

Dimensions (mm)

<table>
<thead>
<tr>
<th>Type</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>NW08-40</td>
<td>87</td>
<td>103</td>
</tr>
<tr>
<td>NW40b-63</td>
<td>37</td>
<td>53</td>
</tr>
</tbody>
</table>
Cable-type door interlock IPA
This option prevents door opening when the circuit breaker is closed and prevents circuit breaker closing when the door is open.
For this, a special plate associated with a lock and a cable is mounted on the right side of the circuit breaker. With this interlock installed, the source changeover function cannot be implemented.

Note: the door interlock can either be mounted on the right side or the left side of the breaker.
Installation recommendations

Power connection

Cables connections
If cables are used for the power connections, make sure that they do not apply excessive mechanical forces to the circuit breaker terminals. For this, make the connections as follows:
- extend the circuit breaker terminals using short bars designed and installed according to the recommendations for bar-type power connections;
- for a single cable, use solution B opposite
- for multiple cables, use solution C opposite
- in all cases, follow the general rules for connections to busbars:
- position the cable lugs before inserting the bolts
- the cables should firmly secured to the framework E.

Busbars connections
The busbars should be suitably adjusted to ensure that the connection points are positioned on the terminals before the bolts are inserted B. The connections are held by the support which is solidly fixed to the framework of the switchboard, such that the circuit breaker terminals do not have to support its weight C (this support should be placed close to the terminals).

Electrodynamic stresses
The first busbar support or spacer shall be situated within a maximum distance from the connection point of the breaker (see table below). This distance must be respected so that the connection can withstand the electrodynamic stresses between phases in the event of a short circuit.

<table>
<thead>
<tr>
<th>Isc (kA)</th>
<th>30</th>
<th>50</th>
<th>65</th>
<th>80</th>
<th>100</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance A (mm)</td>
<td>350</td>
<td>300</td>
<td>250</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
</tbody>
</table>
Clamping
Correct clamping of busbars depends amongst other things, on the tightening torques used for the nuts and bolts. Over-tightening may have the same consequences as under-tightening.

For connecting busbars (Cu ETP-NFA51-100) to the circuit breaker, the tightening torques to be used are shown in the table below.

These values are for use with copper busbars and steel nuts and bolts, class 8.8. The same torques can be used with AGS-T52 quality aluminium bars (French standard NFA 02-104 or American National Standard H-35-1).

Examples

<table>
<thead>
<tr>
<th>Ø (mm) Nominal Drilling</th>
<th>Tightening torques (Nm) with grower or flat washers</th>
<th>Tightening torques (Nm) with contact or corrugated washers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø (mm) Drilling</td>
<td>Tightening torques (Nm)</td>
<td>Tightening torques (Nm)</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>37.5</td>
</tr>
</tbody>
</table>

**Busbar drilling**

Examples

Isolation distance

Dimensions (mm)

<table>
<thead>
<tr>
<th>Ui (V)</th>
<th>X min (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 V</td>
<td>8</td>
</tr>
<tr>
<td>1000 V</td>
<td>14</td>
</tr>
</tbody>
</table>

Busbar bending

When bending busbars maintain the radius indicated below (a smaller radius would cause cracks).

Dimensions (mm)

<table>
<thead>
<tr>
<th>e</th>
<th>Radius of curvature r Min</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td>7.5</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>16 to 20</td>
</tr>
</tbody>
</table>
Installation recommendations

Recommended busbars drilling

MasterPact NT06 to NT16

Rear connection

Rear connection with spreaders

Vertical rear connection

Front connection

Front connection via vertical connection adapters

Top connection

Bottom connection
MasterPact NW08 to NW63

Horizontal rear connection NW08 to NW32

Vertical rear connection NW08 to NW32, NW40b to NW50

Front connection NW08 to NW32

Top connection

Bottom connection
**Installation recommendations**

**Busbar sizing**

**Basis of tables:**
- maximum permissible busbars temperature: 100 °C
- Ti: temperature around the circuit breaker and its connection
- busbar material is unpainted copper.

**Front or rear horizontal connection**

![Diagram](DB101484.eps)

<table>
<thead>
<tr>
<th>MasterPact</th>
<th>Maximum service current</th>
<th>Ti : 40 °C No. of 5 mm thick bars</th>
<th>No. of 10 mm thick bars</th>
<th>Ti : 50 °C No. of 5 mm thick bars</th>
<th>No. of 10 mm thick bars</th>
<th>Ti : 60 °C No. of 5 mm thick bars</th>
<th>No. of 10 mm thick bars</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT06</td>
<td>400</td>
<td>2b.30 x 5</td>
<td>1b.30 x 10</td>
<td>2b.30 x 5</td>
<td>1b.30 x 10</td>
<td>2b.30 x 5</td>
<td>1b.30 x 10</td>
</tr>
<tr>
<td>NT06</td>
<td>630</td>
<td>2b.40 x 5</td>
<td>1b.40 x 10</td>
<td>2b.40 x 5</td>
<td>1b.40 x 10</td>
<td>2b.40 x 5</td>
<td>1b.40 x 10</td>
</tr>
<tr>
<td>NT08 or NW08</td>
<td>800</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
</tr>
<tr>
<td>NT10 or NW10</td>
<td>1000</td>
<td>3b.50 x 5</td>
<td>2b.50 x 10</td>
<td>3b.50 x 5</td>
<td>2b.50 x 10</td>
<td>3b.50 x 5</td>
<td>2b.50 x 10</td>
</tr>
<tr>
<td>NT12 or NW12</td>
<td>1250</td>
<td>3b.50 x 5</td>
<td>2b.50 x 10</td>
<td>3b.50 x 5</td>
<td>2b.50 x 10</td>
<td>3b.50 x 5</td>
<td>2b.50 x 10</td>
</tr>
<tr>
<td>NT16 or NW16</td>
<td>1400</td>
<td>3b.63 x 5</td>
<td>2b.50 x 10</td>
<td>3b.63 x 5</td>
<td>2b.50 x 10</td>
<td>3b.63 x 5</td>
<td>2b.50 x 10</td>
</tr>
<tr>
<td>NT16 or NW16</td>
<td>1600</td>
<td>3b.63 x 5</td>
<td>2b.63 x 10</td>
<td>3b.63 x 5</td>
<td>2b.63 x 10</td>
<td>3b.63 x 5</td>
<td>2b.63 x 10</td>
</tr>
<tr>
<td>NW20</td>
<td>1800</td>
<td>3b.80 x 5</td>
<td>2b.63 x 10</td>
<td>3b.80 x 5</td>
<td>2b.63 x 10</td>
<td>3b.80 x 5</td>
<td>2b.63 x 10</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>3b.100 x 5</td>
<td>2b.80 x 10</td>
<td>3b.100 x 5</td>
<td>2b.80 x 10</td>
<td>3b.100 x 5</td>
<td>2b.80 x 10</td>
</tr>
<tr>
<td>NW25</td>
<td>2200</td>
<td>4b.100 x 5</td>
<td>2b.80 x 10</td>
<td>4b.100 x 5</td>
<td>2b.80 x 10</td>
<td>4b.100 x 5</td>
<td>2b.80 x 10</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>4b.100 x 5</td>
<td>2b.100 x 10</td>
<td>4b.100 x 5</td>
<td>2b.100 x 10</td>
<td>4b.100 x 5</td>
<td>2b.100 x 10</td>
</tr>
<tr>
<td>NW32</td>
<td>2800</td>
<td>4b.100 x 5</td>
<td>3b.80 x 10</td>
<td>4b.100 x 5</td>
<td>3b.80 x 10</td>
<td>5b.100 x 5</td>
<td>3b.100 x 10</td>
</tr>
<tr>
<td>NW32</td>
<td>3000</td>
<td>5b.100 x 5</td>
<td>3b.80 x 10</td>
<td>6b.100 x 5</td>
<td>3b.100 x 10</td>
<td>6b.100 x 5</td>
<td>4b.80 x 10</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>6b.100 x 5</td>
<td>3b.100 x 10</td>
<td>8b.100 x 5</td>
<td>4b.100 x 10</td>
<td>8b.100 x 5</td>
<td>4b.100 x 10</td>
</tr>
<tr>
<td>NW40</td>
<td>3800</td>
<td>4b.100 x 10</td>
<td>5b.100 x 10</td>
<td>5b.100 x 10</td>
<td>5b.100 x 10</td>
<td>6b.100 x 10</td>
<td>6b.100 x 10</td>
</tr>
<tr>
<td>NW40</td>
<td>4000</td>
<td>5b.100 x 10</td>
<td>5b.100 x 10</td>
<td>5b.100 x 10</td>
<td>5b.100 x 10</td>
<td>6b.100 x 10</td>
<td>6b.100 x 10</td>
</tr>
<tr>
<td>NW50</td>
<td>4500</td>
<td>6b.100 x 10</td>
<td>6b.100 x 10</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
</tr>
<tr>
<td>NW50</td>
<td>5000</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
<td>7b.100 x 10</td>
</tr>
</tbody>
</table>

With MasterPact NT, it is recommended to use 50 mm widthness bars (see “Recommended busbars drilling”).

**Example**

**Conditions:**
- drawout version
- horizontal busbars
- Ti: 50 °C
- service current: 1800 A.

**Solution:**
For Ti = 50 °C, use an NW20 which can be connected with three 80 x 5 mm bars or two 63 x 10 mm bars.

**Note:** The values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.
Basis of tables:
- maximum permissible busbars temperature: 100 °C
- Ti: temperature around the circuit breaker and its connection
- busbar material is unpainted copper.

Rear vertical connection

<table>
<thead>
<tr>
<th>MasterPact</th>
<th>Maximum service current</th>
<th>Ti : 40 °C No. of 5 mm thick bars</th>
<th>No. of 10 mm thick bars</th>
<th>Ti : 50 °C No. of 5 mm thick bars</th>
<th>No. of 10 mm thick bars</th>
<th>Ti : 60 °C No. of 5 mm thick bars</th>
<th>No. of 10 mm thick bars</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT06</td>
<td>400</td>
<td>2b.30 x 5</td>
<td>1b.30 x 10</td>
<td>2b.30 x 5</td>
<td>1b.30 x 10</td>
<td>2b.30 x 5</td>
<td>1b.30 x 10</td>
</tr>
<tr>
<td>NT06</td>
<td>630</td>
<td>2b.40 x 5</td>
<td>1b.40 x 10</td>
<td>2b.40 x 5</td>
<td>1b.40 x 10</td>
<td>2b.40 x 5</td>
<td>1b.40 x 10</td>
</tr>
<tr>
<td>NT08 or NW08</td>
<td>800</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
</tr>
<tr>
<td>NT10 or NW10</td>
<td>1000</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
<td>2b.50 x 5</td>
<td>1b.50 x 10</td>
<td>2b.63 x 5</td>
<td>1b.63 x 10</td>
</tr>
<tr>
<td>NT12 or NW12</td>
<td>1250</td>
<td>2b.63 x 5</td>
<td>1b.63 x 10</td>
<td>3b.50 x 5</td>
<td>2b.40 x 10</td>
<td>3b.50 x 5</td>
<td>2b.40 x 10</td>
</tr>
<tr>
<td>NT16 or NW16</td>
<td>1400</td>
<td>2b.80 x 5</td>
<td>1b.80 x 10</td>
<td>2b.80 x 5</td>
<td>2b.50 x 10</td>
<td>3b.63 x 5</td>
<td>2b.50 x 10</td>
</tr>
<tr>
<td>NT16 or NW16</td>
<td>1600</td>
<td>3b.63 x 5</td>
<td>2b.50 x 10</td>
<td>3b.63 x 5</td>
<td>2b.50 x 10</td>
<td>3b.80 x 5</td>
<td>2b.63 x 10</td>
</tr>
<tr>
<td>NW20</td>
<td>1800</td>
<td>2b.100 x 5</td>
<td>1b.100 x 10</td>
<td>2b.100 x 5</td>
<td>1b.100 x 10</td>
<td>3b.100 x 5</td>
<td>2b.80 x 10</td>
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<tr>
<td>NW20</td>
<td>2000</td>
<td>3b.100 x 5</td>
<td>2b.63 x 10</td>
<td>3b.100 x 5</td>
<td>2b.63 x 10</td>
<td>3b.100 x 5</td>
<td>2b.80 x 10</td>
</tr>
<tr>
<td>NW25</td>
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<td>3b.100 x 5</td>
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<td>3b.100 x 5</td>
<td>2b.80 x 10</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>4b.100 x 5</td>
<td>2b.80 x 10</td>
<td>4b.100 x 5</td>
<td>2b.80 x 10</td>
<td>4b.100 x 5</td>
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</tr>
<tr>
<td>NW32</td>
<td>2800</td>
<td>4b.100 x 5</td>
<td>2b.100 x 10</td>
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<td>4b.100 x 5</td>
<td>3b.80 x 10</td>
</tr>
<tr>
<td>NW32</td>
<td>3000</td>
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<td>3b.80 x 10</td>
<td>6b.100 x 5</td>
<td>3b.100 x 10</td>
<td>5b.100 x 5</td>
<td>4b.80 x 10</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>6b.100 x 5</td>
<td>3b.100 x 10</td>
<td>6b.100 x 5</td>
<td>3b.100 x 10</td>
<td>4b.100 x 5</td>
<td>4b.100 x 10</td>
</tr>
<tr>
<td>NW40</td>
<td>3800</td>
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<td>4b.100 x 10</td>
<td>4b.100 x 10</td>
<td>4b.100 x 10</td>
<td>4b.100 x 10</td>
<td>4b.100 x 10</td>
</tr>
<tr>
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<td>4b.100 x 10</td>
<td>4b.100 x 10</td>
<td>4b.100 x 10</td>
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<td>5b.100 x 10</td>
<td>5b.100 x 10</td>
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<td>8b.100 x 10</td>
<td>8b.100 x 10</td>
<td>8b.100 x 10</td>
</tr>
</tbody>
</table>

Example

Conditions:
- drawout version
- vertical connections
- Ti: 40 °C
- service current: 1100 A.

Solution:
For Ti = 40 °C use an NT12 or NW12 which can be connected with two 63 x 5 mm bars or with one 63 x 10 mm bar.

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.
Temperature derating

The table below indicates the maximum current rating, for each connection type, as a function of Ti around the circuit breaker and the busbars. Circuit breakers with mixed connections have the same derating as horizontally connected breakers. For Ti greater than 60 °C, consult us.

Ti: temperature around the circuit breaker and its connection.

<table>
<thead>
<tr>
<th>Version</th>
<th>Drawout</th>
<th>Connection</th>
<th>Front or rear horizontal</th>
<th>Rear vertical</th>
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<tr>
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<tr>
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<td>2000</td>
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<td>2950</td>
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Version | Drawout | Connection | Front or rear horizontal | Rear vertical |
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<td>NT10 H1/H2/L1</td>
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<td>NT12 H1/H2</td>
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<td>1250</td>
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<tr>
<td>NT16 H1/H2</td>
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<td>NW10 N/H/L</td>
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<td>NW20 L1</td>
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<td>2000</td>
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<td>NW25 H1/H2/H3</td>
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<td>2370</td>
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<tr>
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<td>3700</td>
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<tr>
<td>NW63 H1/H2</td>
<td>–</td>
<td>–</td>
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</tr>
</tbody>
</table>

Power dissipation

Total power dissipation is the value measured at In, 50/60 Hz, for a 3 pole or 4 pole breaker, warm steady state temperature as per IEC 60947.
Factors affecting switchboard design

The temperature around the circuit breaker and its connections:
This is used to define the type of circuit breaker to be used and its connection arrangement.

Vents at the top and bottom of the cubicles:
Vents considerably reduce the temperature inside the switchboard, but must be designed so as to respect the degree of protection provided by the enclosure. For weatherproof heavy-duty cubicles, a forced ventilation system may be required.

The heat dissipated by the devices installed in the switchboard:
This is the heat dissipated by the circuit breakers under normal conditions (service current).

The size of the enclosure:
This determines the volume for cooling calculations.

Switchboard installation mode:
Free-standing, against a wall, etc.

Horizontal partitions:
Partitions can obstruct air circulation within the enclosure.

Basis of tables
- switchboard dimensions
- number of circuit breakers installed
- type of breaker connections
- drawout versions
- ambient temperature outside of the switchboard: \(T_a\) (IEC 60439-1).

---

**MasterPact NT06-16 H1/H2/L1** (switchboard 2000 x 400 x 400) - area of outlet vents: 150 cm²

<table>
<thead>
<tr>
<th>Type</th>
<th>NT06 H1/H2/L1</th>
<th>NT08 H1/H2/L1</th>
<th>NT10 H1/H2/L1</th>
<th>NT12 H1/H2</th>
<th>NT16 H1/H2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard composition</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
<td><img src="image3.png" alt="Diagram" /></td>
<td><img src="image4.png" alt="Diagram" /></td>
<td><img src="image5.png" alt="Diagram" /></td>
</tr>
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<td><img src="image9.png" alt="Diagram" /></td>
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</tr>
<tr>
<td>Busbar dimensions (mm)</td>
<td>2b. 40 x 5</td>
<td>2b. 50 x 5</td>
<td>3b. 63 x 5</td>
<td>3b. 63 x 5</td>
<td>3b. 80 x 5</td>
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</table>

<table>
<thead>
<tr>
<th>Vented switchboard ((T_a = 35 , ^\circ\C))</th>
<th>4</th>
<th>H1/L1</th>
<th>H1/L1</th>
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</thead>
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<tr>
<td>3</td>
<td>630</td>
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<table>
<thead>
<tr>
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<tbody>
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<td>630</td>
<td>800</td>
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</tbody>
</table>

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test. The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.
Installation recommendations

Derating in switchboards

MasterPact NT06-08 H1/H2/L1 (switchboard 2300 x 1100 x 500) - area of outlet vents: 300 cm²

<table>
<thead>
<tr>
<th>Type</th>
<th>NT06 H1/H2/L1</th>
<th>NT08 H1/H2/L1</th>
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</table>

<table>
<thead>
<tr>
<th>Busbar dimensions (mm)</th>
<th>2b. 40 x 5</th>
<th>2b. 50 x 5</th>
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</thead>
</table>

<table>
<thead>
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<th>Ventilated switchboard (IP31)</th>
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<td>$T_a = 35 , ^\circ C$</td>
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<tr>
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<td>(1) Area of outlet vents: 300 cm².</td>
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<td>(2) Area of inlet vents: 300 cm².</td>
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</table>

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.
### MasterPact NT10-16 H1/H2/L1 (switchboard 2300 x 1100 x 500) - area of outlet vents: 300 cm²

#### Type

<table>
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<tr>
<th>Type</th>
<th>NT10 H1/H2/L1</th>
<th>NT12 H1/H2</th>
<th>NT16 H1/H2</th>
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<td>Switchboard composition</td>
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#### Connection type

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</table>

#### Busbar dimensions (mm)

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<tr>
<th>Busbar dimensions (mm)</th>
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<th>3</th>
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#### Ventilated switchboard (IP31)

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<th>Temperature (°C)</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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</table>

<table>
<thead>
<tr>
<th>H1/L1</th>
<th>H1/L1</th>
<th>H1/L1</th>
<th>H1/L1</th>
<th>H1/L1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000/1000</td>
<td>1250</td>
<td>1250</td>
<td>1250</td>
<td>1250</td>
</tr>
<tr>
<td>1000/1000</td>
<td>1250</td>
<td>1250</td>
<td>1250</td>
<td>1250</td>
</tr>
<tr>
<td>1000/1000</td>
<td>1250</td>
<td>1250</td>
<td>1250</td>
<td></td>
</tr>
</tbody>
</table>

#### Non ventilated switchboard (IP54)

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>H1/L1</th>
<th>H1/L1</th>
<th>H1/L1</th>
<th>H1/L1</th>
<th>H1/L1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000/900</td>
<td>1180</td>
<td>1210</td>
<td>1250</td>
<td>1250</td>
</tr>
<tr>
<td>1000/950</td>
<td>1250</td>
<td>1250</td>
<td>1250</td>
<td>1250</td>
</tr>
</tbody>
</table>

#### Note:

The values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.
# Installation recommendations

## Derating in switchboards

**MasterPact NW08-10 N/H/L** (switchboard 2300 x 800 x 900) - area of outlet vents: 350 cm²

<table>
<thead>
<tr>
<th>Type</th>
<th>NW08 N/H/L</th>
<th>NW10 N/H/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard composition</td>
<td><img src="DB108438.eps" alt="Diagram" /></td>
<td><img src="DB101491.eps" alt="Diagram" /></td>
</tr>
</tbody>
</table>

### Connection type

<table>
<thead>
<tr>
<th>Type</th>
<th>NW08 N/H/L</th>
<th>NW10 N/H/L</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="DB108438.eps" alt="Diagram" /></td>
<td><img src="DB101491.eps" alt="Diagram" /></td>
<td></td>
</tr>
</tbody>
</table>

### Busbar dimensions (mm)

<table>
<thead>
<tr>
<th>Type</th>
<th>NW08 N/H/L</th>
<th>NW10 N/H/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSBAR</td>
<td>2b. 50 x 5</td>
<td>3b. 63 x 5</td>
</tr>
</tbody>
</table>

### Ventilated switchboard (IP31)

<table>
<thead>
<tr>
<th>Type</th>
<th>NW08 N/H/L</th>
<th>NW10 N/H/L</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="DB108438.eps" alt="Diagram" /></td>
<td><img src="DB101491.eps" alt="Diagram" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>NW08 N/H/L</th>
<th>NW10 N/H/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>45</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>55</td>
<td>800</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Non ventilated switchboard (IP54)

<table>
<thead>
<tr>
<th>Type</th>
<th>NW08 N/H/L</th>
<th>NW10 N/H/L</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="DB108438.eps" alt="Diagram" /></td>
<td><img src="DB101491.eps" alt="Diagram" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>NW08 N/H/L</th>
<th>NW10 N/H/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>45</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>55</td>
<td>800</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Note:

The values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.
MasterPact NW12-16 N/H/L (switchboard 2300 x 800 x 900) - area of outlet vents: 350 cm²

The values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.
**Installation recommendations**

**MasterPact NW20-40 N/H/L** (switchboard 2300 x 800 x 900) - area of outlet vents: 350 cm²

<table>
<thead>
<tr>
<th>Type</th>
<th>NW20 H1/H2/H3</th>
<th>NW20 L1</th>
<th>NW25 H1/2/3</th>
<th>NW32 H1/2/3</th>
<th>NW40 H1/2/3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard composition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Connection type**

<table>
<thead>
<tr>
<th>Busbar dimensions (mm)</th>
<th>3b. 100 x 5</th>
<th>3b. 100 x 5</th>
<th>4b. 100 x 5</th>
<th>3b. 100 x 10</th>
<th>4b. 100 x 10</th>
</tr>
</thead>
</table>

**Ventilated switchboard (=> IP31)**

<table>
<thead>
<tr>
<th>$T_a = 35 \degree C$</th>
<th>4</th>
<th>2000</th>
<th>1630</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>1</td>
<td>2375</td>
<td>2500</td>
<td>3040</td>
</tr>
<tr>
<td>3200</td>
<td>3700</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$T_a = 45 \degree C$</th>
<th>4</th>
<th>1810</th>
<th>1960</th>
<th>1920</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1800</td>
<td>1850</td>
<td>1800</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1610</td>
<td>1660</td>
<td>1600</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2250</td>
<td>2380</td>
<td>2880</td>
<td></td>
</tr>
<tr>
<td>3100</td>
<td>3160</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$T_a = 55 \degree C$</th>
<th>4</th>
<th>1700</th>
<th>1800</th>
<th>1700</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1590</td>
<td>1700</td>
<td>1590</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1500</td>
<td>1680</td>
<td>1600</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2000</td>
<td>2150</td>
<td>2550</td>
<td></td>
</tr>
<tr>
<td>2700</td>
<td>2880</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Non ventilated switchboard (=> IP54)**

<table>
<thead>
<tr>
<th>$T_a = 35 \degree C$</th>
<th>4</th>
<th>2000</th>
<th>1750</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2000</td>
<td>2000</td>
<td>1800</td>
</tr>
<tr>
<td>2</td>
<td>2000</td>
<td>2000</td>
<td>1900</td>
</tr>
<tr>
<td>1</td>
<td>2125</td>
<td>2275</td>
<td>2650</td>
</tr>
<tr>
<td>2850</td>
<td>3040</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3320</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$T_a = 45 \degree C$</th>
<th>4</th>
<th>1900</th>
<th>1660</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1800</td>
<td>1960</td>
<td>1680</td>
</tr>
<tr>
<td>2</td>
<td>1900</td>
<td>1610</td>
<td>1810</td>
</tr>
<tr>
<td>1</td>
<td>2000</td>
<td>2150</td>
<td>2550</td>
</tr>
<tr>
<td>2700</td>
<td>2880</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$T_a = 55 \degree C$</th>
<th>4</th>
<th>1780</th>
<th>1550</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1800</td>
<td>1920</td>
<td>1590</td>
</tr>
<tr>
<td>2</td>
<td>1700</td>
<td>1700</td>
<td>1700</td>
</tr>
<tr>
<td>1</td>
<td>1900</td>
<td>2020</td>
<td>2370</td>
</tr>
<tr>
<td>2530</td>
<td>2720</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2960</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Area of outlet vents: 350 cm².
(2) Area of inlet vents: 350 cm².

**Note:** the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test. The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.
### MasterPact NW40b-63 H1/H2 (switchboard 2300 x 1400 x 1500) - area of outlet vents: 500 cm²

<table>
<thead>
<tr>
<th>Type</th>
<th>NW40b H1/H2</th>
<th>NW50 H1/H2</th>
<th>NW63 H1/H2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard composition</td>
<td><img src="DB108445.eps" alt="Diagram" /></td>
<td><img src="DB101492.eps" alt="Diagram" /></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td><img src="DB108445.eps" alt="Diagram" /></td>
<td><img src="DB101492.eps" alt="Diagram" /></td>
<td></td>
</tr>
<tr>
<td>Busbar dimensions (mm)</td>
<td>5b. 100 x 10</td>
<td>7b. 100 x 10</td>
<td>8b. 100 x 10</td>
</tr>
<tr>
<td>Ventilated switchboard (➡ IP31)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$T_a = 35 , ^\circ C$</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4000</td>
<td>4000</td>
<td>4700</td>
</tr>
<tr>
<td>$T_a = 45 , ^\circ C$</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4000</td>
<td>4000</td>
<td>4450</td>
</tr>
<tr>
<td>$T_a = 55 , ^\circ C$</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4000</td>
<td>4000</td>
<td>4200</td>
</tr>
<tr>
<td>Non ventilated switchboard (➡ IP54)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$T_a = 35 , ^\circ C$</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4000</td>
<td>4000</td>
<td>4350</td>
</tr>
<tr>
<td>$T_a = 45 , ^\circ C$</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4000</td>
<td>4000</td>
<td>4100</td>
</tr>
<tr>
<td>$T_a = 55 , ^\circ C$</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3840</td>
<td>3840</td>
<td>3850</td>
</tr>
</tbody>
</table>

**Note:** The values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test. The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.
Installation recommendations

Substitution kit
Fixed / drawout devices 800 to 3200 A

It is possible to replace a MasterPact (M08 to M32) with a new MasterPact (NW08 to NW32) with the same power rating. Substitution is possible for the following types of circuit breakers:
- N1, H1, H2 for both fixed and drawout versions
- L1 for drawout versions up to 2000 A.

