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Rocker switch  QuickFlex®

Technical information

Merten System M / M-Smart / M-Arc / M-Star / M-Plan / M-Elegance

Dimensions

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<tr>
<th></th>
<th>1-gang</th>
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Merten M-Smart

Merten M-Arc

Merten M-Star

Merten M-Plan

Merten M-Elegance Glass / Metal / Wood
Merten System M/M-Smart/M-Arc/M-Star/M-Plan/M-Elegance

Dimensions

Shaver socket

<table>
<thead>
<tr>
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**Technical information**

**Merten Artec/Antique/Trancent**

**Dimensions**

**Rocker switch/push-button**

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<tr>
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<td>a=374.8</td>
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</table>

* The Merten 1.5-gang Artec frame is only used together with the multi-function push-button, 4-gang with room temperature control unit, art. no. MTN6288.
**Merten Artec/Antique/Trancent**

**Dimensions**

---

**Shaver socket**

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
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![Shaver socket diagram](image-url)
Technical information

SCHUKO socket-outlets

Dimensions

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<th>SCHUKO socket-outlet</th>
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Dimensions in mm

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Installation switches and push-buttons

**One-way circuit with locator light**

Diagram of one-way switch 2 pole with indicator light MTN3102-0000.

**Two-way circuit with locator light**

Diagram of two-way switch with indicator light MTN3136-0000.

**Intermediate switch circuit with locator light**

Diagram of intermediate switch with locator light MTN3137-0000.

**Two-circuit switch with locator light**

Diagram of two-circuit switch with indicator light MTN3105-0000.

**Two-circuit switch with indicator light**

Diagram of two-circuit switch with indicator light MTN3105-0000.

**Two-way circuit with locator light combine with double two-way switch**

Diagram of two-way switch with locator light MTN3136-0000.

**One-way switch 2 pole with indicator light or heating emergency switch**

Diagram of one-way switch 2 pole with indicator light MTN3102-0000.

**Two-way switch with indicator light as one-way switch with indicator light or heating emergency switch**

Diagram of two-way switch with indicator light MTN3106-0000.

**Two-way switch with indicator light as one-way switch with locator light**

Diagram of two-way switch with indicator light MTN3106-0000.

**Two-way switch with indicator light**

Diagram of two-way switch with indicator light MTN3106-0000.
Two-way switch with indicator light as two-way switch with locator light

Single-sided two-way circuit with indicator light

Double-sided two-way circuit with indicator light

Two-way push-button with locator light

(Application: If the staircase relay is operated by the current of the locator lights.)

Push-button with locator light

Push-button, 1-pole, with separate signalling contact for indicator light

Push-button, 1-pole, with separate signalling contact for locator light

Double push-button, 2 make contacts
Push-button for hotel keycard holder

**Indicator light**

- **Indication light**: Continuous light
  - Keycard inserted:
    - Room lamp on
    - The insert is lit
  - Keycard not inserted:
    - Room lamp off
    - The insert is not lit

**Continuous light**

- **Indication light**: Continuous light
  - Keycard inserted:
    - Room lamp on
    - The insert is lit
  - Keycard not inserted:
    - Room lamp off
    - The insert is not lit
LED light signal inserts

Roller shutter switch
MTN3715-0000
LED light signal insert, two-colour
MTN370492
Two-way switch
MTN3116-0000
LED light signal insert, single-colour
MTN5706091

Permitted loads for installation switches for different compensation and lamp types

10 A, AC 230 V

Inductive (uncompensated)
22 lamps at 40 W
14 lamps at 65 W

Capacitive (compensated, \(\cos \phi = 1\))
34 lamps at 40 W
22 lamps at 65 W

Twin-lamp circuit
38 lamps at 40 W
28 lamps at 65 W

Parallel compensation
8 lamps at 40 W
5 lamps at 65 W

The number of lamps stated also applies to complete two-circuit switches

16 A, AC 400 V

Inductive (uncompensated)
33 lamps at 40 W
5 lamps at 65 W

Capacitive (compensated, \(\cos \phi = 0.5\))
51 lamps at 40 W
42 lamps at 65 W

Twin-lamp circuit
57 lamps at 40 W
42 lamps at 65 W

Parallel compensation
12 lamps at 40 W
7 lamps at 65 W
Merten inserts
Replacement circuit diagrams

Existing one-way circuit

Dimming of luminaires

Dimming of luminaires

Switching with electronic switch insert

Switching with relay switch insert

Electronic switch insert MTN575799

Relay universal insert MTN575897

Only ohmic loads such as incandescent lamps and 230 V halogen lamps may be connected.