Mounting diagram

Fixed version

Drawout version

Door cut-out

Fixed version

Drawout version

Power connection

Select a set of retrofit connectors to replace the standard connectors and avoid any modifications to the busbars (see the retrofit section in "orders and quotations").

Note:
(1) Without escutcheon.
(2) With escutcheon.

References X and Y represent the symmetry planes for three-pole devices.
Wiring of voltage releases

During pick-up, the power consumed is approximately 150 to 200 VA. For low control voltages (12, 24, 48 V), maximum cable lengths are imposed by the voltage and the cross-sectional area of cables.

Recommended maximum cable lengths (meter).

<table>
<thead>
<tr>
<th>MN</th>
<th>12 V</th>
<th>24 V</th>
<th>48 V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.5 mm²</td>
<td>1.5 mm²</td>
<td>2.5 mm²</td>
</tr>
<tr>
<td>U source 100 %</td>
<td>58</td>
<td>35</td>
<td>280</td>
</tr>
<tr>
<td>U source 85 %</td>
<td>2</td>
<td>1.5 mm²</td>
<td>16</td>
</tr>
<tr>
<td>MX-XF</td>
<td>U source 100 %</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>U source 85 %</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: the indicated length is that of each of the two wires.

24 V DC power-supply module

External 24 V DC power-supply module for MicroLogic (F1-, F2+)
- It is recommended to use the AD power supply due to its low stray primary-secondary capacitance. Good operation of the MicroLogic Trip Unit in noisy environment is not guaranteed with other power supplies.
- The dedicated AD power supplies shall be used only for the MicroLogic trip units. If the COM option is used, a second dedicated power supply shall be used.
- M2C modules can be supplied by MicroLogic external AD power supply.
- The consumption of a MicroLogic Trip Unit is approximately 100mA.
- The consumption of M2C modules is approximately 100mA.
- A number of 5 devices (MicroLogic control units with M2C) can be connected to the same AD power supply. Add other AD power supply for more than 5 devices.
- For MicroLogics control units alone, a number of 10 devices can be connected to the same AD power supply. Add other AD power supply for more than 10 MicroLogics.
- If the installation is shared between several panels, one AD power supply shall be added for each panel.
- AD power supply dedicated to MicroLogics trip units shall not be connected to earth. (F1-, F2+).

External 24 V DC power supply for Communication bus
- A dedicated 24 V DC power supply shall be used for the communication devices.
- Do not connect the positive terminal (E1) to earth.
- The negative terminal (E2) can be connected to earth.
- A number of communication modules (BCM, IFE, IFM, I/O, FDM...) can be connected to the same 24 V DC power supply. Refer below the devices consumption table to avoid exceeding the maximum current delivered by the 24 V DC power supply.

ULP module consumption

The table below lists the ULP module consumption.

<table>
<thead>
<tr>
<th>Module</th>
<th>Typical Consumption (24 V DC at 20 °C / 68 °F)</th>
<th>Maximum Consumption (19.2 V DC at 60 °C / 140 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCM ULP for MasterPact and ComPact NS</td>
<td>40 mA</td>
<td>65 mA</td>
</tr>
<tr>
<td>MicroLogic 5 or 6 trip unit for ComPact NSX circuit breakers</td>
<td>30 mA</td>
<td>55 mA</td>
</tr>
<tr>
<td>BSCM for ComPact NSX circuit breakers</td>
<td>9 mA</td>
<td>15 mA</td>
</tr>
<tr>
<td>2-wire RS 485 isolated repeater</td>
<td>15 mA</td>
<td>19 mA</td>
</tr>
<tr>
<td>FDM121 display for LV circuit breaker</td>
<td>21 mA</td>
<td>30 mA</td>
</tr>
<tr>
<td>IFM Modbus-SL interface for LV circuit breaker</td>
<td>21 mA</td>
<td>30 mA</td>
</tr>
<tr>
<td>IFE Ethernet interface for LV circuit breaker</td>
<td>120 mA</td>
<td>3 A (with gateway)</td>
</tr>
<tr>
<td>I/O input/output interface module for LV circuit breaker</td>
<td>165 mA</td>
<td>420 mA</td>
</tr>
<tr>
<td>Maintenance module</td>
<td>0 mA (the maintenance module has its own power supply)</td>
<td>0 mA (the maintenance module has its own power supply)</td>
</tr>
</tbody>
</table>

Installation recommendation
- The 24 V DC wires (output of the 24 V DC power supply) shall be twist together.
- The 24 V DC wires (output of the 24 V DC power supply) must cross all power cables perpendicularly.
- The technical characteristics of the external 24 V DC power-supply module for MicroLogic control units are indicated on page A-30.

Note: wiring of ZSI: it is recommended to use twisted shielded cable. The shield must be connected to earth at both ends.
**MasterPact M Retrofitting: electrical diagrams**

Correspondences between MasterPact NW and MasterPact M terminal blocks.

<table>
<thead>
<tr>
<th>Power</th>
<th>Control unit</th>
<th>Remote operation</th>
</tr>
</thead>
</table>

**Indication contacts**

- Open
- Closed
- Not connected or shorted
- Connected and shorted
- Disconnected
- Connected
- Test

**Chassis contacts**

- Identical to MasterPact M.
- Different than MasterPact M.
- New or additional functions.

(1) The current transformer for the external neutral must be replaced.
# MasterPact NT and NW

## Dimensions and connections

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>2</td>
</tr>
<tr>
<td>Functions and characteristics</td>
<td>A-1</td>
</tr>
<tr>
<td>Installation recommendations</td>
<td>B-1</td>
</tr>
<tr>
<td><strong>NT06 to NT16 circuit breakers</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed 3/4-poles device</td>
<td>C-2</td>
</tr>
<tr>
<td>Drawout 3/4-poles device</td>
<td>C-6</td>
</tr>
<tr>
<td><strong>NW08 to NW32 circuit breakers</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed 3/4-poles device</td>
<td>C-10</td>
</tr>
<tr>
<td>Drawout 3/4-poles device</td>
<td>C-12</td>
</tr>
<tr>
<td><strong>NW40 circuit breakers</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed 3/4-poles device</td>
<td>C-14</td>
</tr>
<tr>
<td>Drawout 3/4-poles device</td>
<td>C-16</td>
</tr>
<tr>
<td><strong>NW40b to NW63 circuit breakers</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed 3/4-poles device</td>
<td>C-18</td>
</tr>
<tr>
<td>Drawout 3/4-poles device</td>
<td>C-20</td>
</tr>
<tr>
<td><strong>NT/NW accessories</strong></td>
<td>C-22</td>
</tr>
<tr>
<td><strong>NT/NW external modules</strong></td>
<td>C-24</td>
</tr>
<tr>
<td>FDM121 switchboard display</td>
<td>C-29</td>
</tr>
<tr>
<td>FDM128 switchboard display</td>
<td>C-30</td>
</tr>
<tr>
<td>Electrical diagrams</td>
<td>D-1</td>
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<tr>
<td>Additional characteristics</td>
<td>E-1</td>
</tr>
<tr>
<td>Catalog numbers and order form</td>
<td>F-1</td>
</tr>
</tbody>
</table>

[www.se.com](http://www.se.com)
Dimensions and connections

NT06 to NT16 circuit breakers
Fixed 3/4-poles device

Dimensions

Bottom mounting (on base plate or rails)

Rear mounting detail
(on upright or backplate)

Safety clearances

Door cutout

Rear panel cutout

For voltages < 690 V

<table>
<thead>
<tr>
<th>Parts</th>
<th>Insulated</th>
<th>Metal</th>
<th>Energised</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>0</td>
<td>60</td>
</tr>
</tbody>
</table>

Note: X and Y are the symmetry planes for a 3-pole device.
A(*) An overhead clearance of 50 mm is required to remove the arc chutes.
An overhead clearance of 20 mm is required to remove the terminal block.

F datum.
(1) Without escutcheon.
(2) With escutcheon.
### Connections

#### Horizontal rear connection

```
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>43.5</td>
</tr>
<tr>
<td>123</td>
<td></td>
</tr>
<tr>
<td>67.5</td>
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</tr>
<tr>
<td>15</td>
<td></td>
</tr>
<tr>
<td>167.5</td>
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</tbody>
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```

#### Vertical rear connection

```
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>43.5</td>
</tr>
<tr>
<td>97</td>
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</tr>
<tr>
<td>187.5</td>
<td></td>
</tr>
<tr>
<td>97</td>
<td></td>
</tr>
</tbody>
</table>
```

#### Front connection

```
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>12</td>
</tr>
<tr>
<td>150</td>
<td></td>
</tr>
<tr>
<td>328</td>
<td></td>
</tr>
<tr>
<td>164</td>
<td></td>
</tr>
</tbody>
</table>
```

---

**Note:** recommended connection screws: M10 class 8.8. Tightening torque: 50 Nm with contact washer.
Dimensions and connections

NT06 to NT16 circuit breakers
Fixed 3/4-poles device

**Connections**

**Front connection with spreaders**

**Detail**

**Rear connection with spreaders**

**Detail**

**Spreader detail**

Middle left or middle right spreader for 4P.

Middle spreader for 3P.

Left or right spreader for 4P.

Left or right spreader for 3P.

View A detail.

Note: X and Y are the symmetry planes for a 3-pole device.
Connections

Front connection via vertical connection adapters

Note: recommended connection screws: **M10** class 8.8.

Tightening torque: **50 Nm** with contact washer.

(1) 2 connection possibilities on vertical connection adapters (21 mm between centres).
Dimensions and connections

NT06 to NT16 circuit breakers
Drawout 3/4-poles device

**Dimensions**

(1) Disconnected position.

**Bottom mounting (on base plate or rails)**

**Rear mounting detail**
(on upright or backplate)

**Safety clearances**

**Door cutout**

**Rear panel cutout**

For voltages ≤ 690 V

<table>
<thead>
<tr>
<th>Parts</th>
<th>Insulated</th>
<th>Metal</th>
<th>Energised</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

E: datum.

(1) Without escutcheon.
(2) With escutcheon.

*Note: X and Y are the symmetry planes for a 3-pole device.*
Connections

Horizontal rear connection

Vertical rear connection

Front connection

Note: recommended connection screws: M10 class 8.8. Tightening torque: 50 Nm with contact washer.
Dimensions and connections

NT06 to NT16 circuit breakers
Drawout 3/4-poles device

**Connections**
Front connection with spreaders

**Spreader detail**

**Middle left or middle right spreader for 4P.**

**Middle spreader for 3P.**

**Left or right spreader for 4P.**

**Left or right spreader for 3P.**

View A detail.

**Note:** X and Y are the symmetry planes for a 3-pole device.
Connections

Front connection via vertical connection adapters fitted with cable-lug adapters

Note: recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.
Dimensions and connections

NW08 to NW32 circuit breakers
Fixed 3/4-poles device

Dimensions

Mounting on base plate or rails

Mounting detail

Safety clearances

Door cutout

<table>
<thead>
<tr>
<th>Insulated parts</th>
<th>Metal parts</th>
<th>Energised parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>B 0</td>
<td>0</td>
<td>60</td>
</tr>
</tbody>
</table>

(1) Without escutcheon.
(2) With escutcheon.

Note: X and Y are the symmetry planes for a 3-pole device.

A(*) An overhead clearance of 50 mm is required to remove the arc chutes.
An overhead clearance of 20 mm is required to remove the terminal block.
Connections
Horizontal rear connection

Vertical rear connection

Front connection

Note: recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.
Dimensions and connections
NW08 to NW32 circuit breakers
Drawout 3/4-poles device

**Dimensions**

![Dimensions Diagram]

*Disconnected position.*

**Mounting on base plate or rails**

![Mounting Diagram]

**Mounting detail**

![Mounting Detail Diagram]

**Safety clearances**

![Safety Clearances Diagram]

**Door cutout**

![Door Cutout Diagram]

<table>
<thead>
<tr>
<th></th>
<th>Insulated parts</th>
<th>Metal parts</th>
<th>Energised parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>0</td>
<td>60</td>
</tr>
</tbody>
</table>

* datum.

(1) Without escutcheon.
(2) With escutcheon.

The safety clearances take into account the space required to remove the arc chutes.

Note: X and Y are the symmetry planes for a 3-pole device.
Connections

Horizontal rear connection

Vertical rear connection

Front connection

View A detail.

Note: recommended connection screws: M10 class 8.8. Tightening torque: 50 Nm with contact washer.
Dimensions and connections
NW40 circuit breakers
Fixed 3/4-poles device

Dimensions

Mounting on base plate or rails

Mounting detail

Safety clearances

Door cutout

<table>
<thead>
<tr>
<th>Insulated parts</th>
<th>Metal parts</th>
<th>Energised parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>60</td>
</tr>
</tbody>
</table>

F: datum.

(1) Without escutcheon.
(2) With escutcheon.

Note: X and Y are the symmetry planes for a 3-pole device.

A(*) An overhead clearance of 110 mm is required to remove the arc chutes.
An overhead clearance of 20 mm is required to remove the terminal block.
Connections

Horizontal rear connection

Vertical rear connection

Note: recommended connection screws: M10 class 8.8. Tightening torque: 50 Nm with contact washer.
Dimensions and connections

NW40 circuit breakers
Drawout 3/4-poles device

**Dimensions**

![Dimensions Diagram](DB101289.eps)

(1) Disconnected position.

**Mounting on base plate or rails**

![Mounting Detail](Db101291.eps)

**Mounting detail**

![Mounting Detail](Db101292.eps)

**Safety clearances**

![Safety Clearances](Db101293.eps)

**Door cutout**

![Door Cutout](Db101294.eps)

<table>
<thead>
<tr>
<th>Insulated parts</th>
<th>Metal parts</th>
<th>Energised parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<td>0</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

(1) Without escutcheon.
(2) With escutcheon.

*Note: X and Y are the symmetry planes for a 3-pole device.*
Connections

Horizontal rear connection

Note: recommended connection screws: M10 class 8.8. Tightening torque: 50 Nm with contact washer.
Dimensions and connections
NW40b to NW63 circuit breakers
Fixed 3/4-poles device

Dimensions

Mounting on base plate or rails

Mounting detail

Safety clearances

Door cutout

<table>
<thead>
<tr>
<th></th>
<th>Insulated parts</th>
<th>Metal parts</th>
<th>Energised parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>0</td>
<td>60</td>
</tr>
</tbody>
</table>

(1) Without escutcheon.
(2) With escutcheon.

Note: X and Y are the symmetry planes for a 3-pole device.
A(*) An overhead clearance of 110 mm is required to remove the arc chutes.
An overhead clearance of 20 mm is required to remove the terminal block.
Note: recommended connection screws: M10 class 8.8. Tightening torque: 50 Nm with contact washer.
Dimensions and connections
NW40b to NW63 circuit breakers
Drawout 3/4-poles device

Dimensions

Disconnected position.

Mounting on base plate or rails

Mounting detail

Safety clearances

Door cutout

(1) Without escutcheon.
(2) With escutcheon.

The safety clearances take into account the space required to remove the arc chutes.
Note: X and Y are the symmetry planes for a 3-pole device.
Connections

Horizontal rear connection (NW40b - NW50)

Vertical rear connection (NW40b - NW50)

Vertical rear connection (NW63)

Note: recommended connection screws: M10 s/s class A4 80. Tightening torque: 50 Nm with contact washer.
Dimensions and connections

NT/NW accessories

Mounting on backplate with special brackets (MasterPact NW08 to 32 fixed)

Disconnectable front-connection adapter (MasterPact NW08 to 32 fixed)

Horizontal rear connection

Vertical rear connection

Note: recommended connection screws: M10 class 8.8. Tightening torque: 50 Nm with contact washer.

Datum.
Rear panel cutout (drawout devices)

NW08 to NW40

Rear view

NW40b to NW63

Rear view

Escutcheon

MasterPact NT

Fixed device

Drawout device

MasterPact NW

Fixed device

Drawout device
Dimensions and connections

NT/NW external modules

Connection of auxiliary wiring to terminal block

External power supply module (AD)

Battery module (BAT)

One conductor only per connection point.
Delay unit for MN release

External sensor for source ground return (SGR) protection

Sensor “MGDF summer” module

IFE - Ethernet interface
Dimensions and connections

NT/NW external modules

I/O (Input/Output) application module

IFM - Modbus-SL interface

Com’X 210
External sensor for external neutral

**Dimensions**

400/1600 A (NT06 to NT16)

- High: 137 mm.

400/2000 A (NW08 to NW20)

- High: 162 mm.

1000/4000 A (NW025 to NW40)

- High: 162 mm.

4000/6300 A (NW40b to NW63)

- High: 168 mm.

**Installation**

400/1600 A (NT06 to NT16)

400/2000 A (NW08 to NW20)

1000/4000 A (NW025 to NW40)

4000/6300 A (NW40b to NW63)
### Rectangular sensor for earth leakage protection (Vigi)

**280 x 115 mm window**

**470 x 160 mm window**

### Busbars path

**280 x 115 mm window**

Busbars spaced 70 mm centre-to-centre

- 2 bars 50 x 10.
- 2 bars 100 x 5.

**470 x 160 mm window**

Busbars spaced 115 mm centre-to-centre

- 4 bars 100 x 5.
- 4 bars 125 x 5.
FDM121 switchboard display

Dimensions

Mounting

Through panel

On panel

Connector (optional).
FDM128 switchboard display

Dimensions

Mounting
On panel
MasterPact NT and NW
Electrical diagrams

<table>
<thead>
<tr>
<th>Presentation</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions and characteristics</td>
<td>A-1</td>
</tr>
<tr>
<td>Installation recommendations</td>
<td>B-1</td>
</tr>
<tr>
<td>Dimensions and connections</td>
<td>C-1</td>
</tr>
<tr>
<td><strong>MasterPact NT06 to NT16</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed and drawout devices</td>
<td>D-2</td>
</tr>
<tr>
<td><strong>MasterPact NW08 to NW63</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed and drawout devices</td>
<td>D-4</td>
</tr>
<tr>
<td><strong>MasterPact NT and NW</strong></td>
<td></td>
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<tr>
<td>Earth-fault and earth-leakage protection</td>
<td>D-6</td>
</tr>
<tr>
<td>Neutral protection - Zone selective interlocking</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>D-8</td>
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<tr>
<td><strong>Fixed, electrically operated MasterPact NT and NW</strong></td>
<td></td>
</tr>
<tr>
<td>Connection to the communication interface module</td>
<td>D-9</td>
</tr>
<tr>
<td><strong>Withdrawable MasterPact NT and NW</strong></td>
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</tr>
<tr>
<td>Connection to the I/O and communication interface module</td>
<td>D-10</td>
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<tr>
<td><strong>MasterPact NT and NW</strong></td>
<td></td>
</tr>
<tr>
<td>24 V DC external power supply AD module</td>
<td>D-11</td>
</tr>
<tr>
<td><strong>Additional characteristics</strong></td>
<td>E-1</td>
</tr>
<tr>
<td><strong>Catalog numbers and order form</strong></td>
<td>F-1</td>
</tr>
</tbody>
</table>
The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.

Control unit

Terminal block marking

<table>
<thead>
<tr>
<th>Com</th>
<th>UC1</th>
<th>UC2</th>
<th>UC3</th>
<th>UC4</th>
<th>M2C</th>
</tr>
</thead>
<tbody>
<tr>
<td>E5</td>
<td>ZS</td>
<td>M2</td>
<td>M3</td>
<td>F2+</td>
<td>V3</td>
</tr>
<tr>
<td>E6</td>
<td>Z5</td>
<td>M1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remote operation

<table>
<thead>
<tr>
<th>SDE2</th>
<th>Res</th>
<th>SDE1</th>
<th>MN</th>
<th>MX2</th>
<th>MX1</th>
<th>XF</th>
<th>PF</th>
<th>MCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>184</td>
<td>K2</td>
<td>84</td>
<td>D2</td>
<td>C12</td>
<td>C2</td>
<td>A2</td>
<td>Z5</td>
<td>B2</td>
</tr>
<tr>
<td>181</td>
<td>K1</td>
<td>81</td>
<td>D1</td>
<td>C11</td>
<td>C1</td>
<td>A1</td>
<td>Z51</td>
<td>B1</td>
</tr>
</tbody>
</table>

Note: when communicating MX or XF releases are used, the third wire (C3,A3) must be connected even if the communication module is not installed.

A : digital ammeter.  
P : A + power meter + additional protection.  
E : energy.  
H : P + harmonics.
Electrical diagrams

MasterPact NT06 to NT16
Fixed and drawout devices

Indication contacts

<table>
<thead>
<tr>
<th>OF4</th>
<th>OF3</th>
<th>OF2</th>
<th>OF1</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>34</td>
<td>24</td>
<td>14</td>
</tr>
<tr>
<td>42</td>
<td>32</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>41</td>
<td>31</td>
<td>21</td>
<td>11</td>
</tr>
</tbody>
</table>


(*) Spring charging motor 440/480 V AC
(380 V motor + additional resistor).

Chassis contacts

<table>
<thead>
<tr>
<th>CD2</th>
<th>CD1</th>
<th>CE3</th>
<th>CE2</th>
<th>CE1</th>
<th>CT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>824</td>
<td>814</td>
<td>334</td>
<td>324</td>
<td>314</td>
<td>914</td>
</tr>
<tr>
<td>821</td>
<td>811</td>
<td>331</td>
<td>321</td>
<td>311</td>
<td>911</td>
</tr>
</tbody>
</table>

CD2 : disconnected position
CD1 : connected position
CE3 : connected position
CE2 : connected position
CE1 : connected position
CT1 : test position

Key:
- drawout device only.
- SDE1, OF1, OF2, OF3, OF4 supplied as standard.
- Interconnected connections (only one wire per connection point).
Electrical diagrams

**MasterPact NW08 to NW63**

Fixed and drawout devices

The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.

### Control unit

**Terminal block marking**

<table>
<thead>
<tr>
<th>Com</th>
<th>UC1</th>
<th>UC2</th>
<th>UC3</th>
<th>UC4</th>
<th>M2C</th>
</tr>
</thead>
<tbody>
<tr>
<td>E5</td>
<td>E6</td>
<td>Z5</td>
<td>M1</td>
<td>M2</td>
<td>M3</td>
</tr>
<tr>
<td>E3</td>
<td>E4</td>
<td>Z3</td>
<td>T3</td>
<td>T4</td>
<td>VN</td>
</tr>
<tr>
<td>E1</td>
<td>E2</td>
<td>F1</td>
<td>T1</td>
<td>T2</td>
<td>V1</td>
</tr>
</tbody>
</table>

**A** : digital ammeter.

**E** : energy.

**P** : A + power meter + additional protection.

**H** : P + harmonics.

(1) The PTE option with MicroLogic E is not compatible with an external potential CT.

**Control unit**

- UC1: Z1-Z5 zone selective interlocking
  - Z1 = ZSI OUT SOURCE
  - Z2 = ZSI OUT ; Z3 = ZSI IN SOURCE
  - Z4 = ZSI IN ST (short time)
  - Z5 = ZSI IN GF (earth fault)
- UC2: T1, T2, T3, T4 = external neutral
- M2, M3 = Vigi module input (MicroLogic 7)
- UC3: F2+, F1– = external 24 V DC power supply
- VN: external voltage connector (must be connected to the neutral with a 3P circuit breaker)
- UC4: External Voltage Connector (PTE option)
- M2C: 2 programmable contacts (internal relay) ext. 24 V DC power supply required

### Remote operation

- SDE2 / Res: fault-trip indication contact or remote reset
- SDE1: fault-trip indication contact (supplied as standard)
- MN: undervoltage release or shunt release
- MX2: shunt release (standard or communicating)
- MX1: closing release (standard or communicating)
- PF: ready-to-close contact
- MCH: electric motor

**Note:** when communicating MX or XF releases are used, the third wire (C3,A3) must be connected even if the communication module is not installed.
Electrical diagrams

**MasterPact NW08 to NW63**

Fixed and drawout devices

---

### Indication contacts

<table>
<thead>
<tr>
<th>OF4</th>
<th>OF3</th>
<th>OF2</th>
<th>OF1</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
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<td>14</td>
</tr>
<tr>
<td>42</td>
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<td>12</td>
</tr>
<tr>
<td>41</td>
<td>31</td>
<td>21</td>
<td>11</td>
</tr>
</tbody>
</table>

**OF4**: ON/OFF indication contacts

- OF4
- OF3
- OF2
- OF1

Combined “connected-deconnected” indication contacts

- OF24 or EF24
- OF23 or EF23
- OF22 or EF22
- OF21 or EF21
- OF14 or EF14
- OF13 or EF13
- OF12 or EF12
- OF11 or EF11

---

### Chassis contacts

<table>
<thead>
<tr>
<th>CD3</th>
<th>CD2</th>
<th>CD1</th>
<th>CE3</th>
<th>CE2</th>
<th>CE1</th>
<th>CT3</th>
<th>CT2</th>
<th>CT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>834</td>
<td>824</td>
<td>814</td>
<td>334</td>
<td>324</td>
<td>314</td>
<td>934</td>
<td>924</td>
<td>914</td>
</tr>
<tr>
<td>832</td>
<td>822</td>
<td>812</td>
<td>332</td>
<td>322</td>
<td>312</td>
<td>932</td>
<td>922</td>
<td>912</td>
</tr>
<tr>
<td>831</td>
<td>821</td>
<td>811</td>
<td>331</td>
<td>321</td>
<td>311</td>
<td>931</td>
<td>921</td>
<td>911</td>
</tr>
</tbody>
</table>

**OF4**: ON/OFF indication contacts

- CD3
- CD2
- CD1
- CE3
- CE2
- CE1
- CT3
- CT2
- CT1

---

### Key:

- **Drawout device only.**
- **SDE1, OF1, OF2, OF3, OF4 supplied as standard.**

Interconnected connections (only one wire per connection point).
**External sensor (CT) for residual earth-fault protection**

Connection of current-transformer secondary circuit for external neutral
MasterPact equipped with a MicroLogic 6 A/E/P/H:
- shielded cable with 2 twisted pairs
- T1 twisted with T2
- maximum length 4 meters
- cable cross-sectional area 0.4 to 1.5 mm²
- recommended cable: Belden 9552 or equivalent.
For proper wiring of neutral CT, refer to instruction Bulletin 48041-082-03 shipped with it.
Do not remove MicroLogic factory-installed jumper between T1 and T2 unless neutral CT is connected.
If supply is via the top, follow the schematics.
If supply is via the bottom, control wiring is identical; for the power wiring, H1 is connected to the source side, H2 to the load side.
For four-pole versions, for residual earth-fault protection, the current transformer for the external neutral is not necessary.
Connection for signal VN is required only for power measurements (3 Ø, 4 wires, 4CTs).

**External transformer for source ground return (SGR) earth-fault protection**

Connection of the secondary circuit
MasterPact equipped with a MicroLogic 6 A/E/P/H:
- unshielded cable with 1 twisted pair
- maximum length 150 meters
- cable cross-sectional area 0.4 to 1.5 mm²
- terminals 5 and 6 may not be used at the same time
- use terminal 5 for NW08 to 40
- use terminal 6 for NW40b to 63
- recommended cable: Belden 9409 or equivalent.
Earth-leakage protection
Connection of the rectangular-sensor secondary circuit
Use the cable shipped with the rectangular sensor.

Neutral protection
- Three pole circuit breaker:
  - neutral protection is impossible with MicroLogic A, E
  - MasterPact equipped with MicroLogic P or H
  - the current transformer for external neutral is necessary (the wiring diagram is identical to the one used for the residual earth-fault protection)
- Four pole circuit breaker:
  - MasterPact equipped with MicroLogic A, E, P or H
  - the current transformer for external neutral is not necessary.

Zone selective interlocking
Zone-selective interlocking is used to reduce the electrodynamic forces exerted on the installation by shortening the time required to clear faults, while maintaining time selectivity between the various devices. A pilot wire interconnects a number of circuit breakers equipped with MicroLogic A/E/P/H control units, as illustrated in the diagram above. The control unit detecting a fault sends a signal upstream and checks for a signal arriving from downstream. If there is a signal from downstream, the circuit breaker remains closed for the full duration of its tripping delay. If there is no signal from downstream, the circuit breaker opens immediately, regardless of the tripping-delay setting.

Fault 1.
Only circuit breaker A detects the fault. Because it receives no signal from downstream, it opens immediately, regardless of its tripping delay set to 0.3.

Fault 2.
Circuit breakers A and B detect the fault. Circuit breaker A receives a signal from B and remains closed for the full duration of its tripping delay set to 0.3. Circuit breaker B does not receive a signal from downstream and opens immediately, in spite of its tripping delay set to 0.2.

Wiring
- Maximum impedance: 2.7 Ω/300 m.
- Capacity of connectors: 0.4 to 2.5 mm².
- Wires: single or multicore.
- Maximum length: 3000 m.

Limits to device interconnection:
- the common ZSI - OUT (Z1) and the output ZSI - OUT (Z2) can be connected to a maximum of 10 upstream device
- a maximum of 100 downstream devices may be connected to the common ZSI - IN (Z3) and to an input ZSI - IN CR (Z4) or GF (Z5).
Electrical diagrams
MasterPact NT and NW
Communication

Communication architecture

[1] Modbus termination is mandatory, see ULP system user guide TRV99101.
Electrical diagrams

Fixed, electrically operated MasterPact NT and NW
Connection to the communication interface module

<table>
<thead>
<tr>
<th>Color</th>
<th>Color Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Red</td>
<td>E1</td>
<td>24 V</td>
</tr>
<tr>
<td>Black</td>
<td>E2</td>
<td>0 V</td>
</tr>
<tr>
<td>White</td>
<td>E5</td>
<td>H</td>
</tr>
<tr>
<td>Blue</td>
<td>E6</td>
<td>L</td>
</tr>
</tbody>
</table>

Breaker ULP cord

24 V DC

Ethernet

24 V DC

IFE

ULP Termination

OR

IFE

ULP Termination

24 V DC

Ethernet
Electrical diagrams
Withdrawable MasterPact NT and NW
Connection to the I/O and communication interface module
With MicroLogic, it is recommended to connect 24 V DC external power-supply (AD module) to the MicroLogic control unit (F1- F2+) in order:
- to keep available the display and the energy metering, even if Current < 20 % In.
- to use the display even if the circuit breaker is open or not supplied (for the exact conditions of use, see the "electrical diagrams" part of this catalog)
- to display fault currents after tripping
- to modify settings when the circuit breaker is open (OFF position)

The same 24 V DC external power supply can be used for the MicroLogic control unit and the communication devices (IFE, IFM, I/O, FDM).

The 24 V DC external power-supply (AD module) for the MicroLogic control unit (F1- F2+) is not required for basic protections LSIG.

The 24 V DC external power-supply for the BCM ULP communication module (E1-E2) is required. The same 24 V DC external power supply can be used for the communication devices (IFE, IFM, I/O, FDM).

The 24 V DC external power supply (AD module) is used to supply MicroLogic control unit, this power supply shall be used only for supplying MicroLogic control units and M2C.

The dedicated AD power supplies shall be used only for the MicroLogic trip units. If the COM option is used, a second dedicated 24 V DC external power supply shall be used.

**Note:** In case of using the 24 V DC external power supply (AD module), maximum cable length between 24 V DC (G1, G2) and the control unit (F1-, F2+) must not exceed 10 meters.

The internal voltage taps are connected to the bottom side of the circuit breaker.

An external voltage taps are possible using the PTE option:
- With this option, the internal voltage taps are disconnected and the voltage taps are connected to terminals VN, V1, V2, V3.
- The PTE option is required for voltages less than 220 V and greater than 690 V (in which case a voltage transformer is compulsory). For three-pole devices, the system is supplied with terminal VN connected only to the control unit.
- When the PTE option is implemented, the voltage measurement input must be protected against short-circuits. Installed as close as possible to the busbars, this protection function is ensured by a P2SM circuit breaker (1 A rating) with an auxiliary contact (cat. no. 21104 and 21117).
- This voltage measurement input is reserved exclusively for the control unit and must not ever be used to supply other circuits outside the switchboard.

The BAT battery module, mounted in series upstream of the AD module, ensures an uninterrupted supply of power if the AD module power supply fails.

**Connection**

The maximum length for each conductor supplying power to the trip unit module is 10 m.

**Do not ground F2+, F1-, or power supply output:**
- the positive terminal (F2+) on the trip unit must not be connected to earth ground
- the negative terminal (F1-) on the trip unit must not be connected to earth ground
- the output terminals (- and +) of the 24 V DC power supply must not be grounded.

**Reduce electromagnetic interference:**
- the input and output wires of the 24 V DC power supply must be physically separated as much as possible
- the 24 V DC wires (output of the 24 V DC power supply) shall be twisted together.
- the 24 V DC wires (output of the 24 V DC power supply) must cross all power cables perpendicularly
- power supply conductors must be cut to length. Do not loop excess conductor.
MasterPact NT and NW

Additional characteristics

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>2</td>
</tr>
<tr>
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<tr>
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<tr>
<td>Dimensions and connections</td>
<td>C-1</td>
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<td>Electrical diagrams</td>
<td>D-1</td>
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<tr>
<td><strong>Tripping curves</strong></td>
<td>E-2</td>
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<tr>
<td>Limitation curves</td>
<td></td>
</tr>
<tr>
<td>Current limiting</td>
<td>E-4</td>
</tr>
<tr>
<td>Energy limiting</td>
<td>E-5</td>
</tr>
<tr>
<td>Catalog numbers and order form</td>
<td>F-1</td>
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</table>
Additional characteristics

Tripping curves

**MicroLogic 2.0**

**MicroLogic 5.0, 6.0, 7.0**
Additional characteristics

Tripping curves

Earth fault protection (MicroLogic 6.0)

\[ I_g = A \cdot J \times \ln (t) \]

<table>
<thead>
<tr>
<th>Condition</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>( I_n &lt; 400 ) A</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1</td>
</tr>
<tr>
<td>( 400 \leq I_n \leq 1200 ) A</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1</td>
</tr>
<tr>
<td>( I_n &gt; 1200 ) A</td>
<td>500</td>
<td>640</td>
<td>720</td>
<td>800</td>
<td>880</td>
<td>960</td>
<td>1040</td>
<td>1120</td>
<td>1200</td>
</tr>
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</table>

IDMTL curve (MicroLogic P and H)

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<tr>
<th>Condition</th>
<th>HVF</th>
<th>EIT</th>
<th>VT</th>
<th>ST</th>
<th>DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>( I_n &lt; 400 ) A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( 400 \leq I_n \leq 1200 ) A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( I_n &gt; 1200 ) A</td>
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</tbody>
</table>
Additional characteristics

Limitation curves

Current limiting

**Voltage 380/415/440 V AC**

Limited short-circuit current (kA peak)

**Voltage 660/690 V AC**

Limited short-circuit current (kA peak)
Additional characteristics

Limitation curves

Energy limiting

**Voltage 380/415/440 V AC**

Limited energy

![Graph showing limitation curves for 380/415/440 V AC.]

**Voltage 660/690 V AC**

Limited energy

![Graph showing limitation curves for 660/690 V AC.]

Rated short-circuit current (kA rms)

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MasterPact NT and NW
Catalog numbers and order form

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Earthing switch F-35
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- Drawout circuit breakers and switch-disconnectors
- Chassis and connections

### NW08 to NW40 with corrosion protection
- Circuit breakers

### Retrofit solutions (*)
- Connections for fixed devices
- Connections for drawout devices

### MasterPact NT
- Connection
- MicroLogic control unit, communication option, accessories
- Remote operation
- Chassis locking and accessories
- Clusters
- Circuit breaker locking and accessories
- Mechanical interlocking for TransferPact source changeover
- Indication contacts
- Instructions

### Communication, monitoring and control, for NT/NW
- Instructions

### MasterPact NW
- Connection
- MicroLogic control unit, communication option, accessories
- Remote operation
- Chassis locking and accessories
- Clusters
- Circuit breaker locking and accessories
- Mechanical interlocking for TransferPact source changeover
- Indication contacts
- Instructions

### Communication, monitoring and control
- Instructions

### MasterPact NT and NW
- Instructions
A MasterPact fixed circuit breaker is described by 4 catalog numbers corresponding to:
- the basic circuit breaker
- a control unit
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

### Basic circuit breaker

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
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<tbody>
<tr>
<td><strong>H1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NT02</td>
<td>250</td>
<td>42</td>
</tr>
<tr>
<td>NT06</td>
<td>630</td>
<td>42</td>
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<tr>
<td>NT08</td>
<td>800</td>
<td>42</td>
</tr>
<tr>
<td>NT10</td>
<td>1000</td>
<td>42</td>
</tr>
<tr>
<td>NT12</td>
<td>1250</td>
<td>42</td>
</tr>
<tr>
<td>NT16</td>
<td>1600</td>
<td>42</td>