For switching e.g. energy-saving lamps, transformers, fluorescent lamps or relays.

L N

One-way/Two-way switch

Rotary dimmer with on/off switch MTN5131-0000

Super dimmer

L N

L N

L N

L N
Existing two-way circuit

Dimmable two-way circuit with push-button

Dimmable two-way circuit with extension TELE insert

Switching with relay switch insert and extension TELE insert

Notice!
ET super dimmer MTN577899 cannot be used here.
Merten inserts
Replacement circuit diagrams

Existing intermediate switch circuit

Dimmable intermediate switch circuit with push-button
Trancent control electronics

The Trancent control electronics are elements of the system modules. They are plugged onto the corresponding electronic switches, relay switches and memory super dimmers, together with frame. Then the glass sensor cover, containing the individually labelled cover foil, is screwed on.

The combinations allowed can be found in the functional and device overview table for Trancent devices.

The active cover, which is touched to switch, is indicated by the dotted area. The function is triggered by simply touching the active cover - there is no need to apply pressure. Touch the glass using the minimum area of coverage (one or two fingertips, as required). The minimum time period for touching the cover is 0.5 seconds.

When installed horizontally, the Trancent insert is mounted at a rotated angle of 90°.

Construction

The system consists of the following components:
(The illustration shows the design of a 2-gang combination)

Trancent insert (depending on function)
Trancent frame
Trancent control electronics (depending on function and on integrated insert)
Cover foil
Note: Function-dependent cover foils available on request
Trancent glass sensor cover (transparent or satinated)

Trancent socket-outlets

Flush-mounted outlet
socket-outlet insert
Trancent frame
Spacer
Cover foil
Trancent glass socket-outlet cover
Socket-outlet insert
Merten Trancent  
Frame, glass covers

### Frame

| Frame, 1-gang | MTN482160 |
| Frame, 2-gang | MTN482260 |
| Frame, 3-gang | MTN482360 |
| Frame, 4-gang | MTN482460 |

### Trancent glass covers

| Glass sensor cover, 1-gang | MTN569100 | MTN569101 |
| Glass socket-outlet cover, 1-gang | MTN569400 | MTN569401 |
| Glass sensor cover, 2-gang | MTN569200 | MTN569201 |
| Glass socket-outlet cover, 2-gang | MTN568200 | MTN568201 |
| Glass sensor cover 1-gang with socket-outlet glass cover 1-gang | MTN569500 | MTN569501 |
| Glass sensor cover, 3-gang | MTN569300 | MTN569301 |
| Glass socket-outlet cover, 3-gang | MTN568300 | MTN568301 |

Delivered with standard cover foil and screws
### Technical information

**Merten Trancent**

**Functions and device overview**

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<th>Inserts</th>
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<td><strong>Electronic switch (2 conductors - neutral conductor is not required)</strong></td>
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<tr>
<td>Switching of ohmic loads</td>
<td>Electronic switch insert MTN575799 (25-400 W) AC 220-230 V, 50-60 Hz</td>
<td>Control electronics, 1-gang MTN569090 Two-circuit control electronics MTN569091 Roller shutter control electronics MTN569092 Control electronics, 1- to 4-gang MTN6164-4600</td>
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<tr>
<td>Pulse generator for surge switches or protective circuits</td>
<td>Electronic push-button insert MTN574697 (4-100 VA)</td>
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<tr>
<td>Relay switch (3 conductors - neutral conductor is required)</td>
<td>Relay universal insert MTN575897 AC 220-230 V, 50-60 Hz max. 1000 W/VA; 500 VA for LV halogen lamps with conventional transformer; max. 140 μF capacitive load</td>
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<tr>
<td>Switching of ohmic, inductive or capacitive loads via two outputs</td>
<td>Roller shutter/two-circuit insert MTN576499</td>
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<td>Dimmer (2 conductors - neutral conductor is not required)</td>
<td>Universal super dimmer insert MTN770999 at 50 Hz: 25 - 420 VA at 60 Hz: 25 - 340 W</td>
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<td>Dimming of capacitive loads</td>
<td>Memory ET super dimmer insert for capacitive load MTN577899 (20-315 W)</td>
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<td>Roller shutter/blind</td>
<td>Roller shutter/two-circuit insert MTN576499 not permitted</td>
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</table>

**KNX**

The covers facing each other can either be parameterised as a pair (dual-surface) or as individual buttons (single-surface).