</tr>
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<table>
<thead>
<tr>
<th><strong>H2</strong></th>
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<tbody>
<tr>
<td>NT06</td>
<td>630</td>
<td>50</td>
</tr>
<tr>
<td>NT08</td>
<td>800</td>
<td>50</td>
</tr>
<tr>
<td>NT10</td>
<td>1000</td>
<td>50</td>
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<td>NT12</td>
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<td>50</td>
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<tr>
<td>NT16</td>
<td>1600</td>
<td>50</td>
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<table>
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<th><strong>L1</strong></th>
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<tbody>
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<td>NT08</td>
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<td>150</td>
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<tr>
<td>NT10</td>
<td>1000</td>
<td>150</td>
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### MicroLogic control unit

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<thead>
<tr>
<th>“ammeter” A</th>
<th>3P/4P</th>
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<tbody>
<tr>
<td>MicroLogic 2.0 A</td>
<td>basic protection</td>
</tr>
<tr>
<td>MicroLogic 5.0 A</td>
<td>selective protection</td>
</tr>
<tr>
<td>MicroLogic 6.0 A</td>
<td>selective + earth-fault protection</td>
</tr>
<tr>
<td>MicroLogic 7.0 A</td>
<td>selective + earth-leakage protection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>“energy” E</th>
<th>3P/4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroLogic 2.0 E</td>
<td>basic protection</td>
</tr>
<tr>
<td>MicroLogic 5.0 E</td>
<td>selective protection</td>
</tr>
<tr>
<td>MicroLogic 6.0 E</td>
<td>selective + earth-fault protection</td>
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</table>

<table>
<thead>
<tr>
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<th>3P/4P</th>
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<tr>
<td>MicroLogic 5.0 P</td>
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<tr>
<td>MicroLogic 6.0 P</td>
<td>selective + earth-fault protection</td>
</tr>
<tr>
<td>MicroLogic 7.0 P</td>
<td>selective + earth-leakage protection</td>
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<table>
<thead>
<tr>
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<td>MicroLogic 6.0 H</td>
<td>selective + earth-fault protection</td>
</tr>
<tr>
<td>MicroLogic 7.0 H</td>
<td>selective + earth-leakage protection</td>
</tr>
</tbody>
</table>

### Communication option

| COM (BCM-ULP) | 47405 |
| Eco COM module (BCM-ULP) | 47407 |
| IFE Ethernet interface for LV breaker | LV434001 |
| Ethernet interface for LV breakers and gateway | LV434002 |
| IFM Modbus-SL interface module | LV434000 |
| I/O application module | LV434063 |

### Brand option

| Square D brand | Label | 47802 |
# NT06 to NT16 fixed circuit breakers

## Connections

### Front connection

<table>
<thead>
<tr>
<th>250/630-1600 A</th>
<th>3P</th>
<th>4P</th>
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<tbody>
<tr>
<td>Top</td>
<td>47328</td>
<td>47330</td>
</tr>
<tr>
<td>Bottom</td>
<td>47329</td>
<td>47331</td>
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</table>

### Front connection accessories

**Vertical connection adapters 250/630-1600 A**

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<thead>
<tr>
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<th>3P (3 parts)</th>
<th>4P (4 parts)</th>
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<tbody>
<tr>
<td>3P</td>
<td>33642</td>
<td>33643</td>
</tr>
<tr>
<td>4P</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Interphase barriers**

<p>| | |</p>
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</tr>
</thead>
<tbody>
<tr>
<td>3P/4P top</td>
<td>33646</td>
</tr>
<tr>
<td>3P/4P bottom</td>
<td>33646</td>
</tr>
</tbody>
</table>

### Arc chute screen

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
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<tbody>
<tr>
<td>3P</td>
<td>47335</td>
<td></td>
</tr>
<tr>
<td>4P</td>
<td>47336</td>
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</table>

### Rear connection

**Vertical connection**

<table>
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<tr>
<th>250/630-1600 A</th>
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<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>33604</td>
<td>33614</td>
</tr>
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<td>Bottom</td>
<td>33605</td>
<td>33615</td>
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**Horizontal connection**

<table>
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<tr>
<th>250/630-1600 A</th>
<th>3P</th>
<th>4P</th>
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</thead>
<tbody>
<tr>
<td>Top</td>
<td>33606</td>
<td>33616</td>
</tr>
<tr>
<td>Bottom</td>
<td>33607</td>
<td>33617</td>
</tr>
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</table>

### Rear connection accessories

**Interphase barriers**

<p>| | |</p>
<table>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>3P/4P top</td>
<td>33648</td>
</tr>
<tr>
<td>3P/4P bottom</td>
<td>33648</td>
</tr>
</tbody>
</table>

### Common accessories for front and rear connections

**Spreaders**

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<tr>
<td>Top</td>
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</tr>
<tr>
<td>Bottom</td>
<td>33623</td>
<td></td>
</tr>
</tbody>
</table>

For front and horizontal rear connection

**Cable lug adapters 250/630-1600 A**

<table>
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<tr>
<th></th>
<th>3P (3 parts)</th>
<th>4P (4 parts)</th>
</tr>
</thead>
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<tr>
<td>Top</td>
<td>33644</td>
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<tr>
<td>Bottom</td>
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</table>

**Cable lug kits**

<table>
<thead>
<tr>
<th></th>
<th>240 mm²</th>
<th>500 mm²</th>
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</thead>
<tbody>
<tr>
<td>3P</td>
<td>33013</td>
<td>33015</td>
</tr>
<tr>
<td>4P</td>
<td>33014</td>
<td>33016</td>
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</table>
**ON/OFF indication contacts (OF)**

<table>
<thead>
<tr>
<th>Details</th>
<th>Description</th>
<th>Catalog number</th>
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<tbody>
<tr>
<td>Changeover contacts (6 A - 240 V)</td>
<td>4 (standard)</td>
<td>47339</td>
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<tr>
<td>1 low-level OF to replace 1 standard OF (4 max.)</td>
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</tr>
</tbody>
</table>

**“Fault trip” indication contacts (SDE)**

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<th>Details</th>
<th>Description</th>
<th>Catalog number</th>
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</thead>
<tbody>
<tr>
<td>Changeover contact (6 A - 240 V)</td>
<td>1 (standard)</td>
<td>47340</td>
</tr>
<tr>
<td>1 additional SDE (6 A - 240 V)</td>
<td></td>
<td>47341</td>
</tr>
<tr>
<td>1 additional low-level SDE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Programmable contacts (*) (programmed via MicroLogic control unit)**

<table>
<thead>
<tr>
<th>Details</th>
<th>Description</th>
<th>Catalog number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 contacts (M2C) (5 A - 240 V)</td>
<td></td>
<td>47403</td>
</tr>
</tbody>
</table>

(*) for MicroLogic control units P and H only.
## Remote ON/OFF

### Gear motor

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Remote Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>MCH</td>
</tr>
<tr>
<td>48 V</td>
<td>47391</td>
</tr>
<tr>
<td>100/130 V</td>
<td>47395</td>
</tr>
<tr>
<td>200/240 V</td>
<td>47396</td>
</tr>
<tr>
<td>277/415 V</td>
<td>47398</td>
</tr>
<tr>
<td>440/480 V</td>
<td>47400</td>
</tr>
<tr>
<td>DC</td>
<td>47390</td>
</tr>
<tr>
<td>24/30 V</td>
<td>47391</td>
</tr>
<tr>
<td>48/60 V</td>
<td>47391</td>
</tr>
<tr>
<td>100/130 V</td>
<td>47392</td>
</tr>
<tr>
<td>200/250 V</td>
<td>47393</td>
</tr>
</tbody>
</table>

## Instantaneous voltage releases

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Closing release</th>
<th>Opening release</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>47349</td>
</tr>
<tr>
<td>DC</td>
<td>24/30 V DC, 24 V AC</td>
<td>47350</td>
</tr>
<tr>
<td></td>
<td>48/60 V DC, 48 V AC</td>
<td>47351</td>
</tr>
<tr>
<td></td>
<td>100/130 V AC/DC</td>
<td>47352</td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>47353</td>
</tr>
<tr>
<td></td>
<td>277 V AC</td>
<td>47354</td>
</tr>
<tr>
<td></td>
<td>380/480 V AC</td>
<td>47355</td>
</tr>
<tr>
<td>Communicating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>47310</td>
</tr>
<tr>
<td>DC</td>
<td>24/30 V DC, 24 V AC</td>
<td>47311</td>
</tr>
<tr>
<td></td>
<td>48/60 V DC, 48 V AC</td>
<td>47312</td>
</tr>
<tr>
<td></td>
<td>100/130 V AC/DC</td>
<td>47313</td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>47314</td>
</tr>
<tr>
<td></td>
<td>277 V AC</td>
<td>47315</td>
</tr>
<tr>
<td></td>
<td>380/480 V AC</td>
<td>47316</td>
</tr>
</tbody>
</table>

### "Ready to close" contact (1 max.)

<table>
<thead>
<tr>
<th>Contact Type</th>
<th>Voltage</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 changeover contact (5 A - 240 V)</td>
<td>47342</td>
<td></td>
</tr>
<tr>
<td>1 low-level changeover contact</td>
<td>47343</td>
<td></td>
</tr>
</tbody>
</table>

### Electrical closing pushbutton

<table>
<thead>
<tr>
<th>Pushbutton Type</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pushbutton</td>
<td>47512</td>
</tr>
</tbody>
</table>

## Remote reset after fault trip

### Electrical reset

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>110/130 V AC</td>
<td>47344</td>
</tr>
<tr>
<td>220/240 V AC</td>
<td>47345</td>
</tr>
</tbody>
</table>

### Automatic reset

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/130 V AC/DC</td>
<td>47347</td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>47348</td>
</tr>
<tr>
<td>277 V AC</td>
<td>47349</td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>47350</td>
</tr>
</tbody>
</table>

### Remote tripping

#### Instantaneous voltage release

<table>
<thead>
<tr>
<th>Voltage</th>
<th>2nd MX</th>
<th>MN</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>47360</td>
</tr>
<tr>
<td>DC</td>
<td>24/30 V DC, 24 V AC</td>
<td>47370</td>
</tr>
<tr>
<td></td>
<td>48/60 V DC, 48 V AC</td>
<td>47371</td>
</tr>
<tr>
<td></td>
<td>100/130 V AC/DC</td>
<td>47372</td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>47373</td>
</tr>
<tr>
<td></td>
<td>277 V AC</td>
<td>47374</td>
</tr>
<tr>
<td></td>
<td>380/480 V AC</td>
<td>47375</td>
</tr>
</tbody>
</table>

### MN delay unit

<table>
<thead>
<tr>
<th>Voltage</th>
<th>R (non-adjustable)</th>
<th>Rr (adjustable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>48/60 V AC/DC</td>
<td>33684</td>
</tr>
<tr>
<td>DC</td>
<td>100/130 V AC/DC</td>
<td>33685</td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>33682</td>
</tr>
<tr>
<td></td>
<td>380/480 V AC/DC</td>
<td>33683</td>
</tr>
</tbody>
</table>
A MasterPact drawout circuit breaker is described by 5 catalog numbers corresponding to:
- the basic circuit breaker
- a control unit
- a chassis
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

### Basic circuit breaker

#### Type H1

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT02</td>
<td>250</td>
<td>42</td>
</tr>
<tr>
<td>NT06</td>
<td>630</td>
<td>42</td>
</tr>
<tr>
<td>NT08</td>
<td>800</td>
<td>42</td>
</tr>
<tr>
<td>NT10</td>
<td>1000</td>
<td>42</td>
</tr>
<tr>
<td>NT12</td>
<td>1250</td>
<td>42</td>
</tr>
<tr>
<td>NT16</td>
<td>1600</td>
<td>42</td>
</tr>
</tbody>
</table>

#### Type H2

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT06</td>
<td>630</td>
<td>50</td>
</tr>
<tr>
<td>NT08</td>
<td>800</td>
<td>50</td>
</tr>
<tr>
<td>NT10</td>
<td>1000</td>
<td>50</td>
</tr>
<tr>
<td>NT12</td>
<td>1250</td>
<td>50</td>
</tr>
<tr>
<td>NT16</td>
<td>1600</td>
<td>50</td>
</tr>
</tbody>
</table>

#### Type L1

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT06</td>
<td>630</td>
<td>150</td>
</tr>
<tr>
<td>NT08</td>
<td>800</td>
<td>150</td>
</tr>
<tr>
<td>NT10</td>
<td>1000</td>
<td>150</td>
</tr>
</tbody>
</table>

### MicroLogic control unit

#### “ammeter” A

- MicroLogic 2.0 A basic protection 65304
- MicroLogic 5.0 A selective protection 65305
- MicroLogic 6.0 A selective + earth-fault protection 65306
- MicroLogic 7.0 A selective + earth-leakage protection 65307

#### “energy” E

- MicroLogic 2.0 E basic protection 47281
- MicroLogic 5.0 E selective protection 47284
- MicroLogic 6.0 E selective + earth-fault protection 47292

#### “power meter” P

- MicroLogic 5.0 P selective protection 47297
- MicroLogic 6.0 P selective + earth-fault protection 47298
- MicroLogic 7.0 P selective + earth-leakage protection 47299

#### “harmonic meter” H

- MicroLogic 5.0 H selective protection 47301
- MicroLogic 6.0 H selective + earth-fault protection 47302
- MicroLogic 7.0 H selective + earth-leakage protection 47303

### Chassis

#### For type H1 - H2

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1000 A</td>
<td>33722</td>
<td>33725</td>
</tr>
<tr>
<td>1600 A</td>
<td>33723</td>
<td></td>
</tr>
</tbody>
</table>

#### For type L1

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>630-1000 A</td>
<td>33723</td>
<td></td>
</tr>
</tbody>
</table>

### Communication option

<table>
<thead>
<tr>
<th>Chassis (I/O application module) +</th>
<th>Circuit breaker (BCM-ULP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM (BCM-ULP)</td>
<td>33852, 47485</td>
</tr>
<tr>
<td>Eco COM module (BCM-ULP)</td>
<td>33843</td>
</tr>
<tr>
<td>IFE</td>
<td>LV434001</td>
</tr>
<tr>
<td>IFE</td>
<td>LV434002</td>
</tr>
<tr>
<td>IFM Modbus-SL interface module</td>
<td>LV434000</td>
</tr>
<tr>
<td>I/O application module</td>
<td>LV434063</td>
</tr>
</tbody>
</table>

### Brand option

- Square D brand Label 47802

Auxiliaries and accessories:
- for drawout devices: see page F-9
- for fixed or drawout devices: see page F-12.
Switch-disconnector version: see page F-14.
Source changeover assembly: see page F-12.
# NT06 to NT16 Drawout Circuit Breakers

## Connections

### Chassis Front Connection

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A Top</td>
<td>33727</td>
<td>33733</td>
</tr>
<tr>
<td>Bottom</td>
<td>33728</td>
<td>33734</td>
</tr>
</tbody>
</table>

### Front Connection Accessories

**Vertical Connection Adapters 250/630-1600 A**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P (3 parts)</th>
<th>4P (4 parts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>33642</td>
<td>33643</td>
</tr>
</tbody>
</table>

### Chassis Rear Connection

**Vertical Connection**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A Top</td>
<td>33729</td>
<td>33735</td>
</tr>
<tr>
<td>Bottom</td>
<td>33730</td>
<td>33736</td>
</tr>
</tbody>
</table>

**Horizontal Connection**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A Top</td>
<td>33731</td>
<td>33737</td>
</tr>
<tr>
<td>Bottom</td>
<td>33732</td>
<td>33738</td>
</tr>
</tbody>
</table>

### Rear Connection Accessories

**Interphase Barriers**

<table>
<thead>
<tr>
<th>Type</th>
<th>33768</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P/4P (3 parts)</td>
<td></td>
</tr>
</tbody>
</table>

### Common Accessories for Front and Rear Connection

**Spreaders**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A</td>
<td>33622</td>
<td>33623</td>
</tr>
</tbody>
</table>

For front and horizontal rear connection.

**Cable Lug Adapters 250/630-1600 A**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P (3 parts)</th>
<th>4P (4 parts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>33644</td>
<td>33645</td>
</tr>
</tbody>
</table>

**Cable Lug Kits**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P (6 lug kit)</th>
<th>4P (8 lug kit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 mm²</td>
<td>33013</td>
<td>33014</td>
</tr>
<tr>
<td>300 mm²</td>
<td>33015</td>
<td>33016</td>
</tr>
</tbody>
</table>
## Chassis locking

### "Disconnected" position locking

<table>
<thead>
<tr>
<th>Method</th>
<th>Profalux</th>
<th>Ronis</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCPO Standard</td>
<td>Profalux</td>
<td>Ronis 1 lock with 1 key + adaptation kit</td>
<td>33773</td>
</tr>
<tr>
<td>By padlocks</td>
<td>2 locks 1 key + adaptation kit</td>
<td>33774</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>33775</td>
<td></td>
</tr>
<tr>
<td>1 key lock Profalux</td>
<td>identical key not identified combination</td>
<td>33173</td>
<td></td>
</tr>
<tr>
<td>(without adaptation kit)</td>
<td>identical key identified 215470 combination</td>
<td>33174</td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key identified 215471 combination</td>
<td>33175</td>
<td></td>
</tr>
<tr>
<td>By Ronis keylocks</td>
<td>Ronis 1 lock with 1 key + adaptation kit</td>
<td>33776</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit</td>
<td>33777</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>33778</td>
<td></td>
</tr>
<tr>
<td>1 key lock Ronis (without</td>
<td>identical key not identified combination</td>
<td>33189</td>
<td></td>
</tr>
<tr>
<td>adaptation kit)</td>
<td>identical key identified EL24135 combination</td>
<td>33190</td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24153 combination</td>
<td>33191</td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24315 combination</td>
<td>33192</td>
<td></td>
</tr>
</tbody>
</table>

**Optional disconnected/test/connected position locking**

- Adaptation kit (without keylock):
  - Profalux: 33769
  - Ronis: 33770
  - Castell: 33771
  - Kirk: 33772

### Door interlock (1 part)

- Right-hand side of chassis (VPECD): 33786
- Left-hand side of chassis (VPECQ): 33787

### Racking interlock

- Racking interlock (VPOC): 33788

### Breaker mismatch protection

- Breaker mismatch protection (VDC): 33767

## Chassis accessories

### Arc chute cover

- 3P/4P Standard: 33763

### Auxiliary terminal shield (CB)

- Terminal shield: 3P, 4P
- 3P: 33764
- 4P: 33765

### Safety shutters as standard

- Safety shutters (VO): 3P, 4P
  - 3P Standard: 33766
  - 4P Standard: 33767

---

**Catalog numbers**

www.se.com
### Catalog numbers

**NT06 to NT16 drawout circuit breakers**

**Indication contacts**

<table>
<thead>
<tr>
<th>Description</th>
<th>Contacts (6 A - 240 V)</th>
<th>Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ON/OFF indication contacts (OF)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changeover contacts</td>
<td>4 (standard)</td>
<td></td>
</tr>
<tr>
<td>1 low-level OF to replace 1 standard OF (4 max.)</td>
<td></td>
<td>33806</td>
</tr>
<tr>
<td><strong>“Fault trip” indication contacts (SDE)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changeover contact</td>
<td>1 (standard)</td>
<td></td>
</tr>
<tr>
<td>1 additional SDE (6 A - 240 V)</td>
<td></td>
<td>47430</td>
</tr>
<tr>
<td>1 additional low-level SDE</td>
<td></td>
<td>47431</td>
</tr>
<tr>
<td><strong>Programmable contacts (programmed via MicroLogic control unit)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 contacts M2C (6 A - 240 V)</td>
<td></td>
<td>47483</td>
</tr>
</tbody>
</table>

(*) for MicroLogic control units P and H only.

<table>
<thead>
<tr>
<th>Description</th>
<th>Contacts (6 A - 240 V)</th>
<th>Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carriage switches (connected / disconnected / test position)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changeover contacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 connected position contact (3 max.)</td>
<td></td>
<td>33751</td>
</tr>
<tr>
<td>1 test position contact (1 max.)</td>
<td></td>
<td>33752</td>
</tr>
<tr>
<td>1 disconnected position contact (2 max.)</td>
<td></td>
<td>33753</td>
</tr>
<tr>
<td>And/or low-level changeover contacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 connected position contact (3 max.)</td>
<td></td>
<td>33754</td>
</tr>
<tr>
<td>1 test position contact (1 max.)</td>
<td></td>
<td>33755</td>
</tr>
<tr>
<td>1 disconnected position contact (2 max.)</td>
<td></td>
<td>33756</td>
</tr>
<tr>
<td><strong>Auxiliary terminals for chassis alone</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 wire terminal (30 parts)</td>
<td></td>
<td>47071</td>
</tr>
<tr>
<td>6 wire terminal (10 parts)</td>
<td></td>
<td>47072</td>
</tr>
<tr>
<td>Jumpers (10 parts)</td>
<td></td>
<td>47900</td>
</tr>
</tbody>
</table>

[www.se.com](http://www.se.com)
### Remote ON/OFF

**Gear motor**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>47461</td>
</tr>
<tr>
<td>48 V</td>
<td></td>
</tr>
<tr>
<td>100/130 V</td>
<td>47465</td>
</tr>
<tr>
<td>200/240 V</td>
<td>47466</td>
</tr>
<tr>
<td>277/415 V</td>
<td>47468</td>
</tr>
<tr>
<td>440/480 V</td>
<td>47470</td>
</tr>
<tr>
<td>DC</td>
<td>47460</td>
</tr>
<tr>
<td>24/30 V</td>
<td>47461</td>
</tr>
<tr>
<td>48/60 V</td>
<td>47465</td>
</tr>
<tr>
<td>100/130 V</td>
<td>47462</td>
</tr>
<tr>
<td>200/250 V</td>
<td>47463</td>
</tr>
</tbody>
</table>

### Instantaneous voltage release

<table>
<thead>
<tr>
<th>Standard</th>
<th>Closing release</th>
<th>Opening release</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>33809</td>
</tr>
<tr>
<td>DC</td>
<td>47439</td>
<td>33810</td>
</tr>
<tr>
<td>24/30 V DC, 24 V AC</td>
<td>47440</td>
<td>33811</td>
</tr>
<tr>
<td>48/60 V DC, 48 V AC</td>
<td>47441</td>
<td>33812</td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>47442</td>
<td>33813</td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>47443</td>
<td>33814</td>
</tr>
<tr>
<td>277 V AC</td>
<td>47444</td>
<td>33815</td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>47445</td>
<td>33816</td>
</tr>
</tbody>
</table>

**Communicating**

| AC 50/60 Hz       | 12 V DC         | 33791           |
| DC                | 47411           | 33792           |
| 24/30 V DC, 24 V AC| 47412           | 33793           |
| 48/60 V DC, 48 V AC| 47413           | 33794           |
| 100/130 V AC/DC   | 47414           | 33795           |
| 200/250 V AC/DC   | 47415           | 33796           |
| 277 V AC          | 47416           | 33797           |
| 380/480 V AC      | 47417           |

**“Ready to close” contact (1 max.)**

- 1 changeover contact (1 A - 240 V) 47432
- 1 low-level changeover contact 47433

### Electrical closing pushbutton

<table>
<thead>
<tr>
<th>1 pushbutton</th>
<th>BPFE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>47512</td>
</tr>
</tbody>
</table>

### Remote reset after fault trip

**Electrical reset**

<table>
<thead>
<tr>
<th>110/130 V AC</th>
<th>RES</th>
</tr>
</thead>
<tbody>
<tr>
<td>47454</td>
<td></td>
</tr>
</tbody>
</table>

**Automatic reset**

<table>
<thead>
<tr>
<th>Adaptation</th>
<th>47346</th>
</tr>
</thead>
</table>

### Remote tripping

**Instantaneous voltage release**

<table>
<thead>
<tr>
<th>AC 50/60 Hz</th>
<th>2nd MX or MN</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>12 V DC</td>
</tr>
<tr>
<td>47444</td>
<td>33819</td>
</tr>
<tr>
<td>24/30 V DC, 24 V AC</td>
<td>47450</td>
</tr>
<tr>
<td>48/60 V DC, 48 V AC</td>
<td>47451</td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>47452</td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>47453</td>
</tr>
<tr>
<td>277 V AC</td>
<td>47454</td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>47455</td>
</tr>
</tbody>
</table>

**MN delay unit**

| AC 50/60 Hz       | R (non-adjustable) |
| DC                | 47360             |
| 47361             |
| 100/130 V AC/DC   | 33684             |
| 200/250 V AC/DC   | 33685             |
| 380/480 V AC/DC   | 33686             |

**Rr (adjustable)**

| 33680             |
| 33681             |
| 33682             |
| 33683             |
# Accessories for NT06 to NT16 fixed or drawout circuit breakers

## Circuit breaker locking

### Pushbutton locking device

| By padlocks | 33897 |

## OFF position locking

### By padlocks + BPFE support

| VCPO | 47514 |

### By Profalux keylocks

1. 1 lock with 1 key + adaptation kit | 47519 |
2. 2 locks 1 key + adaptation kit | 47520 |

<table>
<thead>
<tr>
<th>1 keylock Profalux (without adaptation kit):</th>
</tr>
</thead>
<tbody>
<tr>
<td>identical key not identified combination</td>
</tr>
<tr>
<td>identical key identified 215470 combination</td>
</tr>
<tr>
<td>identical key identified 215471 combination</td>
</tr>
</tbody>
</table>

### By Ronis keylocks + BPFE support

1. 1 lock with 1 key + adaptation kit | 47521 |
2. 2 locks 1 key + adaptation kit | 47522 |

<table>
<thead>
<tr>
<th>1 keylock Ronis (without adaptation kit):</th>
</tr>
</thead>
<tbody>
<tr>
<td>identical key not identified combination</td>
</tr>
<tr>
<td>identical key identified EL24135 combination</td>
</tr>
<tr>
<td>identical key identified EL24153 combination</td>
</tr>
<tr>
<td>identical key identified EL24315 combination</td>
</tr>
</tbody>
</table>

## Cable-type door interlock

1. 1 complete assembly for MasterPact NT fixed devices | 33920 |
2. 1 complete assembly for MasterPact NT drawout devices | 33921 |

## Mechanical interlocking for TransferPact source changeover

### Interlocking using connecting rods

Complete assembly with 2 adaptation fixtures + rods

| 2 MasterPact NT fixed devices | 33912 |
| 2 MasterPact NT drawout devices | 33913 |

### Interlocking using cables (*)

Choose 2 adaptation fixtures (1 for each breaker) + 1 set of cables

| 1 adaptation fixture for MasterPact NT fixed devices | 33200 |
| 1 adaptation fixture for MasterPact NT drawout devices | 33201 |
| 1 set of 2 cables | 33209 |

(*) Can be used with any combination of NT or NW, fixed or drawout devices.

## Other circuit breaker accessories

### Mechanical operation counter

| Operation counter CDM | 33895 |

### Escutcheon and accessories

<table>
<thead>
<tr>
<th></th>
<th>Fixed</th>
<th>Drawout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escutcheon</td>
<td>33718</td>
<td>33857</td>
</tr>
<tr>
<td>Transparent cover (IP54)</td>
<td>33859</td>
<td></td>
</tr>
<tr>
<td>Escutcheon blanking plate</td>
<td>33858</td>
<td></td>
</tr>
</tbody>
</table>
# Accessories for MicroLogic control units

## External sensors

**External sensor for earth-leakage protection (TCE)**

<table>
<thead>
<tr>
<th>Sensor rating</th>
<th>400/1600 A (for MicroLogic P and H with 3P devices)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>33576</td>
</tr>
</tbody>
</table>

**Rectangular sensor for earth-leakage protection**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>280 mm x 115 mm / L1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>56053</td>
</tr>
</tbody>
</table>

## Source ground return (SGR) earth fault protection

**External sensor (SGR)**

| Catalog number | 33579 |

**MDGF summing module**

| Catalog number | 48891 |

## Voltage measurement input (for breakers supplied via bottom terminals)

**Voltage measurement input**

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Fixed</th>
<th>Drawout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>47506</td>
<td>47507</td>
</tr>
</tbody>
</table>

## Long-time rating plug (limits setting range for higher accuracy)

**Standard**

<table>
<thead>
<tr>
<th>Setting Range</th>
<th>0.4 to 1 x Ir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>33542</td>
</tr>
</tbody>
</table>

**Low-setting option**

<table>
<thead>
<tr>
<th>Setting Range</th>
<th>0.4 to 0.8 x Ir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>33543</td>
</tr>
</tbody>
</table>

**High-setting option**

<table>
<thead>
<tr>
<th>Setting Range</th>
<th>0.8 to 1 x Ir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>33544</td>
</tr>
</tbody>
</table>

**Without long-time protection**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>33545</td>
</tr>
</tbody>
</table>

## Zone Selective Interlocking option for MicroLogic P and H

**ZSI Standard**

| Catalog number | 48891 |

## External power supply module (AD)

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>24/30 V DC</th>
<th>48/60 V DC</th>
<th>100/125 V DC</th>
<th>110/130 V AC</th>
<th>200/240 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>LV454440</td>
<td>LV454441</td>
<td>LV454442</td>
<td>LV454443</td>
<td>LV454444</td>
</tr>
</tbody>
</table>

## Battery module (BAT)

<table>
<thead>
<tr>
<th>Battery Type</th>
<th>1 battery 24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>54446</td>
</tr>
</tbody>
</table>

## Test equipment

### Mini test kit

**Hand held test kit (HHTK)**

| Catalog number | 33594 |

### Portable test kit

**Full function test kit (FFTK)**

| Catalog number | 33595 |

**Test report edition come from FFTK**

| Catalog number | 34559 |

**FFTK test cable 2 pin for STR trip unit**

| Catalog number | 34560 |

**FFTK test cable 7 pin for MicroLogic trip unit**

| Catalog number | 33590 |

## Special settings

**Sensor rating**

<table>
<thead>
<tr>
<th>Rating</th>
<th>NT02</th>
<th>NT06</th>
<th>NT08</th>
<th>NT10</th>
<th>NT12</th>
<th>NT16</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>630</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1250</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**To be specified when ordering**
A MasterPact fixed switch-disconnector is described by 3 catalog numbers corresponding to:
- the basic switch-disconnector
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

<table>
<thead>
<tr>
<th>Basic switch-disconnector</th>
<th>Type HA</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In (A at 40 °C) Icm (kA peak for U = 220/690 V)</td>
<td></td>
</tr>
<tr>
<td>NT06</td>
<td>630</td>
<td>47159</td>
<td>47160</td>
</tr>
<tr>
<td>NT08</td>
<td>800</td>
<td>47161</td>
<td>47162</td>
</tr>
<tr>
<td>NT10</td>
<td>1000</td>
<td>47163</td>
<td>47164</td>
</tr>
<tr>
<td>NT12</td>
<td>1250</td>
<td>47165</td>
<td>47166</td>
</tr>
<tr>
<td>NT16</td>
<td>1600</td>
<td>47167</td>
<td>47168</td>
</tr>
</tbody>
</table>

Communication option
- Modbus CCM | 47405

Brand option
- Square D brand | Label | 47802

Auxiliaries and accessories:
- for fixed devices: see page F-5
- for fixed or drawout devices: see page F-12
- Source changeover assembly: see page F-12
# NT06 to NT16 fixed switch-disconnectors

## Connections

### Front connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A Top</td>
<td>47328</td>
<td>47330</td>
</tr>
<tr>
<td>Bottom</td>
<td>47329</td>
<td>47331</td>
</tr>
</tbody>
</table>

### Front connection accessories

#### Vertical connection adapters 250/630-1600 A

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P (3 parts)</td>
<td>33642</td>
<td></td>
</tr>
<tr>
<td>4P (4 parts)</td>
<td>33643</td>
<td></td>
</tr>
</tbody>
</table>

#### Interphase barriers

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P/4P top (3 parts)</td>
<td>33646</td>
<td></td>
</tr>
<tr>
<td>3P/4P bottom (3 parts)</td>
<td>33646</td>
<td></td>
</tr>
</tbody>
</table>

### Rear connection

#### Vertical connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A Top</td>
<td>33604</td>
<td>33614</td>
</tr>
<tr>
<td>Bottom</td>
<td>33605</td>
<td>33615</td>
</tr>
</tbody>
</table>

#### Horizontal connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A Top</td>
<td>33606</td>
<td>33616</td>
</tr>
<tr>
<td>Bottom</td>
<td>33607</td>
<td>33617</td>
</tr>
</tbody>
</table>

### Rear connection accessories

#### Interphase barriers

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P/4P top (3 parts)</td>
<td>33648</td>
<td></td>
</tr>
<tr>
<td>3P/4P bottom (3 parts)</td>
<td>33648</td>
<td></td>
</tr>
</tbody>
</table>

### Common accessories for front and rear connection

#### Spreader

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/630-1600 A</td>
<td>33622</td>
<td>33623</td>
</tr>
</tbody>
</table>

For front and horizontal rear connection

#### Cable lug adapters 250/630-1600 A

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P (3 parts)</td>
<td>33644</td>
<td></td>
</tr>
<tr>
<td>4P (4 parts)</td>
<td>33645</td>
<td></td>
</tr>
</tbody>
</table>

#### Cable lug kits

<table>
<thead>
<tr>
<th>Current</th>
<th>3P (8 lug kit)</th>
<th>4P (8 lug kit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 mm²</td>
<td>33013</td>
<td>33014</td>
</tr>
<tr>
<td>300 mm²</td>
<td>33015</td>
<td>33016</td>
</tr>
</tbody>
</table>
A MasterPact drawout switch-disconnector is described by 4 catalog numbers corresponding to:
- the basic switch-disconnector
- a chassis
- a top connection
- a bottom connection.

A communication option and various auxiliaries and accessories may also be added.

### Basic switch-disconnector

**Type HA**

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT06</td>
<td>630 75</td>
<td>47248</td>
</tr>
<tr>
<td>NT08</td>
<td>800 75</td>
<td>47250</td>
</tr>
<tr>
<td>NT10</td>
<td>1000 75</td>
<td>47252</td>
</tr>
<tr>
<td>NT12</td>
<td>1250 75</td>
<td>47254</td>
</tr>
<tr>
<td>NT16</td>
<td>1600 75</td>
<td>47256</td>
</tr>
</tbody>
</table>

**Chassis**

<table>
<thead>
<tr>
<th></th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>630/1250 A</td>
<td>33722</td>
<td>33725</td>
</tr>
<tr>
<td>1600 A</td>
<td>33723</td>
<td>33726</td>
</tr>
</tbody>
</table>

**Communication option**

<table>
<thead>
<tr>
<th>Chassis + Switch-disconnector</th>
<th>COM (BCM-ULP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>33852</td>
</tr>
<tr>
<td>4P</td>
<td>47485</td>
</tr>
</tbody>
</table>

**Brand option**

| Square D brand | Label | 47802 |

---

Auxiliaries and accessories:
- for fixed devices: see page F-9
- for fixed or drawout devices: see page F-12.
Source changeover assembly: see page F-12.
# NT06 to NT16 drawout switch-disconnectors

## Connections

### Chassis front connection

<table>
<thead>
<tr>
<th>250/630-1600 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>33727</td>
<td>33733</td>
</tr>
<tr>
<td>Bottom</td>
<td>33728</td>
<td>33734</td>
</tr>
</tbody>
</table>

### Front connection accessories

**Vertical connection adapters 250/630-1600 A**

| 3P (3 parts) | 33642 |
| 4P (4 parts) | 33643 |

### Chassis rear connection

**Vertical connection**

<table>
<thead>
<tr>
<th>250/630-1600 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>33729</td>
<td>33735</td>
</tr>
<tr>
<td>Bottom</td>
<td>33730</td>
<td>33736</td>
</tr>
</tbody>
</table>

**Horizontal connection**

<table>
<thead>
<tr>
<th>250/630-1600 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>33731</td>
<td>33737</td>
</tr>
<tr>
<td>Bottom</td>
<td>33732</td>
<td>33738</td>
</tr>
</tbody>
</table>

### Rear connection accessories

**Interphase barriers**

| 3P/4P (3 parts) | 33768 |

### Common accessories for front and rear connection

**Spreaders**

<table>
<thead>
<tr>
<th>250/630-1600 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>33622</td>
<td>33623</td>
</tr>
</tbody>
</table>

For front and horizontal rear connection

**Cable lug adapters 250/630-1600 A**

| 3P (3 parts) | 33644 |
| 4P (4 parts) | 33645 |

**Cable lug kits**

| 240 mm² | 3P (6 lug kit) | 33013 |
| 4P (8 lug kit) | 33014 |
| 300 mm² | 3P (6 lug kit) | 33015 |
| 4P (8 lug kit) | 33016 |
A MasterPact fixed circuit breaker is described by 4 catalog numbers corresponding to:
- the basic circuit breaker
- a control unit
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

### Basic circuit breaker

#### Type N1

<table>
<thead>
<tr>
<th>In (A at 40 ºC) Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08 800 42</td>
<td>48000 48007</td>
</tr>
<tr>
<td>NW10 1000 42</td>
<td>48014 48021</td>
</tr>
<tr>
<td>NW12 1250 42</td>
<td>48028 48035</td>
</tr>
<tr>
<td>NW16 1600 42</td>
<td>48042 48049</td>
</tr>
<tr>
<td>NW20 2000 42</td>
<td>48056 48063</td>
</tr>
</tbody>
</table>

#### Type H1

<table>
<thead>
<tr>
<th>In (A at 40 ºC) Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08 800 65</td>
<td>48189 48190</td>
</tr>
<tr>
<td>NW10 1000 65</td>
<td>48001 48008</td>
</tr>
<tr>
<td>NW12 1250 65</td>
<td>48015 48022</td>
</tr>
<tr>
<td>NW16 1600 65</td>
<td>48029 48036</td>
</tr>
<tr>
<td>NW20 2000 65</td>
<td>48043 48050</td>
</tr>
<tr>
<td>NW25 2000 65</td>
<td>48057 48064</td>
</tr>
<tr>
<td>NW32 3000 65</td>
<td>48070 48076</td>
</tr>
<tr>
<td>NW40 4000 65</td>
<td>48082 48087</td>
</tr>
<tr>
<td>NW40b 4000 100</td>
<td>48106 48109</td>
</tr>
<tr>
<td>NW50 5000 100</td>
<td>48112 48115</td>
</tr>
<tr>
<td>NW63 6300 100</td>
<td>48118 48121</td>
</tr>
</tbody>
</table>

#### Type H2

<table>
<thead>
<tr>
<th>In (A at 40 ºC) Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08 800 100</td>
<td>48002 48009</td>
</tr>
<tr>
<td>NW10 1000 100</td>
<td>48016 48023</td>
</tr>
<tr>
<td>NW12 1250 100</td>
<td>48030 48037</td>
</tr>
<tr>
<td>NW16 1600 100</td>
<td>48044 48051</td>
</tr>
<tr>
<td>NW20 2000 100</td>
<td>48058 48065</td>
</tr>
<tr>
<td>NW25 2500 100</td>
<td>48071 48077</td>
</tr>
<tr>
<td>NW32 3200 100</td>
<td>48083 48088</td>
</tr>
<tr>
<td>NW40 4000 100</td>
<td>48093 48098</td>
</tr>
<tr>
<td>NW40b 4000 150</td>
<td>48107 48110</td>
</tr>
<tr>
<td>NW50 5000 150</td>
<td>48113 48116</td>
</tr>
<tr>
<td>NW63 6300 150</td>
<td>48119 48122</td>
</tr>
</tbody>
</table>

### Option

Neutral on the right [1]

<table>
<thead>
<tr>
<th>MicroLogic control unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ammeter&quot; A</td>
</tr>
<tr>
<td>MicroLogic 2.0 A basic protection</td>
</tr>
<tr>
<td>MicroLogic 5.0 A selective protection</td>
</tr>
<tr>
<td>MicroLogic 6.0 A selective + earth-fault protection</td>
</tr>
<tr>
<td>MicroLogic 7.0 A(2) selective + earth-leakage protection</td>
</tr>
<tr>
<td>&quot;energy&quot; E</td>
</tr>
<tr>
<td>MicroLogic 2.0 E basic protection</td>
</tr>
<tr>
<td>MicroLogic 5.0 E selective protection</td>
</tr>
<tr>
<td>MicroLogic 6.0 E selective + earth-fault protection</td>
</tr>
<tr>
<td>&quot;power meter&quot; P</td>
</tr>
<tr>
<td>MicroLogic 5.0 P selective protection</td>
</tr>
<tr>
<td>MicroLogic 6.0 P selective + earth-fault protection</td>
</tr>
<tr>
<td>MicroLogic 7.0 P(2) selective + earth-leakage protection</td>
</tr>
<tr>
<td>&quot;harmonic meter&quot; H</td>
</tr>
<tr>
<td>MicroLogic 5.0 H selective protection</td>
</tr>
<tr>
<td>MicroLogic 6.0 H selective + earth-fault protection</td>
</tr>
<tr>
<td>MicroLogic 7.0 H(2) selective + earth-leakage protection</td>
</tr>
</tbody>
</table>

### Communication option

<table>
<thead>
<tr>
<th>COM (BCM-ULP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>48188</td>
</tr>
<tr>
<td>Eco COM module (BCM-ULP)</td>
</tr>
<tr>
<td>IFE Ethernet interface for LV breaker</td>
</tr>
<tr>
<td>Ethernet interface for LV breakers and gateway</td>
</tr>
<tr>
<td>IFM Modbus-SL interface module</td>
</tr>
<tr>
<td>I/O application module</td>
</tr>
</tbody>
</table>

---

(1) Select a 4P basic circuit breaker with neutral on the right page F-34.
All other catalog numbers are unchanged.
(2) Only for breaker up to 3200A
Auxiliaries and accessories:
- for fixed devices: see page F-20
- for fixed or drawout devices: see page F-28.
Switch-disconnector version: see page F-30.
Source changeover assembly: see page F-28.
### Catalog numbers

#### NW08 to NW63 fixed circuit breakers

#### Connections

#### Front connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/800-1600 A</td>
<td>48128</td>
<td>48153</td>
</tr>
<tr>
<td>2000 A</td>
<td>48130</td>
<td>48155</td>
</tr>
<tr>
<td>2500/3200 A</td>
<td>48129</td>
<td>48154</td>
</tr>
</tbody>
</table>

#### Front connection accessories

#### Disconnectable front connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600 A</td>
<td>48421</td>
<td>48424</td>
</tr>
<tr>
<td>2000/3200 A</td>
<td>48422</td>
<td>48425</td>
</tr>
</tbody>
</table>

#### Rear connection

#### Vertical connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/800-2000 A</td>
<td>48133</td>
<td>48158</td>
</tr>
<tr>
<td>800-1600 A type L1</td>
<td>48138</td>
<td>48163</td>
</tr>
<tr>
<td>2000 A types H3/L1</td>
<td>48139</td>
<td>48164</td>
</tr>
<tr>
<td>4000 A</td>
<td>48135</td>
<td>48160</td>
</tr>
<tr>
<td>4000b/5000 A</td>
<td>48136</td>
<td>48161</td>
</tr>
<tr>
<td>6300 A</td>
<td>48137</td>
<td>48162</td>
</tr>
</tbody>
</table>

#### Horizontal connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/800-2000 A</td>
<td>48143</td>
<td>48168</td>
</tr>
<tr>
<td>800-1600 A type L1</td>
<td>48148</td>
<td>48173</td>
</tr>
<tr>
<td>2500/3200 A</td>
<td>48144</td>
<td>48169</td>
</tr>
<tr>
<td>2000 A types H3/L1</td>
<td>48149</td>
<td>48174</td>
</tr>
<tr>
<td>4000 A</td>
<td>48145</td>
<td>48170</td>
</tr>
<tr>
<td>4000b/5000 A</td>
<td>48146</td>
<td>48171</td>
</tr>
</tbody>
</table>

#### Rear connection accessories

#### Interphase barriers

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P/4P (3 parts)</td>
<td>48599</td>
</tr>
</tbody>
</table>

#### Brackets for mounting on a backplate

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 parts</td>
<td>47829</td>
</tr>
</tbody>
</table>

#### Brand option

#### Square D brand Label

<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>47802</td>
</tr>
</tbody>
</table>

#### Grounding kit

#### Grounding kit for MasterPact NW fixed

<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>48558</td>
</tr>
</tbody>
</table>
**Catalog numbers**

**NW08 to NW63 fixed circuit breakers**

**Indication contacts**

<table>
<thead>
<tr>
<th><strong>ON/OFF indication contacts (OF)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Block of 4 changeover contacts (6 A - 240 V)</td>
<td>1 block (standard)</td>
</tr>
<tr>
<td>1 additional block of 4 contacts (2 max.)</td>
<td>48198</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>“Fault trip” indication contacts (SDE)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeover contact (6 A - 240 V)</td>
<td>1 (standard)</td>
</tr>
<tr>
<td>1 additional SDE (6 A - 240 V)</td>
<td>48200</td>
</tr>
<tr>
<td>1 additional low-level SDE</td>
<td>48201</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Programmable contacts (*) (programmed via MicroLogic control unit)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 contacts M2C (5 A - 240 V)</td>
<td>47403</td>
</tr>
<tr>
<td>6 changeover contacts M6C (5 A - 240 V)</td>
<td>47404</td>
</tr>
</tbody>
</table>

(*) For MicroLogic control units P and H only.
## Remote ON/OFF

### Gear motor

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>Voltage Range</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>48 V</td>
<td>48207</td>
</tr>
<tr>
<td></td>
<td>100/130 V</td>
<td>48211</td>
</tr>
<tr>
<td></td>
<td>200/240 V</td>
<td>48212</td>
</tr>
<tr>
<td></td>
<td>250/277 V</td>
<td>48213</td>
</tr>
<tr>
<td></td>
<td>380/415 V</td>
<td>48214</td>
</tr>
<tr>
<td></td>
<td>440/480 V</td>
<td>48215</td>
</tr>
<tr>
<td>DC</td>
<td>24/30 V</td>
<td>48206</td>
</tr>
<tr>
<td></td>
<td>48/60 V</td>
<td>48207</td>
</tr>
<tr>
<td></td>
<td>100/130 V</td>
<td>48208</td>
</tr>
<tr>
<td></td>
<td>200/250 V</td>
<td>48209</td>
</tr>
</tbody>
</table>

## Instantaneous voltage releases

### Standard

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>Voltage Range</th>
<th>Closing Release</th>
<th>Opening Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>47349</td>
<td>47359</td>
</tr>
<tr>
<td></td>
<td>24/30 V DC, 24 V AC</td>
<td>47350</td>
<td>47360</td>
</tr>
<tr>
<td></td>
<td>48/60 V DC, 48 V AC</td>
<td>47351</td>
<td>47361</td>
</tr>
<tr>
<td></td>
<td>100/130 V AC/DC</td>
<td>47352</td>
<td>47362</td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>47353</td>
<td>47363</td>
</tr>
<tr>
<td></td>
<td>277 V AC</td>
<td>47354</td>
<td>47364</td>
</tr>
<tr>
<td></td>
<td>380/480 V AC</td>
<td>47355</td>
<td>47365</td>
</tr>
</tbody>
</table>

### Communicating

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>Voltage Range</th>
<th>Closing Release</th>
<th>Opening Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>47310</td>
<td>47320</td>
</tr>
<tr>
<td></td>
<td>24/30 V DC, 24 V AC</td>
<td>47311</td>
<td>47321</td>
</tr>
<tr>
<td></td>
<td>48/60 V DC, 48 V AC</td>
<td>47312</td>
<td>47322</td>
</tr>
<tr>
<td></td>
<td>100/130 V AC/DC</td>
<td>47313</td>
<td>47323</td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>47314</td>
<td>47324</td>
</tr>
<tr>
<td></td>
<td>277 V AC</td>
<td>47315</td>
<td>47325</td>
</tr>
<tr>
<td></td>
<td>380/480 V AC</td>
<td>47316</td>
<td>47326</td>
</tr>
</tbody>
</table>

### "Ready to close" contact (1 max.)

<table>
<thead>
<tr>
<th>Contact Type</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 changeover contact (5 A - 240 V)</td>
<td>47342</td>
</tr>
<tr>
<td>1 low-level changeover contact</td>
<td>47343</td>
</tr>
</tbody>
</table>

## Electrical closing pushbutton

<table>
<thead>
<tr>
<th>Contact Type</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pushbutton</td>
<td>48534</td>
</tr>
</tbody>
</table>

## Remote reset after fault trip

### Electrical reset

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>Voltage Range</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>110/130 V AC</td>
<td>48202</td>
</tr>
<tr>
<td></td>
<td>220/240 V AC</td>
<td>48203</td>
</tr>
</tbody>
</table>

### Automatic reset

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>Voltage Range</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RAR</td>
<td>47346</td>
</tr>
</tbody>
</table>

## Remote tripping

### Instantaneous voltage release

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>Voltage Range</th>
<th>2nd MX</th>
<th>or</th>
<th>MN</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>47369</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24/30 V DC, 24 V AC</td>
<td>47370</td>
<td>47380</td>
<td></td>
</tr>
<tr>
<td></td>
<td>48/60 V DC, 48 V AC</td>
<td>47371</td>
<td>47381</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100/130 V AC/DC</td>
<td>47372</td>
<td>47382</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>47373</td>
<td>47383</td>
<td></td>
</tr>
<tr>
<td></td>
<td>277 V AC</td>
<td>47374</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>380/480 V AC</td>
<td>47375</td>
<td>47385</td>
<td></td>
</tr>
</tbody>
</table>

## MN delay unit

<table>
<thead>
<tr>
<th>Voltage Type</th>
<th>Voltage Range</th>
<th>R (non-adjustable)</th>
<th>Rr (adjustable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>48/60 V AC/DC</td>
<td>33680</td>
<td>33681</td>
</tr>
<tr>
<td></td>
<td>100/130 V AC/DC</td>
<td>33682</td>
<td>33683</td>
</tr>
<tr>
<td></td>
<td>200/250 V AC/DC</td>
<td>33684</td>
<td>33685</td>
</tr>
<tr>
<td></td>
<td>380/480 V AC/DC</td>
<td>33686</td>
<td>33687</td>
</tr>
</tbody>
</table>
A MasterPact drawout circuit breaker is described by 5 catalog numbers corresponding to:
- the basic circuit breaker
- a control unit
- a chassis
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

---

**Basic circuit breaker**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NW08</td>
<td>800</td>
<td>42</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>42</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>42</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>42</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>42</td>
</tr>
</tbody>
</table>

---

**Type H1**

<table>
<thead>
<tr>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW02</td>
<td>250</td>
<td>65</td>
</tr>
<tr>
<td>NW08</td>
<td>800</td>
<td>65</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>65</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>65</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>65</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>65</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>65</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>65</td>
</tr>
<tr>
<td>NW40</td>
<td>4000</td>
<td>65</td>
</tr>
<tr>
<td>NW40b</td>
<td>4000</td>
<td>100</td>
</tr>
<tr>
<td>NW50</td>
<td>5000</td>
<td>100</td>
</tr>
<tr>
<td>NW63</td>
<td>6300</td>
<td>100</td>
</tr>
</tbody>
</table>

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**Type H2**

<table>
<thead>
<tr>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08</td>
<td>800</td>
<td>100</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>100</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>100</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>100</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>100</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>100</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>100</td>
</tr>
<tr>
<td>NW40</td>
<td>4000</td>
<td>150</td>
</tr>
<tr>
<td>NW40b</td>
<td>4000</td>
<td>150</td>
</tr>
<tr>
<td>NW50</td>
<td>5000</td>
<td>150</td>
</tr>
<tr>
<td>NW63</td>
<td>6300</td>
<td>150</td>
</tr>
</tbody>
</table>

---

**Type H3**

<table>
<thead>
<tr>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW20</td>
<td>2000</td>
<td>150</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>150</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>150</td>
</tr>
<tr>
<td>NW40</td>
<td>4000</td>
<td>150</td>
</tr>
</tbody>
</table>

---

**Type L1**

<table>
<thead>
<tr>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08</td>
<td>800</td>
<td>150</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>150</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>150</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>150</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>150</td>
</tr>
</tbody>
</table>

---

**Option**

Neutral on the right

<table>
<thead>
<tr>
<th>MicroLogic control unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ammeter&quot; A</td>
</tr>
<tr>
<td>MicroLogic 2.0 A basic protection</td>
</tr>
<tr>
<td>MicroLogic 5.0 A selective protection</td>
</tr>
<tr>
<td>MicroLogic 6.0 A selective + earth-fault protection</td>
</tr>
<tr>
<td>MicroLogic 7.0 A(2) selective + earth-leakage protection</td>
</tr>
</tbody>
</table>

| "energy" E             |
| MicroLogic 2.0 E basic protection | 3P/4P |
| MicroLogic 5.0 E selective protection | 48498 |
| MicroLogic 6.0 E selective + earth-fault protection | 48500 |

| "power meter" P       |
| MicroLogic 5.0 P selective protection | 3P/4P |
| MicroLogic 6.0 P selective + earth-fault protection | 48363 |
| MicroLogic 7.0 P(2) selective + earth-leakage protection | 48365 |

| "harmonic meter" H    |
| MicroLogic 5.0 H selective protection | 3P/4P |
| MicroLogic 6.0 H selective + earth-fault protection | 48366 |
| MicroLogic 7.0 H(2) selective + earth-leakage protection | 48368 |

---

**Grounding kit**

Grounding kit for MasterPact NW drawout | 48559 |
Catalog numbers
NW08 to NW63 drawout circuit breakers
Chassis and connections

**Chassis**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>For type N1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>800/1250 A</td>
<td>48391</td>
<td>48403</td>
</tr>
<tr>
<td>1600 A</td>
<td>48392</td>
<td>48404</td>
</tr>
<tr>
<td>For type H1/H2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250/800-1600 A</td>
<td>48392</td>
<td>48404</td>
</tr>
<tr>
<td>2000 A</td>
<td>48393</td>
<td>48405</td>
</tr>
<tr>
<td>2500 A</td>
<td>48394</td>
<td>48406</td>
</tr>
<tr>
<td>3200 A</td>
<td>48395</td>
<td>48407</td>
</tr>
<tr>
<td>4000 A</td>
<td>48396</td>
<td>48408</td>
</tr>
<tr>
<td>4000b/6300 A</td>
<td>48397</td>
<td>48409</td>
</tr>
<tr>
<td>For type H3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000/2500 A</td>
<td>48394</td>
<td>48406</td>
</tr>
<tr>
<td>3200 A</td>
<td>48395</td>
<td>48407</td>
</tr>
<tr>
<td>4000 A</td>
<td>48396</td>
<td>48408</td>
</tr>
<tr>
<td>For type L1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>800/1600 A</td>
<td>48399</td>
<td>48411</td>
</tr>
<tr>
<td>2000 A</td>
<td>48400</td>
<td>48412</td>
</tr>
</tbody>
</table>

**Communication option**

<table>
<thead>
<tr>
<th>Option</th>
<th>Chassis (I/O application module)</th>
<th>Circuit breaker (BCM-ULP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM (BCM-ULP)</td>
<td>33852</td>
<td>48384</td>
</tr>
<tr>
<td>Eco COM module (BCM-ULP)</td>
<td>33852</td>
<td>48385</td>
</tr>
<tr>
<td>IFE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet interface for LV breaker</td>
<td>LV434001</td>
<td></td>
</tr>
<tr>
<td>Ethernet interface for LV breakers and gateway</td>
<td>LV434002</td>
<td></td>
</tr>
<tr>
<td>iFM Modbus-SL interface module</td>
<td>LV434000</td>
<td></td>
</tr>
<tr>
<td>I/O application module</td>
<td>LV434063</td>
<td></td>
</tr>
</tbody>
</table>

**Chassis front connection**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/800-1600 A Top</td>
<td>48415</td>
<td>48441</td>
</tr>
<tr>
<td>Bottom</td>
<td>48418</td>
<td>48444</td>
</tr>
<tr>
<td>2000 A Top</td>
<td>48413</td>
<td>48417</td>
</tr>
<tr>
<td>Bottom</td>
<td>48414</td>
<td>48420</td>
</tr>
<tr>
<td>2500/3200 A Top</td>
<td>48416</td>
<td>48445</td>
</tr>
<tr>
<td>Bottom</td>
<td>48419</td>
<td>48446</td>
</tr>
</tbody>
</table>

**Chassis rear connection**

**Vertical connection**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/800-2000 A Top</td>
<td>48133</td>
<td>48158</td>
</tr>
<tr>
<td>Bottom</td>
<td>48138</td>
<td>48163</td>
</tr>
<tr>
<td>800-1600 A type L1 Top</td>
<td>48134</td>
<td>48159</td>
</tr>
<tr>
<td>Bottom</td>
<td>48139</td>
<td>48164</td>
</tr>
<tr>
<td>2000 A types H3/L1 Top</td>
<td>48135</td>
<td>48160</td>
</tr>
<tr>
<td>Bottom</td>
<td>48140</td>
<td>48165</td>
</tr>
<tr>
<td>4000 A Top</td>
<td>48136</td>
<td>48161</td>
</tr>
<tr>
<td>Bottom</td>
<td>48141</td>
<td>48166</td>
</tr>
<tr>
<td>6300 A Top</td>
<td>48137</td>
<td>48162</td>
</tr>
<tr>
<td>Bottom</td>
<td>48142</td>
<td>48167</td>
</tr>
</tbody>
</table>

**Horizontal connection**

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/800-2000 A Top</td>
<td>48143</td>
<td>48168</td>
</tr>
<tr>
<td>Bottom</td>
<td>48146</td>
<td>48173</td>
</tr>
<tr>
<td>800-1600 A type L1 Top</td>
<td>48144</td>
<td>48169</td>
</tr>
<tr>
<td>Bottom</td>
<td>48149</td>
<td>48174</td>
</tr>
<tr>
<td>2000 A types H3/L1 Top</td>
<td>48145</td>
<td>48170</td>
</tr>
<tr>
<td>Bottom</td>
<td>48150</td>
<td>48175</td>
</tr>
<tr>
<td>4000 A Top</td>
<td>48146</td>
<td>48171</td>
</tr>
<tr>
<td>Bottom</td>
<td>48151</td>
<td>48176</td>
</tr>
</tbody>
</table>

**Rear connection accessories**

- Interphase barriers: 3P/4P (3 parts) 48600

**Brand option**

- Square D brand Label 47802
## NW08 to NW63 drawout circuit breakers
### Chassis locking and accessories

#### Chassis locking

**"Disconnected" position locking**

<table>
<thead>
<tr>
<th>By padlocks</th>
<th>VCPO</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>By Profalux keylocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profalux</td>
<td>1 lock with 1 key + adaptation kit</td>
<td>48568</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit</td>
<td>48569</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>48570</td>
</tr>
<tr>
<td>1 key lock Profalux (without adaptation kit):</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key not identified combination</td>
<td>33173</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215470 combination</td>
<td>33174</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215471 combination</td>
<td>33175</td>
</tr>
<tr>
<td>By Profalux keylocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profalux</td>
<td>1 lock with 1 key + adaptation kit</td>
<td>48568</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit</td>
<td>48569</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>48570</td>
</tr>
<tr>
<td>1 key lock Profalux (without adaptation kit):</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key not identified combination</td>
<td>33173</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215470 combination</td>
<td>33174</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215471 combination</td>
<td>33175</td>
</tr>
</tbody>
</table>

#### Door interlock (1 part)

- Right-hand side of chassis: 48579
- Left-hand side of chassis: 48580

#### Racking interlock

1 part: 48582

#### Racking interlock between crank and OFF pushbutton

1 part: 48585

#### Automatic spring discharge before breaker removal

1 part: 48554

#### Breaker mismatch protection

Breaker mismatch protection VDC: 33767
## Chassis accessories

**Arc chute cover**

<table>
<thead>
<tr>
<th>3P/4P</th>
<th>Standard</th>
</tr>
</thead>
</table>

**Auxiliary terminal shield (CB)**

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>800/4000 A</td>
<td>48595</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4000b/6300 A</td>