- Dual-surface: blind control, switching, dimming, toggling, pulse edges, temperature, scene.
**Merten Trancent**

**Circuit diagrams**

### Switching with electronic switch insert

- L N
- Only ohmic loads such as incandescent lamps and 230 V halogen lamps may be connected.
- Electronic switch insert, art. no. MTN575799
  - Control electronics, 1-gang (art. no. MTN569090)

### Switching with relay universal insert

- L N
- For switching e.g. energy-saving lamps, transformers, fluorescent lamps or relays.
- Relay universal insert, art. no. MTN575897
  - Control electronics, 1-gang (art. no. MTN569090)

### Dimming of luminaires

- L N
- Memory super dimmer art. no. MTN577899
  - Control electronics, 1-gang (art. no. MTN569090)

### Control of a blind/roller shutter drive

- L N
- Motor with limit switches
- Roller shutter / two-circuit insert, art. no. MTN576499
  - Roller shutter control electronics, art. no. MTN566092

### Switching of two outputs

- L N
- Channel 1
- Channel 2
- Roller shutter / two-circuit insert, art. no. MTN576499
  - Two-circuit control electronics, art. no. MTN566091
Technical information

Merten Trancent
Replacement circuit diagrams

Two-way circuit: replaced by Trancent insert and push-button

Two-way circuit: replaced by Trancent insert and extension TELE insert

Two-way circuit: replaced by relay universal insert and extension TELE insert

Intermediate switch circuit: replaced by Trancent insert and push-button

Intermediate switch circuit: replaced by Trancent insert and extension TELE insert

Intermediate switch circuit: replaced by Trancent insert, push-button and extension TELE insert
Installation

Rocker switch

Type of protection: IP 44

Switch or push-button inserts from our flush-mounted ranges

Intermediate plate with screw fixing

Supporting frame with screw fixing

Shatter-proof rocker

SCHUKO socket-outlet with hinged lid

Type of protection: IP 44

SCHUKO socket-outlet insert

Size 60 mounting outlet

Gasket

Supporting frame with screw fixing

Shatter-proof cover with hinged lid

Dimensions

<table>
<thead>
<tr>
<th>Merten Aquadesign</th>
<th>1-gang</th>
<th>a=90.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-gang</td>
<td>a=161.6</td>
<td></td>
</tr>
<tr>
<td>3-gang</td>
<td>a=232.8</td>
<td></td>
</tr>
<tr>
<td>4-gang</td>
<td>a=304</td>
<td></td>
</tr>
</tbody>
</table>

Rocker switch

Socket-outlet
Rocker switch and rocker button
Type of protection: IP 40

SCHUKO socket-outlet
Type of protection: IP 20

Roller shutter switch and push-button with semi-cylinder lock
Scope of delivery: without lock
Since this switch is sealed, we recommend a lock with 315° key bit position
Merten Anti-vandalism

Dimensions

Rocker switch

Merten anti-vandalism

<table>
<thead>
<tr>
<th>Type</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-gang</td>
<td>a=95</td>
</tr>
<tr>
<td>2-gang</td>
<td>a=166</td>
</tr>
<tr>
<td>3-gang</td>
<td>a=237</td>
</tr>
</tbody>
</table>

Key-operated switch

Merten anti-vandalism

<table>
<thead>
<tr>
<th>Type</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-gang</td>
<td>a=95</td>
</tr>
<tr>
<td>2-gang</td>
<td>a=166</td>
</tr>
<tr>
<td>3-gang</td>
<td>a=237</td>
</tr>
</tbody>
</table>
Electronics

Mains voltage for all electronic devices with relay outputs

- Electronic devices with relay outputs are chiefly roller blind controls, time switches, ARGUS movement detectors and light-sensitive switches, that can be distinguished by their neutral conductor terminals. A capacitor, designed for sinusoidal alternating voltage, provides the power supply for these devices. This wave form is complied with by nearly all facilities-based carriers. The capacitor power units are resistant to momentary deviations from the normal sinusoidal alternating voltage, like e.g. power failures, power changeovers.
- Voltage rises of up to 460 V for 10 milliseconds
- Power output spikes up to and exceeding IEC 802
- Ripple-control signals

If inverters producing rectangular, triangular or trapezoidal alternating voltages are used for local power networks or emergency power units, then devices with capacitors should not be used, because these abnormal voltage curves may destroy the devices.