<td>48596</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Safety shutters + locking block**

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P</th>
<th>4P</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>800/4000 A</td>
<td>48597</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4000b/6300 A</td>
<td>48598</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Shutter locking block (for remplacement)**

2 parts for 800/4000 A: 48591

**Front face shutter position indication and locking**

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P/4P</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>800/4000 A</td>
<td>48592</td>
<td></td>
</tr>
<tr>
<td>4000b/6300 A</td>
<td>48593</td>
<td></td>
</tr>
</tbody>
</table>

www.se.com
### ON/OFF indication contacts (OF)

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block of 4 changeover contacts (6 A - 240 V)</td>
<td>48468</td>
</tr>
<tr>
<td>1 additional block of 4 contacts (2 max.)</td>
<td></td>
</tr>
</tbody>
</table>

### Combined closed / connected contacts for use with 1 auxiliary contact

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 contact (5 A - 240 V) (8 max.)</td>
<td>48477</td>
</tr>
<tr>
<td>or 1 low-level contact (8 max.)</td>
<td>48478</td>
</tr>
</tbody>
</table>

### "Fault trip" indication contacts (SDE)

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeover contact (6 A - 240 V)</td>
<td>48475</td>
</tr>
<tr>
<td>1 additional SDE (6 A - 240 V)</td>
<td></td>
</tr>
<tr>
<td>or 1 additional low-level SDE</td>
<td>48476</td>
</tr>
</tbody>
</table>

### Programmable contacts (*) (programmed via MicroLogic control unit)

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 contacts M2C (5 A - 240 V)</td>
<td>48382</td>
</tr>
</tbody>
</table>

(*): For MicroLogic control units P and H only.

### Carriage switches (connected / disconnected / test position)

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeover contacts (8 A - 240 V)</td>
<td></td>
</tr>
<tr>
<td>1 connected position contact (3 max.)</td>
<td>33751</td>
</tr>
<tr>
<td>1 test position contact (3 max.)</td>
<td>33752</td>
</tr>
<tr>
<td>1 disconnected position contact (3 max.)</td>
<td>33753</td>
</tr>
<tr>
<td>and/or low-level changeover contacts</td>
<td></td>
</tr>
<tr>
<td>1 connected position contact (3 max.)</td>
<td>33754</td>
</tr>
<tr>
<td>1 test position contact (3 max.)</td>
<td>33755</td>
</tr>
<tr>
<td>1 disconnected position contact (3 max.)</td>
<td>33756</td>
</tr>
<tr>
<td>Actuator for additional carriage switches</td>
<td>48560</td>
</tr>
</tbody>
</table>

### Auxiliary terminals for chassis alone

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 wire terminal (30 parts)</td>
<td>47898</td>
</tr>
<tr>
<td>6 wire terminal (10 parts)</td>
<td>47899</td>
</tr>
<tr>
<td>Jumpers (10 parts)</td>
<td>47900</td>
</tr>
</tbody>
</table>
## Remote ON/OFF

**Gear motor**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>MCH</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>48 V</td>
<td>48522</td>
</tr>
<tr>
<td>100/130 V</td>
<td>48526</td>
<td></td>
</tr>
<tr>
<td>200/240 V</td>
<td>48527</td>
<td></td>
</tr>
<tr>
<td>250/277 V</td>
<td>48528</td>
<td></td>
</tr>
<tr>
<td>380/415 V</td>
<td>48529</td>
<td></td>
</tr>
<tr>
<td>440/480 V</td>
<td>48530</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>24/36 V</td>
<td>48521</td>
</tr>
<tr>
<td>48/65 V</td>
<td>48522</td>
<td></td>
</tr>
<tr>
<td>100/130 V</td>
<td>48523</td>
<td></td>
</tr>
<tr>
<td>200/250 V</td>
<td>48524</td>
<td></td>
</tr>
</tbody>
</table>

## Instantaneous voltage releases

<table>
<thead>
<tr>
<th>Standard</th>
<th>Closing release</th>
<th>Opening release</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>MX</td>
</tr>
<tr>
<td>DC</td>
<td>24/36 V DC, 48 V AC</td>
<td>48480</td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>48483</td>
<td></td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>48484</td>
<td></td>
</tr>
<tr>
<td>277 V AC</td>
<td>48485</td>
<td></td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>48486</td>
<td></td>
</tr>
<tr>
<td>Communicating</td>
<td>MX com</td>
<td>MX com</td>
</tr>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>48446</td>
</tr>
<tr>
<td>DC</td>
<td>24/36 V DC, 48 V AC</td>
<td>48449</td>
</tr>
<tr>
<td>48/60 V DC, 48 V AC</td>
<td>48450</td>
<td></td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>48451</td>
<td></td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>48452</td>
<td></td>
</tr>
<tr>
<td>277 V AC</td>
<td>48453</td>
<td></td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>48454</td>
<td></td>
</tr>
</tbody>
</table>

### “Ready to close” contact (1 max.)

- 1 changeover contact (5 A - 240 V)
- 1 low-level changeover contact

**Electrical closing pushbutton**

- 1 pushbutton

**Remote reset after fault trip**

- **Electrical reset**
  - RES
  - 110/130 V AC | 48472 |
  - 220/240 V AC | 48473 |
- **Automatic reset**
  - RAR
  - Adaptation | 47346 |

## Remote tripping

### Instantaneous voltage release

<table>
<thead>
<tr>
<th>Voltage</th>
<th>2nd MX</th>
<th>MN</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>12 V DC</td>
<td>48551</td>
</tr>
<tr>
<td>DC</td>
<td>24/36 V DC, 48 V AC</td>
<td>48510</td>
</tr>
<tr>
<td>48/60 V DC, 48 V AC</td>
<td>48512</td>
<td></td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>48513</td>
<td></td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>48514</td>
<td></td>
</tr>
<tr>
<td>277 V AC</td>
<td>48515</td>
<td></td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>48516</td>
<td></td>
</tr>
</tbody>
</table>

### MN delay unit

<table>
<thead>
<tr>
<th>Voltage</th>
<th>R (non-adjustable)</th>
<th>Rr (adjustable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>48/60 V AC/DC</td>
<td>33680</td>
</tr>
<tr>
<td>DC</td>
<td>100/130 V AC/DC</td>
<td>33681</td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>33682</td>
<td></td>
</tr>
<tr>
<td>380/480 V AC/DC</td>
<td>33683</td>
<td></td>
</tr>
</tbody>
</table>
## Accessories for NW08 to NW63 fixed and drawout circuit breakers

### Circuit breaker locking

**Pushbutton locking device**

<table>
<thead>
<tr>
<th>Method</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>By padlocks</td>
<td>48536</td>
</tr>
</tbody>
</table>

### OFF position locking

<table>
<thead>
<tr>
<th>Method</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>By padlocks</td>
<td>VCPO 48539</td>
</tr>
<tr>
<td>By Profalux keylocks</td>
<td>1 lock with 1 key + adaptation kit 48545</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit 48546</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit 48547</td>
</tr>
<tr>
<td>1 keylock Profalux (without adaptation kit):</td>
<td>identical key not identified combination 33189</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215470 combination 33174</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215471 combination 33175</td>
</tr>
<tr>
<td>By Ronis keylocks</td>
<td>1 lock with 1 key + adaptation kit 48549</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit 48550</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit 48551</td>
</tr>
<tr>
<td>1 keylock Ronis (without adaptation kit):</td>
<td>identical key not identified combination 33190</td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24135 combination 33190</td>
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<tr>
<td></td>
<td>identical key identified EL24153 combination 33191</td>
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<tr>
<td></td>
<td>identical key identified EL24315 combination 33192</td>
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<tr>
<td>Adaptation kit (without keylock):</td>
<td>adaptation kit Profalux / Ronis 48541</td>
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<tr>
<td></td>
<td>adaptation kit Kirk 48542</td>
</tr>
<tr>
<td></td>
<td>adaptation kit Castell 48543</td>
</tr>
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</table>

### Cable-type door interlock

1 complete assembly for MasterPact NW fixed or drawout device 48614

### Mechanical interlocking for TransferPact source changeover

#### Interlocking of 2 devices using connecting rods

Complete assembly with 2 adaptation fixtures + rods 48612

- 2 MasterPact NW fixed devices 48612
- 2 MasterPact NW drawout devices 48612

*Can be used with 1 NW fixed + 1 NW drawout.*

#### Interlocking of 2 devices using cables

Choose 2 adaptation fixtures (1 for each device) + 1 set of cables

- 1 adaptation fixture for MasterPact NW fixed devices 47926
- 1 adaptation fixture for MasterPact NW drawout devices 47926
- 1 set of 2 cables of 2.5 m 33209

*Can be used with any combination of NT or NW, fixed or drawout devices.*

#### Interlocking of 3 devices using cables

Choose 1 interlocking kit (including 3 adaptation fixtures + cables)

- 3 sources, only 1 device closed, fixed or drawout devices 48610
- 2 sources + 1 coupling, fixed or drawout devices 48609
- 2 normal + 1 replacement source, fixed or drawout devices 48608

### Other circuit breaker accessories

#### Mechanical operation accessories

Operation counter CDM 48535

#### Escutcheon and accessories

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed</th>
<th>Drawout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escutcheon</td>
<td>48601</td>
<td>48603</td>
</tr>
<tr>
<td>Transparent cover IPS4</td>
<td>48604</td>
<td></td>
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<tr>
<td>Escutcheon blanking plate</td>
<td>48605</td>
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## Accessories for MicroLogic control units

### External sensors

<table>
<thead>
<tr>
<th>Sensor for earth-fault protection (TCE)</th>
<th>Rating</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>400/2000 A</td>
<td>34035</td>
</tr>
<tr>
<td></td>
<td>1000/4000 A</td>
<td>34036</td>
</tr>
<tr>
<td></td>
<td>4000/6300 A (for NW40b, NW50, NW63)</td>
<td>48182</td>
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</table>

### Rectangular sensor for earth-leakage protection

- Rating: 470 mm x 160 mm / L2
- In max. 3200 A
- Catalog Number: 56054

### Source ground return (SGR) earth fault protection

<table>
<thead>
<tr>
<th>External sensor (SGR)</th>
<th>Catalog Number</th>
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</table>

### Voltage measurement input (for breakers supplied via bottom terminals)

<table>
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<th>Voltage measurement input</th>
<th>Fixed</th>
<th>Drawout</th>
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</thead>
<tbody>
<tr>
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<td>47506</td>
<td>48533</td>
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### Long-time rating plug (limits setting range for higher accuracy)

<table>
<thead>
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<th>Rating</th>
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</tr>
</thead>
<tbody>
<tr>
<td>0.4 at 1 x Ir</td>
<td>33542</td>
</tr>
<tr>
<td>0.4 at 0.8 x Ir</td>
<td>33543</td>
</tr>
<tr>
<td>0.8 at 1 x Ir</td>
<td>33544</td>
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<tr>
<td>Off</td>
<td>33545</td>
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</table>

### Zone Selective Interlocking option for MicroLogic P and H

<table>
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<th>Option</th>
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<tbody>
<tr>
<td>Standard</td>
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### External power supply module (AD)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>24/30 V DC</td>
<td>LV454440</td>
</tr>
<tr>
<td>48/60 V DC</td>
<td>LV454441</td>
</tr>
<tr>
<td>100/125 V DC</td>
<td>LV454442</td>
</tr>
<tr>
<td>110/130 V AC</td>
<td>LV454443</td>
</tr>
<tr>
<td>200/240 V AC</td>
<td>LV454444</td>
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</table>

### Battery module (BAT)

<table>
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<th>Configuration</th>
<th>Catalog Number</th>
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</thead>
<tbody>
<tr>
<td>1 battery 24 V</td>
<td>54446</td>
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### Test equipment

#### Mini test kit

- Hand held test kit (HHTK)
- Catalog Number: 33594

#### Portable test kit

- Full function test kit (FFTK)
- Catalog Number: 33595
- Test report edition come from FFTK
- FFTK test cable 2 pin for STR trip unit
- FFTK test cable 7 pin for MicroLogic trip unit
- Catalog Number: 34559, 34560, 33590

### Special settings

<table>
<thead>
<tr>
<th>Sensor rating</th>
<th>NW02</th>
<th>NW08</th>
<th>NW10</th>
<th>NW12</th>
<th>NW16</th>
<th>NW20</th>
<th>NW25</th>
<th>NW32</th>
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<tbody>
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<td>■</td>
<td>■</td>
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<td>■</td>
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<td>■</td>
</tr>
<tr>
<td>400</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
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<td>4000</td>
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</tbody>
</table>
A MasterPact fixed switch-disconnector is described by 3 catalog numbers corresponding to:
- the basic switch-disconnector
- a top connection
- a bottom connection.

A communication option and various auxiliaries and accessories may also be added.

### Basic switch-disconnector

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
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<tbody>
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<td><strong>Type NA</strong></td>
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<tr>
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<tr>
<td>NW16</td>
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</table>

<table>
<thead>
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<tr>
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<tr>
<td>NW40b</td>
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<tr>
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<td>NW63</td>
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<td>NW40</td>
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<td>NW50</td>
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<td>220</td>
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<tr>
<td>NW63</td>
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<td>220</td>
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### Communication option

<table>
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<tr>
<th>COM (BCM ULP)</th>
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<tbody>
<tr>
<td><strong>IFE</strong></td>
<td>Ethernet interface for LV breaker</td>
<td>LV434001</td>
</tr>
<tr>
<td><strong>IFM</strong> Modbus-SL interface module</td>
<td>Ethernet interface for LV breakers and gateway</td>
<td>LV434002</td>
</tr>
<tr>
<td><strong>I/O application module</strong></td>
<td></td>
<td>LV434063</td>
</tr>
</tbody>
</table>

**Auxiliaries and accessories:**
- for fixed devices: see page F-20
- for fixed or drawout devices: see page F-28.
- Source changeover assembly: see page F-28.
## Front connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Top</th>
<th>Bottom</th>
<th>3P</th>
<th>4P</th>
</tr>
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<tbody>
<tr>
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<td>48128</td>
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<td>48155</td>
</tr>
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<td>2000 A</td>
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<td>48124</td>
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<tr>
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<td></td>
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<td>48127</td>
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<tr>
<td>2500-3200 A</td>
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## Front connection accessories

### Disconnectable front connection

<table>
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<th>3P</th>
<th>4P</th>
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</thead>
<tbody>
<tr>
<td>1600 A</td>
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## Rear connection

### Vertical connection

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</thead>
<tbody>
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<td>2500-3200 A</td>
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<td></td>
<td>48134</td>
<td>48159</td>
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<td></td>
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<td>48139</td>
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<td>4000 A</td>
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<td>48165</td>
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<td>4000b/5000 A</td>
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### Horizontal connection

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<th>3P</th>
<th>4P</th>
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</thead>
<tbody>
<tr>
<td>800-2000 A</td>
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<td>2500-3200 A</td>
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<td></td>
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<td>48169</td>
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<td></td>
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<td>48174</td>
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<tr>
<td>4000 A</td>
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<td>48175</td>
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<td>4000b/5000 A</td>
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## Rear connection accessories

### Interphase barriers

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### Brackets for mounting on a backplate

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</table>
A MasterPact drawout switch-disconnector is described by 4 catalog numbers corresponding to:
- the basic switch-disconnector
- a chassis
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

### Basic switch-disconnector

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type NA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NW08</td>
<td>800</td>
<td>88</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>88</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>88</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>88</td>
</tr>
</tbody>
</table>

| **Type HA**|       |       |
| NW08       | 800   | 143   |
| NW10       | 1000  | 143   |
| NW12       | 1250  | 143   |
| NW16       | 1600  | 143   |
| NW20       | 2000  | 143   |
| NW25       | 2500  | 143   |
| NW32       | 3200  | 143   |
| NW40       | 4000  | 143   |
| NW40b      | 4000  | 187   |
| NW50       | 5000  | 187   |
| NW63       | 6300  | 187   |

| **Type HF**|       |       |
| NW08       | 800   | 187   |
| NW10       | 1000  | 187   |
| NW12       | 1250  | 187   |
| NW16       | 1600  | 187   |
| NW20       | 2000  | 187   |
| NW25       | 2500  | 187   |
| NW32       | 3200  | 187   |
| NW40       | 4000  | 187   |
| NW40b      | 4000  | 220   |
| NW50       | 5000  | 220   |
| NW63       | 6300  | 220   |

| **Type HH**|       |       |
| NW40b      | 4000  | 220   |
| NW50       | 5000  | 220   |
| NW63       | 6300  | 220   |

### Chassis

<table>
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<tr>
<td></td>
<td>1600 A</td>
<td>48392</td>
</tr>
</tbody>
</table>

| **Type HA/HF**| 800-1600 A                  | 48392 | 48404 |
|               | 2000 A                    | 48393 | 48405 |
|               | 2500 A                    | 48394 | 48406 |
|               | 3200 A                    | 48395 | 48407 |
|               | 4000 A                    | 48396 | 48408 |
|               | 4000b/6300 A              | 48397 | 48409 |

### Communication option

| Chassis (I/O application module) + Switch-disconnector (BCM-ULP) | 33852 | 48384 |
| Chassis (I/O application module) | 33852 | 48384 |
| Ethernet interface for LV breaker | LV434001 |
| Ethernet interface for LV breakers and gateway | LV434002 |
| IFM Modbus-SL interface module | LV434000 |
| I/O application module | LV434003 |

Auxiliaries and accessories:
- for drawout devices: see page F-24
- for fixed or drawout devices: see page F-28
Source changeover assembly: see page F-28
## NW08 to NW63 drawout switch-disconnectors

### Connections

#### Chassis front connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Top</th>
<th>Bottom</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-1600 A</td>
<td>48415</td>
<td>48418</td>
<td>48441</td>
<td>48444</td>
</tr>
<tr>
<td></td>
<td>48413</td>
<td>48414</td>
<td>48417</td>
<td>48420</td>
</tr>
<tr>
<td>2000 A</td>
<td>48416</td>
<td>48419</td>
<td>48442</td>
<td>48445</td>
</tr>
</tbody>
</table>

#### Chassis rear connection

##### Vertical connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Top</th>
<th>Bottom</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-2000 A</td>
<td>48133</td>
<td>48138</td>
<td>48158</td>
<td>48163</td>
</tr>
<tr>
<td></td>
<td>48134</td>
<td>48139</td>
<td>48159</td>
<td>48164</td>
</tr>
<tr>
<td>2500/3200 A</td>
<td>48135</td>
<td>48140</td>
<td>48160</td>
<td>48165</td>
</tr>
<tr>
<td>4000 A</td>
<td>48136</td>
<td>48141</td>
<td>48161</td>
<td>48166</td>
</tr>
<tr>
<td>4000b/5000 A</td>
<td>48137</td>
<td>48142</td>
<td>48162</td>
<td>48167</td>
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<tr>
<td>6300 A</td>
<td>48143</td>
<td>48148</td>
<td>48168</td>
<td>48173</td>
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</tbody>
</table>

##### Horizontal connection

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Top</th>
<th>Bottom</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-2000 A</td>
<td>48143</td>
<td>48144</td>
<td>48169</td>
<td>48174</td>
</tr>
<tr>
<td></td>
<td>48145</td>
<td>48149</td>
<td>48170</td>
<td>48174</td>
</tr>
<tr>
<td>2500/3200 A</td>
<td>48150</td>
<td>48151</td>
<td>48175</td>
<td>48176</td>
</tr>
<tr>
<td>4000 A</td>
<td>48166</td>
<td>48167</td>
<td>48171</td>
<td>48176</td>
</tr>
</tbody>
</table>

### Rear connection accessories

- **Interphase barriers**
  - 3P/4P (3 parts) 48600
A 4 pole MasterPact circuit breaker with neutral on the right is described by the same catalog numbers as a standard 4 pole one, except for the basic circuit breaker, which is specific.

### Fixed circuit breakers with neutral on the right

#### Type H1

<table>
<thead>
<tr>
<th>Model</th>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08</td>
<td>800</td>
<td>65</td>
<td>48183</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>65</td>
<td>48184</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>65</td>
<td>48185</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>65</td>
<td>48186</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>65</td>
<td>48060</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
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<td>48073</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>65</td>
<td>48187</td>
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<tr>
<td>NW40</td>
<td>4000</td>
<td>65</td>
<td>48193</td>
</tr>
<tr>
<td>NW40b</td>
<td>4000</td>
<td>100</td>
<td>48194</td>
</tr>
<tr>
<td>NW50</td>
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<td>100</td>
<td>48195</td>
</tr>
<tr>
<td>NW63</td>
<td>6300</td>
<td>100</td>
<td>48196</td>
</tr>
</tbody>
</table>

#### Type H2

<table>
<thead>
<tr>
<th>Model</th>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08</td>
<td>800</td>
<td>100</td>
<td>48177</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>100</td>
<td>48178</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>100</td>
<td>48179</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>100</td>
<td>48180</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>100</td>
<td>48067</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>100</td>
<td>48079</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>100</td>
<td>48181</td>
</tr>
<tr>
<td>NW40</td>
<td>4000</td>
<td>100</td>
<td>48102</td>
</tr>
<tr>
<td>NW40b</td>
<td>4000</td>
<td>150</td>
<td>48103</td>
</tr>
<tr>
<td>NW50</td>
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<tr>
<td>NW63</td>
<td>6300</td>
<td>150</td>
<td>48105</td>
</tr>
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</table>

### Drawout circuit breakers with neutral on the right

#### Type H1

<table>
<thead>
<tr>
<th>Model</th>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08</td>
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<td>65</td>
<td>48226</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>65</td>
<td>48227</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>65</td>
<td>48228</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
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<tr>
<td>NW20</td>
<td>2000</td>
<td>65</td>
<td>48436</td>
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<td>NW25</td>
<td>2500</td>
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<td>48303</td>
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<td>48437</td>
</tr>
<tr>
<td>NW40</td>
<td>4000</td>
<td>65</td>
<td>48332</td>
</tr>
<tr>
<td>NW40b</td>
<td>4000</td>
<td>100</td>
<td>48333</td>
</tr>
<tr>
<td>NW50</td>
<td>5000</td>
<td>100</td>
<td>48334</td>
</tr>
<tr>
<td>NW63</td>
<td>6300</td>
<td>100</td>
<td>48335</td>
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</table>

#### Type H2

<table>
<thead>
<tr>
<th>Model</th>
<th>In (A at 40 °C)</th>
<th>Icu (kA for U = 220/440 V)</th>
<th>Ics = 100 % Icu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08</td>
<td>800</td>
<td>100</td>
<td>48426</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>100</td>
<td>48427</td>
</tr>
<tr>
<td>NW12</td>
<td>1250</td>
<td>100</td>
<td>48428</td>
</tr>
<tr>
<td>NW16</td>
<td>1600</td>
<td>100</td>
<td>48429</td>
</tr>
<tr>
<td>NW20</td>
<td>2000</td>
<td>100</td>
<td>48438</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>100</td>
<td>48309</td>
</tr>
<tr>
<td>NW32</td>
<td>3200</td>
<td>100</td>
<td>48439</td>
</tr>
<tr>
<td>NW40</td>
<td>4000</td>
<td>100</td>
<td>48354</td>
</tr>
<tr>
<td>NW40b</td>
<td>4000</td>
<td>150</td>
<td>48355</td>
</tr>
<tr>
<td>NW50</td>
<td>5000</td>
<td>150</td>
<td>48356</td>
</tr>
<tr>
<td>NW63</td>
<td>6300</td>
<td>150</td>
<td>48357</td>
</tr>
</tbody>
</table>
A MasterPact earthing switch is described by 2 catalog numbers corresponding to:
- an earthing kit, to be mounted on a standard MasterPact NW08 to NW40 chassis, types N1, H1, NA or HA
- an earthing switch, to be racked-in in a chassis equipped with an earthing kit.

### Earthing switch

<table>
<thead>
<tr>
<th>Type</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NW08 to NW40</td>
<td>4000</td>
<td>135</td>
</tr>
<tr>
<td></td>
<td>48430</td>
<td>48431</td>
</tr>
</tbody>
</table>

### Earthing kit for chassis

<table>
<thead>
<tr>
<th>Types for N1/H1/NA/HA</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthing kit</td>
<td>48433</td>
<td>48434</td>
</tr>
</tbody>
</table>
A MasterPact 1000 V AC drawout circuit breaker is described by 5 catalog numbers corresponding to:
- the basic circuit breaker
- a control unit
- a chassis
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

**Basic circuit breaker**

<table>
<thead>
<tr>
<th>Type H10</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08 800 50</td>
<td>48725</td>
<td>48735</td>
</tr>
<tr>
<td>NW10 1000 50</td>
<td>48726</td>
<td>48736</td>
</tr>
<tr>
<td>NW12 1250 50</td>
<td>48727</td>
<td>48737</td>
</tr>
<tr>
<td>NW16 1600 50</td>
<td>48728</td>
<td>48738</td>
</tr>
<tr>
<td>NW20 2000 50</td>
<td>48729</td>
<td>48739</td>
</tr>
<tr>
<td>NW25 2500 50</td>
<td>48730</td>
<td>48740</td>
</tr>
<tr>
<td>NW32 3200 50</td>
<td>48731</td>
<td>48741</td>
</tr>
<tr>
<td>NW40 4000 50</td>
<td>48732</td>
<td>48742</td>
</tr>
</tbody>
</table>

*Type H10-T: for coordination with Tesys F contactors*

| NW20 2000 50 | 48733 |
| NW25 2500 50 | 48734 |

**MicroLogic control unit - MicroLogic P/H consult us**

- MicroLogic 2.0 A basic protection 48358
- MicroLogic 5.0 A selective protection 48360