Electronic sensor switches / dimmers

The electronic switches, relay switches and memory super dimmers are part of a system module set. Inserts with varying performance characteristics can be combined with sensor surfaces, TELE sensor surfaces or sensor surfaces with radio receivers. The combinations allowed can be found in the functional and device overview table for electronic and relay switches.

Sensor surface:
The sensor surface has a contact area for manual operation of the connected load.
- Touch briefly to switch on or off.
- Touch longer to gradually turn the dimmer lighting up or down.
- The sensor surface is snapped onto the insert with the frame.

TELE sensor surfaces:
TELE sensor surfaces can be controlled either manually, by touching the contact area, or by means of an infrared remote control (art. no. MTN570222).
- Press a transmitter button briefly = Switch
- Hold a button down = Dim
- A maximum of ten TELE sensor surfaces can be operated within a room via remote control.
- The TELE sensor surfaces are coded to one of the transmission channel numbers with a screwdriver.

Trancent control electronics

The Trancent control electronics are also elements of the system modules. They are plugged onto the corresponding electronic switches, relay switches and memory super dimmers, together with frame. Then the glass sensor cover, containing the individually labelled cover foil, is screwed on.

The combinations allowed can be found in the functional and device overview table for Trancent devices.

The inserts can be operated through the glass cover.
- The active cover, which is touched to switch, is indicated by the dotted area.
- The function is triggered by simply touching the active cover - there is no need to apply pressure.
- Touch the glass using the minimum area of coverage (one or two fingertips, as required).
- The minimum time period for touching the cover is 0.5 seconds.
- When installed horizontally, the Trancent insert is mounted at a rotated angle of 90°.
Electronic push-button art. no. MTN574697

Extension unit operation with

Push-button Electronic extension unit Electronic push-button as pulse generator Surge circuit Push-button as pulse generator

Relay universal insert, art. no. MTN575897

Relay universal insert with sensor or TELE sensor surface (up to two push-buttons can be connected in parallel)

Relay universal insert with sensor or TELE sensor surface

Relay universal insert with sensor surface

Relay universal insert with sensor surface

You can connect any number of Relay universal inserts in parallel.

Extension unit operation with

Push-button Electronic extension unit Relay universal insert as main unit

Relay universal insert with sensor or TELE sensor surface

Extension TELE insert MTN573998

Relay universal insert with sensor or TELE sensor surface
Technical information

Electronic/relay switches
Functions and device overview

<table>
<thead>
<tr>
<th>Function</th>
<th>Inserts</th>
<th>Design cover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Local operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor cover</td>
</tr>
<tr>
<td>1*</td>
<td>MTN5776.. MTN5701..</td>
<td></td>
</tr>
<tr>
<td>2*</td>
<td>MTN5737..</td>
<td></td>
</tr>
<tr>
<td>3*</td>
<td>MTN5738..</td>
<td></td>
</tr>
</tbody>
</table>

Electronic switch (2 conductors - neutral conductor is not required)

Switching of ohmic loads
- Incandescent lamps, 230 V halogen lamps
- Extension input for push-buttons and extension TELE inserts

Electronic switch insert
MTN575799 (25-400 W)
AC 220-230 V, 50-60 Hz

Switching of ohmic loads
- Incandescent lamps, 230 V halogen lamps

Electronic switch insert
MTN576799 (40-300 W)

Pulse generator for surge switches or protective circuits
- The switching function is determined by the surge switch/protective circuit used.
- Extension input for push-buttons and extension TELE inserts

Electronic push-button insert
MTN574697 (4-100 VA)

Relay switch (3 conductors - neutral conductor is required)

Switching, timed switching, push-button operation of ohmic, inductive and capacitive loads
- Push-button function, time function, switch function
- Incandescent lamps, energy-saving lamps, LV halogen lamps with conventional transformer, fluorescent lamps
- Extension input for push-buttons and extension TELE inserts

Relay universal insert
MTN575897
AC 220-230 V, 50-60 Hz
max. 1000 W/VA;
500 VA for LV halogen lamps with conventional transformer;
max. 140 μF capacitive load

Switching of ohmic, inductive or capacitive loads
- Incandescent lamps, fluorescent lamps, energy-saving lamps, LV halogen lighting etc.

Relay switch insert
MTN576897
0-1000 W/VA, max. 140 μF

Dimmer (2 conductors - neutral conductor is not required)

Dimming of ohmic, inductive and capacitive loads
- Incandescent lamps, 230 V halogen lamps, dimmable wound transformers, electronic transformers
- Phase control or phase alignment
- Extension input for push-buttons and extension TELE inserts

Universal super dimmer insert
MTN577099
at 50 Hz: 25 - 420 VA
at 60 Hz: 25 - 340 W

Dimming of ohmic, inductive and capacitive loads
- Incandescent lamps, 230 V halogen lamps, dimmable wound transformers, electronic transformers
- Phase alignment
- Extension input for push-buttons and extension inserts

Universal dimmer insert, 2-gang
MTN568099
AC 230 V, 50-60 Hz, 2 x 50-200 VA

Dimming of capacitive loads
- Electronic transformers and incandescent lamps
- Phase alignment
- Extension unit operation with mechanical push-buttons or relay universal insert (art. no. MTN575897) with configured push-button function.

Memory ET super dimmer insert
MTN577899 (20-315 W)

Extension unit
Operator function as extension unit like main unit
- Control of the extension input of the main unit; can be operated remotely
- Neutral conductor required

Extension TELE insert
MTN573998

1* Merten System M/M-Smart/M-Arc/M-Star/M-Plan/M-Elegance
2* Merten Artec/Antique/Trancent
3* Merten Aquadesign
**Electronic/relay switches**

*Functions and device overview*

<table>
<thead>
<tr>
<th>Local operation/IR remote control</th>
<th>Local operation</th>
<th>Local operation</th>
<th>Local operation/radio remote control: Radio system CONNECT</th>
<th>Local operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELE sensor surface</td>
<td>Convenient dial for universal super dimmer insert</td>
<td>2-gang push-button module</td>
<td>CONNECT radio sensor surface for dimmer inserts</td>
<td>CONNECT radio sensor surface for switch inserts</td>
</tr>
<tr>
<td>MTN5779.., MTN5703.., MTN5677..</td>
<td>MTN5678..</td>
<td>MTN568499</td>
<td>MTN5046..</td>
<td>MTN5044</td>
</tr>
<tr>
<td>MTN5709..</td>
<td>MTN568199</td>
<td>MTN5024.., MTN5034..</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- from version 2A

- from version 1F
  - Minimum load: 40 W

- from version 3A
  - Minimum load: 40 W
Dimmer selection

Today you will find one or several lights that can be dimmed in almost every household. Among these are also dimmer solutions for low voltage halogen lamps (12 V) e.g. in rope systems or downlights.

Incandescent lamps, high and low voltage halogen lamps or motors e.g. for extractor fans - can be dimmed, i.e. their power consumption is reduced. They all require dimmers with different technical features.

Before installing, you must make sure that the dimmer is compatible with the load, and that loads with different input behaviour are not mixed behind a dimmer. This can cause problems, especially when extensions are made to the existing installation.

This is why Merten has labelled the dimmers and transformers with standard symbols in the catalogue, in the technical information, and on the devices themselves.

Load reduction

The connected loads mentioned are for single flush-mounted installations; this applies to all dimmers. The maximum connected load must not be reached if the dimmer cannot dissipate sufficient heat - e.g. when installed in cavity walls or in surface-mounted housing.

Reduction of connected loads for dimmers

<table>
<thead>
<tr>
<th>Cause</th>
<th>Reduction in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimmer installed in cavity or wooden walls*</td>
<td>25% 30% 50%</td>
</tr>
<tr>
<td>Several dimmers installed in combination*</td>
<td></td>
</tr>
<tr>
<td>Several built-in dimmers installed next to each other on a DIN rail.*</td>
<td></td>
</tr>
<tr>
<td>Dimmer installed in 1- or 2-gang surface-mounted or console housing</td>
<td></td>
</tr>
<tr>
<td>Dimmer installed in 3-gang surface-mounted or console housing</td>
<td></td>
</tr>
</tbody>
</table>

*If several factors occur at the same time, the reductions are added up.

Example 1: Two dimmers are installed in multiple combination in a wooden wall: The load reduction per dimmer is then 25% + 25% = 50%.