- MicroLogic 6.0 A selective + earth-fault protection 48361

*(1) Incompatible with MicroLogic 2.0 A.*

A MasterPact 1000 V AC drawout switch-disconnector is described by 4 catalog numbers corresponding to:
- the basic switch-disconnector
- a chassis
- a top connection
- a bottom connection.
A communication option and various auxiliaries and accessories may also be added.

**Basic switch-disconnector**

<table>
<thead>
<tr>
<th>Type HA10</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW08 800 105</td>
<td>48745</td>
<td>48755</td>
</tr>
<tr>
<td>NW10 1000 105</td>
<td>48746</td>
<td>48756</td>
</tr>
<tr>
<td>NW12 1250 105</td>
<td>48747</td>
<td>48757</td>
</tr>
<tr>
<td>NW16 1600 105</td>
<td>48748</td>
<td>48758</td>
</tr>
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<td>NW20 2000 105</td>
<td>48749</td>
<td>48759</td>
</tr>
<tr>
<td>NW25 2500 105</td>
<td>48750</td>
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<tr>
<td>NW32 3200 105</td>
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<td>48761</td>
</tr>
<tr>
<td>NW40 4000 105</td>
<td>48752</td>
<td>48762</td>
</tr>
</tbody>
</table>
### Chassis

<table>
<thead>
<tr>
<th>For type H10 and HA10</th>
<th>3P</th>
<th>4P</th>
</tr>
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<tbody>
<tr>
<td>800-1600 A</td>
<td>48392</td>
<td>48404</td>
</tr>
<tr>
<td>2000 A</td>
<td>48393</td>
<td>48405</td>
</tr>
<tr>
<td>2500 A</td>
<td>48394</td>
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<tr>
<td>3200 A</td>
<td>48395</td>
<td>48407</td>
</tr>
<tr>
<td>4000 A</td>
<td>48396</td>
<td>48408</td>
</tr>
</tbody>
</table>

### Communication option

<table>
<thead>
<tr>
<th></th>
<th>Chassis (I/O application module)</th>
<th>Circuit breaker and switch-disconnector (BCM-ULP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM (BCM-ULP)</td>
<td>33852</td>
<td>48384</td>
</tr>
<tr>
<td>Eco COM (BCM-ULP)</td>
<td>33852</td>
<td>48385</td>
</tr>
<tr>
<td>IFE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet interface for LV breaker</td>
<td>LV434001</td>
<td></td>
</tr>
<tr>
<td>Ethernet interface for LV breakers and gateway</td>
<td>LV434002</td>
<td></td>
</tr>
<tr>
<td>IFM Modbus-SL interface module</td>
<td>LV434000</td>
<td></td>
</tr>
<tr>
<td>I/O application module</td>
<td>LV434063</td>
<td></td>
</tr>
</tbody>
</table>

### Chassis rear connection

#### Vertical connection

<table>
<thead>
<tr>
<th>800-2000 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>48133</td>
<td>48158</td>
</tr>
<tr>
<td>Bottom</td>
<td>48138</td>
<td>48163</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2500/3200 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>48134</td>
<td>48159</td>
</tr>
<tr>
<td>Bottom</td>
<td>48139</td>
<td>48164</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>4000 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>48135</td>
<td>48160</td>
</tr>
<tr>
<td>Bottom</td>
<td>48140</td>
<td>48165</td>
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</table>

### Horizontal connection

<table>
<thead>
<tr>
<th>800-2000 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>48143</td>
<td>48168</td>
</tr>
<tr>
<td>Bottom</td>
<td>48146</td>
<td>48173</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2500/3200 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>48144</td>
<td>48169</td>
</tr>
<tr>
<td>Bottom</td>
<td>48149</td>
<td>48174</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4000 A</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>48145</td>
<td>48170</td>
</tr>
<tr>
<td>Bottom</td>
<td>48150</td>
<td>48175</td>
</tr>
</tbody>
</table>

### Rear connection accessories

<table>
<thead>
<tr>
<th>Interphase barriers</th>
<th>3P/4P (3 parts)</th>
<th>48600</th>
</tr>
</thead>
</table>

Catalog numbers

NW08 to NW40 1000 V AC

Drawout circuit breakers and switch-disconnectors

Chassis and connections

www.se.com
A MasterPact NW circuit breaker with corrosion protection is described by 3 catalog numbers corresponding to:
- the basic circuit breaker
- a MicroLogic control unit
- a chassis, complete with vertical rear connections as standard (convertible to horizontal rear connections on-site simply by rotating the connectors, except for the NW32, available with vertical rear connections only).

The various auxiliaries and accessories for MasterPact NW rear-connected circuit breakers may be added. The auxiliary contacts should be “low level” type only.

### Basic circuit breaker

<table>
<thead>
<tr>
<th>Type H2</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In (A at 55°C)</td>
<td>Icu (kA for U = 440 V)</td>
</tr>
<tr>
<td>NW08</td>
<td>800</td>
<td>100</td>
</tr>
<tr>
<td>NW10</td>
<td>1000</td>
<td>100</td>
</tr>
<tr>
<td>NW12</td>
<td>1200</td>
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</tr>
<tr>
<td>NW16</td>
<td>1600</td>
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<tr>
<td>NW20</td>
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<td>100</td>
</tr>
<tr>
<td>NW25</td>
<td>2500</td>
<td>100</td>
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<tr>
<td>NW32</td>
<td>3200</td>
<td>100</td>
</tr>
<tr>
<td>NW40b</td>
<td>4000</td>
<td>150</td>
</tr>
</tbody>
</table>

### MicroLogic control unit

#### “ammeter” A

| MicroLogic 2.0 A | basic protection | 48358 |
| MicroLogic 5.0 A | selective protection | 48360 |
| MicroLogic 6.0 A | selective + earth-fault protection | 48361 |
| MicroLogic 7.0 A | selective + earth-leakage protection | 48362 |

#### “energy” E

| MicroLogic 2.0 E | basic protection | 48498 |
| MicroLogic 5.0 E | selective protection | 48499 |
| MicroLogic 6.0 E | selective + earth-fault protection | 48500 |

#### “power meter” P

| MicroLogic 5.0 P | selective protection | 48363 |
| MicroLogic 6.0 P | selective + earth-fault protection | 48364 |
| MicroLogic 7.0 P | selective + earth-leakage protection | 48365 |

#### “harmonic meter” H

| MicroLogic 5.0 H | selective protection | 48366 |
| MicroLogic 6.0 H | selective + earth-fault protection | 48367 |
| MicroLogic 7.0 H | selective + earth-leakage protection | 48368 |

### Chassis with rear connections

<table>
<thead>
<tr>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-1250 A</td>
<td>48765</td>
</tr>
<tr>
<td>1600-2000 A</td>
<td>48766</td>
</tr>
<tr>
<td>2500 A</td>
<td>48767</td>
</tr>
<tr>
<td>3200 A</td>
<td>48768</td>
</tr>
<tr>
<td>4000 A</td>
<td>48769</td>
</tr>
</tbody>
</table>

### Communication option

<table>
<thead>
<tr>
<th>Chassis (I/O application module)</th>
<th>Circuit breaker (BCM-ULP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM (BCM-ULP)</td>
<td>LV434001</td>
</tr>
<tr>
<td>Eco COM (BCM-ULP)</td>
<td>LV434002</td>
</tr>
<tr>
<td>IFE Ethernet interface for LV breaker</td>
<td>LV434000</td>
</tr>
<tr>
<td>IFE Ethernet interface for LV breakers and gateway</td>
<td>LV434001</td>
</tr>
<tr>
<td>IFM Modbus-SL interface module</td>
<td>LV434000</td>
</tr>
</tbody>
</table>

www.se.com
To replace a MasterPact M with a MasterPact NW, order a retrofit device (without connections) and select a set of connectors corresponding to the replaced device.

The MasterPact NW is installed in exactly the same place as the old MasterPact M device, without any modifications required on the switchboard.

(*) For higher ratings (4000-6300 A) or for other Retrofit solutions, please contact Schneider Electric services.
To replace a MasterPact M with a MasterPact NW, order a retrofit device (without connections) and select a set of connectors corresponding to the replaced device. The MasterPact NW is installed in exactly the same place as the old MasterPact M device, without any modifications required on the switchboard.

### Horizontal rear connection

<table>
<thead>
<tr>
<th>Device to be replaced</th>
<th>Connection to be ordered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MasterPact M08 to M12</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3P</td>
</tr>
<tr>
<td>Top</td>
<td>4P</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548951</td>
</tr>
<tr>
<td>Bottom</td>
<td>4 x EF548951</td>
</tr>
<tr>
<td>Type H1/H2/HI/HF/L1</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3 x EF548954</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548965</td>
</tr>
<tr>
<td><strong>MasterPact M16</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI/H1/H2/HI/HF/L1</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3 x EF548954</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548965</td>
</tr>
<tr>
<td><strong>MasterPact M20 and M25</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI/H1/H2/HI/HF</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3 x EF548957</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548958</td>
</tr>
<tr>
<td><strong>MasterPact M32 neutral on left-hand side</strong></td>
<td></td>
</tr>
<tr>
<td>Type H1/H2/HI/HF/M20/L1</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>1 x EF548973</td>
</tr>
<tr>
<td>Bottom</td>
<td>1 x EF548973</td>
</tr>
<tr>
<td><strong>MasterPact M32 neutral on right-hand side</strong></td>
<td></td>
</tr>
<tr>
<td>Type H1/H2/HI/HF/M20/L1</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>1 x EF548973</td>
</tr>
<tr>
<td>Bottom</td>
<td>1 x EF548973</td>
</tr>
</tbody>
</table>

### Vertical rear connection

<table>
<thead>
<tr>
<th>Device to be replaced</th>
<th>Connection to be ordered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MasterPact M08 to M12</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3 x EF548966</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548966</td>
</tr>
<tr>
<td>Type H1/H2/HI/HF/L1</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3 x EF548969</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548969</td>
</tr>
<tr>
<td><strong>MasterPact M16</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI/H1/H2/HI/HF/L1</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3 x EF548969</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548969</td>
</tr>
<tr>
<td><strong>MasterPact M20 and M25</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI/H1/H2/HI/HF</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>3 x EF548970</td>
</tr>
<tr>
<td>Bottom</td>
<td>3 x EF548970</td>
</tr>
<tr>
<td><strong>MasterPact M32 and M20L1</strong></td>
<td></td>
</tr>
<tr>
<td>Type H1/H2/HI/HF</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>1 x EF548974</td>
</tr>
<tr>
<td>Bottom</td>
<td>1 x EF548974</td>
</tr>
</tbody>
</table>

### Installation kits

<table>
<thead>
<tr>
<th>Device to be replaced</th>
<th>Kit to be ordered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MasterPact M08 to M32</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI/H1/H2/HI/HF</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>1 x EF548927</td>
</tr>
<tr>
<td>Bottom</td>
<td>1 x EF548927</td>
</tr>
</tbody>
</table>

### Power isolation kits (optional)

<table>
<thead>
<tr>
<th>Device to be replaced</th>
<th>Kit to be ordered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MasterPact M08 to M32</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI/H1/H2/HI/HF</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>1 x EF548928</td>
</tr>
<tr>
<td>Bottom</td>
<td>1 x EF548928</td>
</tr>
</tbody>
</table>

### Auxiliaries wires strand

<table>
<thead>
<tr>
<th>Device to be replaced</th>
<th>Kit to be ordered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MasterPact M08 to M32</strong></td>
<td></td>
</tr>
<tr>
<td>Type N1/NI/H1/H2/HI/HF</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>1 x EF548930</td>
</tr>
<tr>
<td>Bottom</td>
<td>1 x EF548930</td>
</tr>
</tbody>
</table>

(*) For higher ratings (4000-6300 A) or for other Retrofit solutions, please contact Schneider Electric services.

(continued on next page)
# MasterPact NT

## Connection

### Fixed circuit breakers
- **Front connection / Replacement kit (3 or 4 parts)**
  - Top or bottom: 250/630-1600 A
  - 3P: 47069
  - 4P: 47070

### Rear connection (vertical or horizontal mounting) / Replacement kit (3 or 4 parts)
- 250/630-1600 A
- 33584
- 33585

### Drawout circuit breakers
- **Front connection / Replacement kit (6 or 8 parts)**
  - Top and bottom: 250/630-1600 A
  - 33588
  - 33589

### Rear connection (vertical or horizontal mounting) / Replacement kit (3 or 4 parts)
- 250/630-1600 A
- 33586
- 33587

## Connection accessories

### Vertical connection adapters 250/630-1600 A / Replacement kit (3 or 4 parts)
- For fixed and drawout front-connected circuit breakers
- 33642
- 33643
- Installation manual

### Cable lug adapters 250/630-1600 A / Replacement kit (3 or 4 parts)
- For fixed and drawout front-connected circuit breakers
- 33644
- 33645
- Installation manual

### Spreadsers / Replacement kit 250/630-1600 A (3 or 4 parts)
- For fixed and drawout front and rear-connected circuit breakers
- 33622
- 33623
- Installation manual

### Interphase barriers / Replacement kit (3 parts)
- For fixed front and rear-connected circuit breakers
  - (take 2 kits: 1 for the top, 1 for the bottom connections)
  - 33648
  - 33648
- Installation manual

- For drawout rear-connected circuit breakers (the same kit covers the top and the bottom connections on the same time)
  - 33768
  - 33768
- Installation manual

### Arc chute screen (1 part)
- For fixed front-connected circuit breakers
- 47335
- 47336
- Installation manual

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[www.se.com](http://www.se.com)
**MasterPact NT**
MicroLogic control unit, communication option, accessories

### Replacement parts for MicroLogic control units

**Long-time rating plug (limits setting range for higher accuracy) / 1 part**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Setting Range</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>0.4 at 1 x Ir</td>
<td>33542</td>
</tr>
<tr>
<td>Low-setting</td>
<td>0.4 at 0.8 x Ir</td>
<td>33543</td>
</tr>
<tr>
<td>High-setting</td>
<td>0.8 at 1 x Ir</td>
<td>33544</td>
</tr>
<tr>
<td>Without long-time protection</td>
<td>off</td>
<td>33545</td>
</tr>
</tbody>
</table>

**Battery + cover**

<table>
<thead>
<tr>
<th>Component</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery (1 part)</td>
<td>33593</td>
</tr>
<tr>
<td>Cover (1 part)</td>
<td>33592</td>
</tr>
<tr>
<td>Cover (1 part)</td>
<td>47067</td>
</tr>
</tbody>
</table>

### Communication option

**IFE**
- Ethernet interface LV breaker: LV434001
- Ethernet interface for LV breakers and gateway: LV434002

**IFM Modbus-SL interface module**
- LV434000

**I/O application module**
- LV434063

**6 wires terminals drawout (1 part)**
- 33099

**6 wires terminals fixed (1 part)**
- 47075

**User guide IFE**
- DOCAO084EN-00

**User guide I/O application module**
- DOCAO055EN-00

### Accessories

**External sensors**

**External sensor for earth-fault protection (TCE) / 1 part**
- Sensor rating: 400/1600 A | 33576

**Source ground return (SGR) earth-fault protection / 1 part**
- External sensor (SGR) | 33579
- MDGF summing module | 48891

**Rectangular sensor for earth-leakage protection + Vigi cable / 1 part**
- 280 mm x 115 mm / L1 | 56053

**Vigi cable or external voltage cable / 1 part**
- Vigi cable or external voltage cable (1 part) | 47090

**External power supply module (AD) / 1 part**
- 24-30 V DC | LV454440
- 48-60 V DC | LV454441
- 100-125 V DC | LV454442
- 110-130 V AC | LV454443
- 200-240 V AC | LV454444

**Battery module (BAT) / 1 part**
- 1 battery | 24 V DC | 54446

**Test equipments / 1 part**
- Hand held test kit (HHTK) | 33594
- Full function test kit (FFTK) | 33595
- Test report edition come from FFTK | 34559
- FFTK test cable 2 pin for STR trip unit | 34560
- FFTK test cable 7 pin for MicroLogic trip unit | 33590
### Remote operation

**Gear motor**

<table>
<thead>
<tr>
<th>MCH (1 part)</th>
<th>AC 50/60 Hz</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 V</td>
<td>33186</td>
<td></td>
</tr>
<tr>
<td>100/130 V</td>
<td>33176</td>
<td></td>
</tr>
<tr>
<td>200/240 V</td>
<td>33177</td>
<td></td>
</tr>
<tr>
<td>277/415 V</td>
<td>33179</td>
<td></td>
</tr>
<tr>
<td>440/480 V</td>
<td>33179</td>
<td></td>
</tr>
<tr>
<td>+ resistor</td>
<td>33193</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal block (1 part)</th>
<th>For fixed circuit breaker</th>
<th>47074</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For drawout circuit breaker</td>
<td>33098</td>
</tr>
</tbody>
</table>

**Installation manual**

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---

### Closing and opening release (XF or MX)

**Standard coil (1 part)**

<table>
<thead>
<tr>
<th>AC 50/60 Hz</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V DC</td>
<td>33658</td>
</tr>
<tr>
<td>24/30 V DC, 24 V AC</td>
<td>33659</td>
</tr>
<tr>
<td>48/60 V DC, 48 V AC</td>
<td>33660</td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>33661</td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>33662</td>
</tr>
<tr>
<td>277 V AC</td>
<td>33663</td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>33664</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communicating coil (1 part)</th>
<th>AC 50/60 Hz</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V DC</td>
<td>33032</td>
<td></td>
</tr>
<tr>
<td>24/30 V DC, 24 V AC</td>
<td>33033</td>
<td></td>
</tr>
<tr>
<td>48/60 V DC, 48 V AC</td>
<td>33034</td>
<td></td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>33035</td>
<td></td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>33036</td>
<td></td>
</tr>
<tr>
<td>277 V AC</td>
<td>33037</td>
<td></td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>33038</td>
<td></td>
</tr>
</tbody>
</table>

**Terminal block (1 part)**

| For fixed circuit breaker | 47074 |
| For drawout circuit breaker | 33098 |

**Installation manual**

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### Undervoltage release MN

**Undervoltage release (1 part)**

<table>
<thead>
<tr>
<th>AC 50/60 Hz</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>24/30 V DC, 24 V AC</td>
<td>33668</td>
</tr>
<tr>
<td>48/60 V DC, 48 V AC</td>
<td>33669</td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>33670</td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>33671</td>
</tr>
<tr>
<td>380/480 V AC</td>
<td>33673</td>
</tr>
</tbody>
</table>

| Terminal block (1 part) | For fixed circuit breaker | 47074 |
| For drawout circuit breaker | 33098 |

**Installation manual**

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---

### MN delay unit

**MN delay unit (1 part)**

<table>
<thead>
<tr>
<th>AC 50/60 Hz</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>48/60 V AC/DC</td>
<td>R (non-adjustable)</td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>R (adjustable)</td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>33684</td>
</tr>
<tr>
<td>380/480 V AC/DC</td>
<td>33685</td>
</tr>
</tbody>
</table>

**Installation manual**

47103
# MasterPact NT

## Chassis locking

### "Disconnected" position locking / 1 part

<table>
<thead>
<tr>
<th>By padlocks</th>
<th>VCPO</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>By Profalux keylocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profalux</td>
<td>1 lock with 1 key + adaptation kit</td>
<td>64909</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit</td>
<td>64910</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>64911</td>
</tr>
<tr>
<td>1 keylock Profalux (without adaptation kit):</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key not identified combination</td>
<td>33173</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215470 combination</td>
<td>33174</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215471 combination</td>
<td>33175</td>
</tr>
<tr>
<td>By Ronis keylocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ronis</td>
<td>1 lock with 1 key + adaptation kit</td>
<td>64912</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit</td>
<td>64913</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>64914</td>
</tr>
<tr>
<td>1 keylock Ronis (without adaptation kit):</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key not identified combination</td>
<td>33189</td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24135 combination</td>
<td>33190</td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24153 combination</td>
<td>33191</td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24315 combination</td>
<td>33192</td>
</tr>
</tbody>
</table>

### Door interlock / 1 part

| | | |
| Right and left-hand side of chassis (VPECD or VPECG) | | |
| | | 33172 |

### Racking interlock / 1 part

| | | |
| Racking interlock (VPOC) | | |
| | | 33788 |

### Breaker mismatch protection / 1 part

| | | |
| Breaker mismatch protection (VDC) | | |
| | | 33767 |

### Chassis accessories

#### Auxiliary terminal shield (CB) / 1 part

| | | |
| Terminal shield | 3P | 33763 |
| | 4P | 33764 |

| | | |
| Installation manual | | 47104 |

#### Safety shutters + locking / 1 part

| | | |
| Safety shutters (VO) | 3P | 33765 |
| | 4P | 33766 |

| | | |
| Installation manual | | 47104 |

---

**Note:** the locking of safety shutters is integrated.
Clusters

1 disconnecting contact cluster for chassis (see table below) 1 part 64906

Table: number of clusters required for the different chassis models

<table>
<thead>
<tr>
<th>Chassis rating (A)</th>
<th>MasterPact NT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3P</td>
</tr>
<tr>
<td>250</td>
<td>12</td>
</tr>
<tr>
<td>630</td>
<td>12</td>
</tr>
<tr>
<td>800</td>
<td>12</td>
</tr>
<tr>
<td>1000</td>
<td>12</td>
</tr>
<tr>
<td>1250</td>
<td>12</td>
</tr>
<tr>
<td>1600</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: the minimum order is 6 parts.

Set of 2 clusters fitters for 2 and 3 clusters 47554

Racking handle / 1 part

Racking handle 47098
## Circuit breaker locking

**Pushbutton locking device / 1 part**

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>By padlocks</td>
<td>33897</td>
</tr>
</tbody>
</table>

**OFF position locking / 1 part**

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>By padlocks + BPFE support</td>
<td>47514</td>
</tr>
<tr>
<td><strong>By Profalux keylocks + BPFE support</strong></td>
<td></td>
</tr>
<tr>
<td>Profalux</td>
<td></td>
</tr>
<tr>
<td>1 lock with 1 key + adaptation kit</td>
<td>64918</td>
</tr>
<tr>
<td>2 locks 1 key + adaptation kit</td>
<td>64919</td>
</tr>
<tr>
<td>1 keylock Profalux (without adaptation kit):</td>
<td></td>
</tr>
<tr>
<td>identical key not identified combination</td>
<td>33173</td>
</tr>
<tr>
<td>identical key identified 215470 combination</td>
<td>33174</td>
</tr>
<tr>
<td>identical key identified 215471 combination</td>
<td>33175</td>
</tr>
<tr>
<td><strong>By Ronis keylocks + BPFE support</strong></td>
<td></td>
</tr>
<tr>
<td>Ronis</td>
<td></td>
</tr>
<tr>
<td>1 lock with 1 key + adaptation kit</td>
<td>64920</td>
</tr>
<tr>
<td>2 locks 1 key + adaptation kit</td>
<td>64921</td>
</tr>
<tr>
<td>1 keylock Ronis (without adaptation kit):</td>
<td></td>
</tr>
<tr>
<td>identical key not identified combination</td>
<td>33189</td>
</tr>
<tr>
<td>identical key identified EL24135 combination</td>
<td>33190</td>
</tr>
<tr>
<td>identical key identified EL24153 combination</td>
<td>33191</td>
</tr>
<tr>
<td>identical key identified EL24315 combination</td>
<td>33192</td>
</tr>
<tr>
<td><strong>Adaptation kit (without keylock):</strong></td>
<td></td>
</tr>
<tr>
<td>adaptation kit Profalux</td>
<td>47515</td>
</tr>
<tr>
<td>adaptation kit Ronis</td>
<td>47516</td>
</tr>
<tr>
<td>adaptation kit Kirk</td>
<td>47517</td>
</tr>
<tr>
<td>adaptation kit Castell</td>
<td>47518</td>
</tr>
</tbody>
</table>

**Installation manual** 47103

## Other circuit breaker accessories

### Mechanical operation counter / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation counter CDM</td>
<td>33895</td>
</tr>
</tbody>
</table>

**Installation manual** 47103

### Escutcheon and accessories / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Fixed</th>
<th>Drawout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escutcheon</td>
<td>33718</td>
<td>33857</td>
</tr>
<tr>
<td>Transparent cover (IP54)</td>
<td>33859</td>
<td></td>
</tr>
<tr>
<td>Escutcheon blanking plate</td>
<td>33858</td>
<td></td>
</tr>
</tbody>
</table>

**Front cover (3P / 4P) / 1 part**

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front cover</td>
<td>47094</td>
</tr>
</tbody>
</table>

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### Spring charging handle / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring charging handle</td>
<td>47092</td>
</tr>
</tbody>
</table>

**Installation manual** 47103

### Arc chute for MasterPact NT / 1 part

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Quantity</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>Type H1/H2/HA</td>
<td>3 x</td>
<td>LV686737SP</td>
</tr>
<tr>
<td>4P</td>
<td>Type L1</td>
<td>4 x</td>
<td>LV686737SP</td>
</tr>
</tbody>
</table>

**Installation manual** 47103
### Mechanical interlocking for TransferPact source changeover

**Interlocking using connecting rods**

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete assembly with 2 adaptation fixtures + rods</td>
<td>33912</td>
</tr>
<tr>
<td>2 MasterPact NT fixed devices</td>
<td></td>
</tr>
<tr>
<td>2 MasterPact NT drawout devices</td>
<td>33913</td>
</tr>
</tbody>
</table>

*Note: the installation manual is enclosed.*

---

**Interlocking using cables (1)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose 2 adaptation fixtures (1 for each breaker) + 1 set of cables</td>
<td>33200</td>
</tr>
<tr>
<td>1 adaptation fixture for MasterPact NT fixed devices</td>
<td></td>
</tr>
<tr>
<td>1 adaptation fixture for MasterPact NT drawout devices</td>
<td>33201</td>
</tr>
<tr>
<td>1 set of 2 cables</td>
<td>33209</td>
</tr>
</tbody>
</table>

(1) Can be used with any combination of NT or NW, fixed or drawout devices.

---

**Cable-type door interlock**

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 complete assembly for MasterPact NT fixed devices</td>
<td>33920</td>
</tr>
<tr>
<td>1 complete assembly for MasterPact NT drawout devices</td>
<td>33921</td>
</tr>
</tbody>
</table>

*Note: the installation manual is enclosed.*
### Indication contacts

#### ON/OFF indication contacts (OF) / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeover contacts (6 A - 240 V)</td>
<td>47076</td>
</tr>
<tr>
<td>1 low-level OF to replace 1 standard OF (4 max.)</td>
<td>47077</td>
</tr>
<tr>
<td>Wiring For fixed circuit breaker</td>
<td>47074</td>
</tr>
<tr>
<td>Wiring For drawout circuit breaker</td>
<td>33098</td>
</tr>
<tr>
<td>Installation manual</td>
<td>47103</td>
</tr>
</tbody>
</table>

#### “Fault trip” indication contacts (SDE) / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 additional SDE (6 A - 240 V)</td>
<td>47078</td>
</tr>
<tr>
<td>1 additional low-level SDE</td>
<td>47079</td>
</tr>
<tr>
<td>Wiring For fixed circuit breaker</td>
<td>47074</td>
</tr>
<tr>
<td>Wiring For drawout circuit breaker</td>
<td>33098</td>
</tr>
<tr>
<td>Installation manual</td>
<td>47103</td>
</tr>
</tbody>
</table>

#### “Ready to close” contact (1 max.) / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 changeover contact (6 A - 240 V)</td>
<td>47080</td>
</tr>
<tr>
<td>1 low-level changeover contact</td>
<td>47081</td>
</tr>
<tr>
<td>Wiring For fixed circuit breaker</td>
<td>47074</td>
</tr>
<tr>
<td>Wiring For drawout circuit breaker</td>
<td>33098</td>
</tr>
<tr>
<td>Installation manual</td>
<td>47103</td>
</tr>
</tbody>
</table>

### Electrical closing pushbutton / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pushbutton</td>
<td>BPFE</td>
</tr>
<tr>
<td></td>
<td>64917</td>
</tr>
</tbody>
</table>

### Carriage switches (connected / disconnected / test position) / 1 part

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeover contacts (6 A - 240 V)</td>
<td>33170</td>
</tr>
<tr>
<td>1 connected position contact (3 max.)</td>
<td>33170</td>
</tr>
<tr>
<td>1 test position contact (1 max.)</td>
<td>33170</td>
</tr>
<tr>
<td>1 disconnected position contact (2 max.)</td>
<td>33170</td>
</tr>
<tr>
<td>And/or low-level changeover contacts</td>
<td>33171</td>
</tr>
<tr>
<td>1 connected position contact (3 max.)</td>
<td>33171</td>
</tr>
<tr>
<td>1 test position contact (1 max.)</td>
<td>33171</td>
</tr>
<tr>
<td>1 disconnected position contact (2 max.)</td>
<td>33171</td>
</tr>
</tbody>
</table>

### Auxiliary terminals for chassis alone

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 wire terminal (1 part), terminal block (1 part)</td>
<td>33098</td>
</tr>
<tr>
<td>6 wires terminals drawout (1 part)</td>
<td>33099</td>
</tr>
<tr>
<td>Jumpers (10 parts)</td>
<td>47900</td>
</tr>
<tr>
<td>Installation manual</td>
<td>47104</td>
</tr>
</tbody>
</table>
## Instructions

<table>
<thead>
<tr>
<th>Chassis accessories</th>
<th>47104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit breaker accessories</td>
<td>47103</td>
</tr>
<tr>
<td>Fixed and drawout circuit breaker</td>
<td>47102</td>
</tr>
<tr>
<td>MicroLogic user manual</td>
<td></td>
</tr>
<tr>
<td>20/50 (French)</td>
<td>33076</td>
</tr>
<tr>
<td>20/50 (English)</td>
<td>33077</td>
</tr>
<tr>
<td>2A/7A (French)</td>
<td>33079</td>
</tr>
<tr>
<td>2A/7A (English)</td>
<td>33080</td>
</tr>
<tr>
<td>2E/8E (French)</td>
<td>33079</td>
</tr>
<tr>
<td>2E/8E (English)</td>
<td>33080</td>
</tr>
<tr>
<td>5P/7P (French)</td>
<td>33082</td>
</tr>
<tr>
<td>5P/7P (English)</td>
<td>33083</td>
</tr>
<tr>
<td>5H/7H (French)</td>
<td>33085</td>
</tr>
<tr>
<td>5H/7H (English)</td>
<td>33086</td>
</tr>
<tr>
<td>NT user manual</td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>47106</td>
</tr>
<tr>
<td>English</td>
<td>47107</td>
</tr>
<tr>
<td>Modbus communication notice for manual</td>
<td>33088</td>
</tr>
</tbody>
</table>
## Communication option

<table>
<thead>
<tr>
<th>Option</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFE - Ethernet interface for LV breaker</td>
<td>LV434001</td>
</tr>
<tr>
<td>IFE - Ethernet interface for LV breakers and gateway</td>
<td>LV434002</td>
</tr>
<tr>
<td>IFM Modbus-SL interface module</td>
<td>LV434000</td>
</tr>
<tr>
<td>I/O application module</td>
<td>LV434063</td>
</tr>
<tr>
<td>6 wires terminals drawout (1 part)</td>
<td>47850</td>
</tr>
<tr>
<td>6 wires terminals fixed (1 part)</td>
<td>47075</td>
</tr>
<tr>
<td>User guide IFE</td>
<td>DOCA0084EN-00</td>
</tr>
<tr>
<td>User guide I/O application module</td>
<td>DOCA0095EN-00</td>
</tr>
</tbody>
</table>

## Monitoring and control

### ULP display module

<table>
<thead>
<tr>
<th>Component</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard front display module FDM121</td>
<td>TRV00121</td>
</tr>
<tr>
<td>FDM mounting accessory (diameter 22 mm)</td>
<td>TRV00128</td>
</tr>
</tbody>
</table>

### Ethernet display module

<table>
<thead>
<tr>
<th>Component</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard front display module FDM128</td>
<td>LV434128</td>
</tr>
</tbody>
</table>

### ULP wiring accessories

<table>
<thead>
<tr>
<th>Component</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaker ULP cord L = 0.35 m</td>
<td>LV434195</td>
</tr>
<tr>
<td>Breaker ULP cord L = 1.3 m</td>
<td>LV434196</td>
</tr>
<tr>
<td>Breaker ULP cord L = 3 m</td>
<td>LV434197</td>
</tr>
<tr>
<td>Breaker ULP cord L = 5 m</td>
<td>LV434198</td>
</tr>
<tr>
<td>10 stacking connectors for communication interface modules</td>
<td>TRV00217</td>
</tr>
<tr>
<td>2 Modbus line terminators</td>
<td>VW3A8306DRC (2)</td>
</tr>
<tr>
<td>5 RJ45 connectors female/female</td>
<td>TRV00870</td>
</tr>
<tr>
<td>10 ULP line terminators</td>
<td>TRV00880</td>
</tr>
<tr>
<td>10 RJ45/RJ45 male cord L = 0.3 m</td>
<td>TRV00803</td>
</tr>
<tr>
<td>10 RJ45/RJ45 male cord L = 0.6 m</td>
<td>TRV00806</td>
</tr>
<tr>
<td>5 RJ45/RJ45 male cord L = 1 m</td>
<td>TRV00810</td>
</tr>
<tr>
<td>5 RJ45/RJ45 male cord L = 2 m</td>
<td>TRV00820</td>
</tr>
<tr>
<td>5 RJ45/RJ45 male cord L = 3 m</td>
<td>TRV00830</td>
</tr>
<tr>
<td>1 RJ45/RJ45 male cord L = 5 m</td>
<td>TRV00850</td>
</tr>
</tbody>
</table>

(1) For measurement display with MicroLogic A, E, P and H.
(2) See www.schneider-electric.com.
## Connection

### Fixed circuit breakers

**Front connection / Replacement kit (3 or 4 parts)**

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Top/Bottom</th>
<th>3P Catalog Numbers</th>
<th>4P Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-1600 A</td>
<td>Top</td>
<td>47990</td>
<td>47991</td>
</tr>
<tr>
<td>2000/3200 A</td>
<td>Top</td>
<td>47992</td>
<td>47993</td>
</tr>
<tr>
<td>800-1600 A</td>
<td>Bottom</td>
<td>47932</td>
<td>47933</td>
</tr>
<tr>
<td>2000/3200 A</td>
<td>Bottom</td>
<td>47942</td>
<td>47943</td>
</tr>
</tbody>
</table>

**Installation manual**

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### Rear connection (vertical or horizontal mounting) / Replacement kit (3 or 4 parts)

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Vertical/Horizontal</th>
<th>3P Catalog Numbers</th>
<th>4P Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-2000 A</td>
<td>Vertical</td>
<td>47964</td>
<td>47965</td>
</tr>
<tr>
<td>2500/3200 A</td>
<td>Vertical</td>
<td>47966</td>
<td>47967</td>
</tr>
<tr>
<td>4000 A</td>
<td>Vertical</td>
<td>47968</td>
<td>47969</td>
</tr>
<tr>
<td>4000b/5000 A</td>
<td>Vertical 2x</td>
<td>47966 2x</td>
<td>47967 2x</td>
</tr>
<tr>
<td>6300 A</td>
<td>Vertical 2x</td>
<td>47968 2x</td>
<td>47969 2x</td>
</tr>
</tbody>
</table>

**Installation manual**

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### Drawout circuit breakers

**Front connection / Replacement kit (3 or 4 parts)**

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Top/Bottom</th>
<th>3P Catalog Numbers</th>
<th>4P Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-1600 A</td>
<td>Top or bottom</td>
<td>47960</td>
<td>47961</td>
</tr>
<tr>
<td>2000/3200 A</td>
<td>Top or bottom</td>
<td>47962</td>
<td>47963</td>
</tr>
</tbody>
</table>

**Installation manual**

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### Rear connection (vertical or horizontal mounting) / Replacement kit (3 or 4 parts)

<table>
<thead>
<tr>
<th>Current Range</th>
<th>Vertical/Horizontal</th>
<th>3P Catalog Numbers</th>
<th>4P Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-2000 A types H1/H2</td>
<td>Vertical</td>
<td>47964</td>
<td>47965</td>
</tr>
<tr>
<td>800-1600 A types H3/L1</td>
<td>Horizontal</td>
<td>47964</td>
<td>47965</td>
</tr>
<tr>
<td>2500/3200 A types H1/H2</td>
<td>Vertical</td>
<td>47966</td>
<td>47967</td>
</tr>
<tr>
<td>2000/3200 A types H3/L1</td>
<td>Horizontal</td>
<td>47966</td>
<td>47967</td>
</tr>
<tr>
<td>4000 A</td>
<td>Vertical</td>
<td>47968</td>
<td>47969</td>
</tr>
<tr>
<td>4000b/5000 A</td>
<td>Vertical 2x</td>
<td>47966 2x</td>
<td>47967 2x</td>
</tr>
<tr>
<td>6300 A</td>
<td>Vertical 2x</td>
<td>47968 2x</td>
<td>47969 2x</td>
</tr>
</tbody>
</table>

**Installation manual**

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### Connection accessories

### Disconnectable front-connection adapter for fixed circuit breaker (3 or 4 parts)

<table>
<thead>
<tr>
<th>Current Range</th>
<th>3P Catalog Numbers</th>
<th>4P Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600 A</td>
<td>48464</td>
<td>48466</td>
</tr>
<tr>
<td>2000/3200 A</td>
<td>48465</td>
<td>48467</td>
</tr>
</tbody>
</table>

**Installation manual**

Notice inside the kit

### Interphase barriers / Replacement kit (3 parts)

**For fixed rear-connected circuit breaker**

48599

**For drawout rear-connected circuit breaker**

48600

**Installation manual**

47950

### Additional support brackets for mounting on a backplate

**For fixed rear-connected circuit breaker (2 parts)**

47829

### Grounding kit KTM

**Grounding kit for MasterPact NW fixed**

- Side plate kit: 48556
- Device earthing kit: 48557

**Grounding kit for MasterPact NW drawout**

48557
### Replacement parts for MicroLogic control units

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-time rating plug (limits setting range for higher accuracy)</td>
<td>33542</td>
</tr>
<tr>
<td>Standard 0.4 at 1 x Ir</td>
<td>33542</td>
</tr>
<tr>
<td>Low-setting option 0.4 at 0.8 x Ir</td>
<td>33543</td>
</tr>
<tr>
<td>High-setting option 0.8 at 1 x Ir</td>
<td>33544</td>
</tr>
<tr>
<td>Without long-time protection</td>
<td>33545</td>
</tr>
</tbody>
</table>

### Battery + cover

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery (1 part)</td>
<td>33593</td>
</tr>
<tr>
<td>Cover (1 part)</td>
<td>33592</td>
</tr>
<tr>
<td>For MicroLogic A, E</td>
<td>47067</td>
</tr>
<tr>
<td>For MicroLogic P and H</td>
<td>47067</td>
</tr>
</tbody>
</table>

### Communication option

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFE</td>
<td>LV434001</td>
</tr>
<tr>
<td>Ethernet interface for LV breaker</td>
<td>LV434001</td>
</tr>
<tr>
<td>Ethernet interface for LV breakers and gateway</td>
<td>LV434002</td>
</tr>
<tr>
<td>IFM Modbus-SL interface module</td>
<td>LV434000</td>
</tr>
<tr>
<td>I/O application module</td>
<td>LV434063</td>
</tr>
<tr>
<td>User guide IFE</td>
<td>DOCA0084EN-00</td>
</tr>
<tr>
<td>User guide I/O application module</td>
<td>DOCA0055EN-00</td>
</tr>
</tbody>
</table>

### Accessories

#### External sensors

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>External sensor for earth-fault protection (TCE)</td>
<td>34035</td>
</tr>
<tr>
<td>Sensor rating</td>
<td>34035</td>
</tr>
<tr>
<td>400/2000 A</td>
<td>34035</td>
</tr>
<tr>
<td>1000/4000 A</td>
<td>34036</td>
</tr>
<tr>
<td>4000/6300 A</td>
<td>48182</td>
</tr>
</tbody>
</table>

#### Source ground return (SGR) earth-fault protection

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>External sensor (SGR)</td>
<td>33579</td>
</tr>
<tr>
<td>MDGF summing module</td>
<td>48891</td>
</tr>
</tbody>
</table>

#### Rectangular sensor for earth-leakage protection + Vigi cable

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>280 mm x 115 mm / L1</td>
<td>56053</td>
</tr>
<tr>
<td>470 mm x 160 mm / L2</td>
<td>56054</td>
</tr>
</tbody>
</table>

#### Vigi cable or external voltage cable

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigi cable or external voltage cable</td>
<td>47090</td>
</tr>
</tbody>
</table>

#### External power supply module (AD)

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-30 V DC</td>
<td>LV454440</td>
</tr>
<tr>
<td>48-60 V DC</td>
<td>LV454441</td>
</tr>
<tr>
<td>100-125 V DC</td>
<td>LV454442</td>
</tr>
<tr>
<td>110-130 V AC</td>
<td>LV454443</td>
</tr>
<tr>
<td>200-240 V AC</td>
<td>LV454444</td>
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</tbody>
</table>

#### Battery module (BAT)

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 battery</td>
<td>54446</td>
</tr>
<tr>
<td>24 V DC</td>
<td>54446</td>
</tr>
</tbody>
</table>

#### Test equipments

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand held test kit (HHTK)</td>
<td>33594</td>
</tr>
<tr>
<td>Full function test kit (FFTK)</td>
<td>33595</td>
</tr>
<tr>
<td>Test report edition come from FFTK</td>
<td>34559</td>
</tr>
<tr>
<td>FFTK test cable 2 pin for STR trip unit</td>
<td>34560</td>
</tr>
<tr>
<td>FFTK test cable 7 pin for MicroLogic trip unit</td>
<td>33590</td>
</tr>
</tbody>
</table>
## Remote operation

### Gear motor

<table>
<thead>
<tr>
<th>MCH (1 part)</th>
<th>48 V</th>
<th>100/130 V</th>
<th>200/240 V</th>
<th>250/277 V</th>
<th>380/415 V</th>
<th>440/480 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz</td>
<td>47889</td>
<td>47893</td>
<td>47889</td>
<td>47891</td>
<td>47896</td>
<td>47897</td>
</tr>
<tr>
<td>DC</td>
<td>24/30 V</td>
<td>47886</td>
<td>48/60 V</td>
<td>100/125 V</td>
<td>200/250 V</td>
<td></td>
</tr>
</tbody>
</table>

### Terminal block (1 part)

- For fixed circuit breaker: 47074
- For drawout circuit breaker: 47849

### Installation manual

- 47951

## Closing and opening release (XF or MX)

### Standard coil (1 part)

<table>
<thead>
<tr>
<th>Standard coil (1 part)</th>
<th>12 V DC</th>
<th>24/30 V DC, 24 V AC</th>
<th>48/60 V DC, 48 V AC</th>
<th>100/130 V AC/DC</th>
<th>200/250 V AC/DC</th>
<th>277 V AC</th>
<th>380/480 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz DC</td>
<td>33658</td>
<td>33659</td>
<td>33660</td>
<td>33661</td>
<td>33662</td>
<td>33663</td>
<td>33664</td>
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</tbody>
</table>

### Communicating coil (1 part)

<table>
<thead>
<tr>
<th>Communicating coil (1 part)</th>
<th>12 V DC</th>
<th>24/30 V DC, 24 V AC</th>
<th>48/60 V DC, 48 V AC</th>
<th>100/130 V AC/DC</th>
<th>200/250 V AC/DC</th>
<th>277 V AC</th>
<th>380/480 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz DC</td>
<td>33032</td>
<td>33033</td>
<td>33034</td>
<td>33035</td>
<td>33036</td>
<td>33037</td>
<td>33038</td>
</tr>
</tbody>
</table>

### Terminal block (1 part)

- For fixed circuit breaker: 47074
- For drawout circuit breaker: 47849

### Installation manual

- 47951

## Undervoltage release MN

### Undervoltage release (1 part)

<table>
<thead>
<tr>
<th>Undervoltage release (1 part)</th>
<th>24/30 V DC, 24 V AC</th>
<th>48/60 V DC, 48 V AC</th>
<th>100/130 V AC/DC</th>
<th>200/250 V AC/DC</th>
<th>380/480 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz DC</td>
<td>33668</td>
<td>33669</td>
<td>33670</td>
<td>33671</td>
<td>33673</td>
</tr>
</tbody>
</table>

### Terminal block (1 part)

- For fixed circuit breaker: 47074
- For drawout circuit breaker: 47849

### Installation manual

- 47951

## MN delay unit

### MN delay unit (1 part)

<table>
<thead>
<tr>
<th>MN delay unit (1 part)</th>
<th>R (non-adjustable)</th>
<th>Rr (adjustable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 50/60 Hz DC</td>
<td>33680</td>
<td>33681</td>
</tr>
<tr>
<td>48/60 V AC/DC</td>
<td>33684</td>
<td>33685</td>
</tr>
<tr>
<td>100/130 V AC/DC</td>
<td>33682</td>
<td></td>
</tr>
<tr>
<td>200/250 V AC/DC</td>
<td>33683</td>
<td></td>
</tr>
<tr>
<td>380/480 V AC/DC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Installation manual

- 47951
## Chassis locking

**“Disconnected” position locking / 1 part**

<table>
<thead>
<tr>
<th>By padlocks</th>
<th>VCPO</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>By Profalux keylocks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profalux</td>
<td>1 lock with 1 key + adaptation kit</td>
<td>64934</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit</td>
<td>64935</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>64936</td>
</tr>
<tr>
<td>1 keylock Profalux (without adaptation kit):</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key not identified combination</td>
<td>33173</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215470 combination</td>
<td>33174</td>
</tr>
<tr>
<td></td>
<td>identical key identified 215471 combination</td>
<td>33175</td>
</tr>
<tr>
<td><strong>By Ronis keylocks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ronis</td>
<td>1 lock with 1 key + adaptation kit</td>
<td>64937</td>
</tr>
<tr>
<td></td>
<td>2 locks 1 key + adaptation kit</td>
<td>64938</td>
</tr>
<tr>
<td></td>
<td>2 locks 2 different keys + adaptation kit</td>
<td>64939</td>
</tr>
<tr>
<td>1 keylock Ronis (without adaptation kit):</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>identical key not identified combination</td>
<td>33189</td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24135 combination</td>
<td>33190</td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24153 combination</td>
<td>33191</td>
</tr>
<tr>
<td></td>
<td>identical key identified EL24315 combination</td>
<td>33192</td>
</tr>
<tr>
<td><strong>Adaptation kit (without keylock):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>adaptation kit Profalux / Ronis</td>
<td>48564</td>
</tr>
<tr>
<td></td>
<td>adaptation kit Kirk</td>
<td>48565</td>
</tr>
<tr>
<td></td>
<td>adaptation kit Castell</td>
<td>48566</td>
</tr>
</tbody>
</table>

### Door interlock / 1 part

- Right and left-hand side of chassis (VPECD or VPECG) | 47914

### Racking interlock

| | 5 parts | 64940 |

### Breaker mismatch protection / 1 part

- Breaker mismatch protection (VDC) | 33767

### Chassis accessories

**Auxiliary terminal shield (CB) / 1 part**

| 800/4000 A | 3P | 4P |
| 4000b/6300 A | 3P | 4P |

**Safety shutters + locking block / 1 part**

| 800/4000 A | 3P | 4P |
| 4000b/6300 A | 3P | 4P |

**Shutter locking block (for replacement) / 1 part**

| 2 parts for 800/4000 A | 48591 |

**Earthing kit for chassis**

| Types for N1/H1/NA/HA | 3P | 4P |

Note: the installation manual is enclosed.
Clusters

1 disconnecting contact cluster for chassis (see table below) (part 1) 64906

<table>
<thead>
<tr>
<th>Chassis rating (A)</th>
<th>MasterPact NW 3P</th>
<th>MasterPact NW 4P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N1</td>
<td>H1/H2</td>
</tr>
<tr>
<td>250</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>630</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>800</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>1000</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>1250</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>1600</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>2000</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>2500</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>3200</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>4000</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>4000b</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>5000</td>
<td>72</td>
<td>96</td>
</tr>
<tr>
<td>6300</td>
<td>72</td>
<td>96</td>
</tr>
</tbody>
</table>

*Note: the minimum order is 6 parts.*

Set of 2 clusters fitters for 2 and 3 clusters 47554

Racking handle

Racking handle 47944

DC rear connection

Serial connection kit

For NW10/20 DC 48642

For NW40 DC 48643
## MasterPact NW

### Circuit breaker locking and accessories

#### Pushbutton locking device / 1 part

- **By padlocks**: 48536
- **Installation manual**: 47951

#### OFF position locking / 1 part

- **By padlocks**: 48539
- **By Profalux keylocks**
  - Profalux
    - 1 lock with 1 key + adaptation kit: 64928
    - 2 locks 1 key + adaptation kit: 64929
    - 2 locks 2 different keys + adaptation kit: 64930
  - 1 keylock Profalux (without adaptation kit):
    - identical key not identified combination: 33173
    - identical key identified 215470 combination: 33174
    - identical key identified 215471 combination: 33175
- **By Ronis keylocks**
  - Ronis
    - 1 lock with 1 key + adaptation kit: 64931
    - 2 locks 1 key + adaptation kit: 64932
    - 2 locks 2 different keys + adaptation kit: 64933
  - 1 keylock Ronis (without adaptation kit):
    - identical key not identified combination: 33189
    - identical key identified EL24135 combination: 33190
    - identical key identified EL24153 combination: 33191
    - identical key identified EL24315 combination: 33192
- **Adaptation kit (without keylock):**
  - adaptation kit Profalux / Ronis: 64925
  - adaptation kit Kirk: 64926
  - adaptation kit Castell: 64927

#### Other circuit breaker accessories

- **Mechanical operation counter / 1 part**
  - Operation counter CDM: 48535
  - **Installation manual**: 47951

- **Escutcheon and accessories / 1 part**
  - Escutcheon
    - Fixed: 48601
    - Transparent cover (IP 54): 48602
    - Escutcheon blanking plate: 48605
  - **Installation manual**: 47951

- **Front cover (3P / 4P) / 1 part**
  - Front cover: 47939
  - **Installation manual**: 47951

- **Spring charging handle / 1 part**
  - Spring charging handle: 47940
  - **Installation manual**: 47951

- **Arc chute for MasterPact NW / 1 part**
  - Type N1/NA/HF: 3 x 47935
  - Type H1/H2/HA (NW08 to NW40): 3 x 47935
  - Type H1/H2/HA (NW40b to NW63): 6 x 47936
  - Type H3/H10/HA10: 3 x 47936
  - Type L1: 3 x 47937
  - Type NW DC: 3 x 47934
  - **Installation manual**: 47951

---

Catalog numbers: spare parts

[www.se.com](http://www.se.com)
### Mechanical interlocking for TransferPact source changeover

#### Interlocking of 2 devices using connecting rods
- Complete assembly with 2 adaptation fixtures + rods
  - 2 MasterPact NW fixed devices: 48612
  - 2 MasterPact NW drawout devices: 48612
- Can be used with 1 NW fixed + 1 NW drawout.
  
  *Note*: the installation manual is enclosed.

#### Interlocking of 2 devices using cables
- Choose 2 adaptation sets (1 for each device + 1 set of cables)
  - 1 adaptation fixture for MasterPact NW fixed devices: 47926
  - 1 adaptation fixture for MasterPact NW drawout devices: 47926
  - 1 set of 2 cables: 33209
- (*) Can be used with any combination of NT or NW, fixed or drawout devices.

#### Interlocking of 3 devices using cables
- Choose 3 adaptation (including 3 adaptation fixtures + cables)
  - 3 sources, only 1 device closed, fixed or drawout devices: 48610
  - 2 sources + 1 coupling, fixed or drawout devices: 48609
  - 2 normal + 1 replacement source, fixed or drawout devices: 48608

#### Cable-type door interlock
- 1 complete assembly for MasterPact NW fixed or drawout device: 48614
  
  *Note*: the installation manual is enclosed.
# Indication contacts

## ON/OFF indication contacts (OF) / 12 parts
- 1 additional block of 4 contacts: 64922
- Wiring:
  - For fixed circuit breaker: 47074
  - For drawout circuit breaker: 47849

## “Fault trip” indication contacts (SDE) / 1 part
- Changeover contact (SDE) 6 A - 240 V: 47915
- Low-level: 47916
- Wiring:
  - For fixed circuit breaker: 47074
  - For drawout circuit breaker: 47849

## “Ready to close” contact (1 max.) / 1 part
- 1 changeover contact (5 A - 240 V): 47080
- 1 low-level changeover contact: 47081
- Wiring:
  - For fixed circuit breaker: 47074
  - For drawout circuit breaker: 47849

## “Connected, disconnected, test position” indication contact (carriage switches) / 1 part
- Changeover contacts 6 A - 240 V: 33170
- CE, CD, CT Low-level: 33171

## Set of additional actuators for carriage switches / 1 set
- 1 set: 48560

## Combined closed / connected contacts for use with 1 auxiliary contact / 1 part
- 1 contact (5 A - 240 V): 48477
- or 1 low-level contact: 48478

## Electrical closing pushbutton / 1 part
- 1 pushbutton: 48534

## Auxiliary terminals for chassis alone
- 3 wire terminal (1 part): 47849
- 6 wire terminal (1 part): 47850
- Jumpers (10 parts): 47900
<table>
<thead>
<tr>
<th>Instructions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chassis accessories</td>
<td>47952</td>
</tr>
<tr>
<td>Circuit breaker accessories</td>
<td>47951</td>
</tr>
<tr>
<td>Fixed and drawout circuit breaker</td>
<td>47950</td>
</tr>
<tr>
<td>User manual</td>
<td>47954</td>
</tr>
<tr>
<td>NW AC (French)</td>
<td>47955</td>
</tr>
<tr>
<td>NW DC (French)</td>
<td>64923</td>
</tr>
<tr>
<td>NW DC (English)</td>
<td>64924</td>
</tr>
<tr>
<td>MicroLogic user manual</td>
<td></td>
</tr>
<tr>
<td>20/50 (French)</td>
<td>33076</td>
</tr>
<tr>
<td>20/50 (English)</td>
<td>33077</td>
</tr>
<tr>
<td>2A/7A (French)</td>
<td>33079</td>
</tr>
<tr>
<td>2A/7A (English)</td>
<td>33080</td>
</tr>
<tr>
<td>2E/8E (French)</td>
<td>33079</td>
</tr>
<tr>
<td>2E/8E (English)</td>
<td>33080</td>
</tr>
<tr>
<td>5P/7P (French)</td>
<td>33082</td>
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<tr>
<td>5P/7P (English)</td>
<td>33083</td>
</tr>
<tr>
<td>5H/7H (French)</td>
<td>33085</td>
</tr>
<tr>
<td>5H/7H (English)</td>
<td>33086</td>
</tr>
<tr>
<td>Modbus communication notice for manual</td>
<td>33088</td>
</tr>
</tbody>
</table>
# Catalog numbers: spare parts

## Communication, monitoring and control

### Communication option

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFE</td>
<td>Ethernet interface for LV breaker</td>
<td>LV434001</td>
</tr>
<tr>
<td>IFE</td>
<td>Ethernet interface for LV breakers and gateway</td>
<td>LV434002</td>
</tr>
<tr>
<td>IFM Modbus-SL interface module</td>
<td></td>
<td>LV434000</td>
</tr>
<tr>
<td>I/O application module</td>
<td></td>
<td>LV434063</td>
</tr>
<tr>
<td>User guide IFE</td>
<td></td>
<td>DOCA0084EN-00</td>
</tr>
<tr>
<td>User guide I/O application module</td>
<td></td>
<td>DOCA0055EN-00</td>
</tr>
</tbody>
</table>

### Monitoring and control

#### ULP display module

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard front display module FDM121</td>
<td></td>
<td>TRV00121</td>
</tr>
<tr>
<td>FDM mounting accessory (diameter 22 mm)</td>
<td></td>
<td>TRV00128</td>
</tr>
</tbody>
</table>

#### Ethernet display module

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchboard front display module FDM128</td>
<td></td>
<td>LV434128</td>
</tr>
</tbody>
</table>

#### ULP wiring accessories

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaker ULP cord L = 0.35 m</td>
<td></td>
<td>LV434195</td>
</tr>
<tr>
<td>Breaker ULP cord L = 1.3 m</td>
<td></td>
<td>LV434196</td>
</tr>
<tr>
<td>Breaker ULP cord L = 3 m</td>
<td></td>
<td>LV434197</td>
</tr>
<tr>
<td>Breaker ULP cord L = 5 m</td>
<td></td>
<td>LV434198</td>
</tr>
<tr>
<td>10 stacking connectors for communication interface modules</td>
<td></td>
<td>TRV00217</td>
</tr>
<tr>
<td>2 Modbus line terminators</td>
<td></td>
<td>VW3A8306DRC (2)</td>
</tr>
<tr>
<td>5 RJ45 connectors female/female</td>
<td></td>
<td>TRV00870</td>
</tr>
<tr>
<td>10 ULP line terminators</td>
<td></td>
<td>TRV00880</td>
</tr>
<tr>
<td>10 RJ45/RJ45 male cord L = 0.3 m</td>
<td></td>
<td>TRV00803</td>
</tr>
<tr>
<td>10 RJ45/RJ45 male cord L = 0.6 m</td>
<td></td>
<td>TRV00806</td>
</tr>
<tr>
<td>5 RJ45/RJ45 male cord L = 1 m</td>
<td></td>
<td>TRV00810</td>
</tr>
<tr>
<td>5 RJ45/RJ45 male cord L = 2 m</td>
<td></td>
<td>TRV00820</td>
</tr>
<tr>
<td>5 RJ45/RJ45 male cord L = 3 m</td>
<td></td>
<td>TRV00830</td>
</tr>
<tr>
<td>1 RJ45/RJ45 male cord L = 5 m</td>
<td></td>
<td>TRV00850</td>
</tr>
</tbody>
</table>

(1) For measurement display with MicroLogic A, E, P and H.

(2) See www.schneider-electric.com.
### Indication contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>OF - ON/OFF indication contacts</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td></td>
</tr>
<tr>
<td>1 OF 6 A-240 V AC (10 A-240 V AC and low-level for NW)</td>
<td></td>
</tr>
<tr>
<td>1 OF low-level for NT</td>
<td>Max. 4 qty</td>
</tr>
<tr>
<td>Additional</td>
<td></td>
</tr>
<tr>
<td>1 block of 4 OF for NW</td>
<td>Max. 2 qty</td>
</tr>
<tr>
<td>EF - combined “connected/closed” contacts</td>
<td></td>
</tr>
<tr>
<td>1 EF 6 A-240 V AC for NW</td>
<td>Max. 8 qty</td>
</tr>
<tr>
<td>1 EF low-level for NW</td>
<td>Max. 8 qty</td>
</tr>
<tr>
<td>SDE - “fault-trip” indication contacts</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td></td>
</tr>
<tr>
<td>1 SDE 6 A-240 V AC</td>
<td></td>
</tr>
<tr>
<td>Additional</td>
<td></td>
</tr>
<tr>
<td>1 SDE 6 A-240 V AC</td>
<td>1 SDE low level</td>
</tr>
</tbody>
</table>

### Programmable contacts

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 MDC contacts</td>
</tr>
</tbody>
</table>

### Remote operation

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carriage switches Low level</td>
</tr>
<tr>
<td>6 A-240 V AC</td>
</tr>
<tr>
<td>CE - “connected” position</td>
</tr>
<tr>
<td>Max. 3 for NW/NT</td>
</tr>
<tr>
<td>CD - “disconnected” position</td>
</tr>
<tr>
<td>Max. 3 for NW - 2 for NT</td>
</tr>
<tr>
<td>CT - “test” position</td>
</tr>
<tr>
<td>Max. 3 for NW - 1 for NT</td>
</tr>
</tbody>
</table>

### AC - NW actuator for 6 CE - 3 CD - 0 CT additional carriage switches

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cradle</td>
</tr>
</tbody>
</table>

### Locking

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBP - ON/OFF pushbutton locking (by transparent cover + padlocks)</td>
</tr>
<tr>
<td>For NW</td>
</tr>
</tbody>
</table>

### Off position locking:

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCPO - by padlocks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSPO - by keylocks</td>
</tr>
</tbody>
</table>

### Chassis locking in “disconnected” position:

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSPD - by keylocks</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>VO - safety shutters on chassis for NT and NW</td>
</tr>
</tbody>
</table>

### MicroLogic control unit functions:

<table>
<thead>
<tr>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 : basic protection (long time + inst.)</td>
</tr>
<tr>
<td>5.0 : selective protection (long time + short time + inst.)</td>
</tr>
<tr>
<td>6.0 : selective + earth-fault protection (long time + short time + inst. + earth-fault)</td>
</tr>
<tr>
<td>7.0 : selective + earth-leakage protection (long time + short time + inst. + earth-leakage)</td>
</tr>
</tbody>
</table>