Example 2: Three dimmers are installed in a 3-gang surface-mounted housing: The load reduction for each dimmer is 50%.

Reduction of the connected load for universal super dimmer insert, art. no. MTN577099

<table>
<thead>
<tr>
<th>Cause</th>
<th>Reduction in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimmer installed in cavity or wooden walls*</td>
<td>10% 15% 20%</td>
</tr>
<tr>
<td>Several dimmers installed in combination*</td>
<td></td>
</tr>
<tr>
<td>Dimmer installed in surface-mounted housing*</td>
<td></td>
</tr>
</tbody>
</table>

*If several factors occur at the same time, the reductions are added up.

Example 1: Two universal super dimmers are installed in multiple combination in a wooden wall: The load reduction per dimmer is then 15% + 20% = 35%.

Example 2: Three universal super dimmers are installed in a 3-gang surface-mounted housing: The load reduction per dimmer is then 10% + 20% = 30%.

Labelling

For simple letters "R", "L", "C", "M" or a combination of these and a symbol divide the dimmers into classes by marking their default loads:

R for ohmic loads (e.g. incandescent lamps)

L for predominantly inductive loads (e.g. dimmable wound 50 Hz / 60 Hz transformers for e.g. low voltage halogen lamps)

C for predominantly inductive loads (e.g. MET, electronic transformers for incandescent halogen lamps or low voltage halogen lamps)

M for motors.

The dim symbol indicates the brightness and speed control options.

If a dimmer is labelled with several letters, then only one of these next to the "R" can be used for all connected loads. The labelling of the loads must correspond to the selected symbol. At present, a dimmer can not operate "L" and "C" load types in one switching circuit simultaneously. This avoids incorrect combinations, e.g. phase control dimmer instead of phase alignment dimmer.

■ Check that at least one identical character is marked on dimmer and transformer. Then your combination of devices is correct.

■ Make sure that L and C loads are not combined behind a dimmer. Even a dimmer with several symbols cannot operate mixed L / C installations.

Example: The dimmer is a universal R,L,C type; R and L load types are already installed. The new load must then be R or L, under no circumstances C.

Technical information

Dimmer system

Basics
## Dimmer system

### Dimmer and load types

<table>
<thead>
<tr>
<th>Load type</th>
<th>Dimmer type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard phase control dimmer</td>
</tr>
<tr>
<td>Standard incandescent lamps</td>
<td><img src="#" alt="R" /></td>
</tr>
<tr>
<td>High-voltage halogen incandescent lamps</td>
<td><img src="#" alt="R" /></td>
</tr>
<tr>
<td>Low-voltage halogen lamps with wound transformer</td>
<td><img src="#" alt="L" /></td>
</tr>
<tr>
<td>Low-voltage halogen lamps with electronic transformer with cap. characteristics</td>
<td><img src="#" alt="C" /></td>
</tr>
<tr>
<td>Low-voltage halogen lamps with electronic transformer with ind. characteristics</td>
<td><img src="#" alt="L" /></td>
</tr>
<tr>
<td>Motors</td>
<td><img src="#" alt="M" /></td>
</tr>
</tbody>
</table>

(The table is not exhaustive)
Fitting of super dimmers into existing installations

- The diagram shows how to convert a conventional two-way or intermediate switch circuit into a convenient, dimmable two-way or intermediate switch circuit in combination with Merten super dimmers.
- New systems should also have conventional two-way or intermediate switch circuits wired in order to maintain maximum subsequent flexibility.
- The push-buttons can be replaced by electronic extension TELE inserts (for IR remote control), art. no. MTN573998, depending on the customer’s requirements.
- Mixed operation is possible with electronic extension units and push-buttons.
- Switching ON/OFF and dimming UP/DOWN is possible at every operating unit.
- For memory ET super dimmer insert art. no. MTN577899: Extension operation is only possible with mechanical push-buttons or the relay universal insert, art. no. MTN575897, with configured push-button function.

Technical information

Dimmer system
Replacement circuit diagrams

Existing One-way circuit

Replaced by

Dimming of luminaires

Existing two-way circuit

Replaced by

Dimmable two-way circuit with push-button

Existing intermediate switch circuit

Replaced by

Dimmable intermediate switch circuit with push-button
Phase control dimmer for incandescent lamps and 230 V halogen lamps

Dimmer type:

<table>
<thead>
<tr>
<th>Connections</th>
<th>Connecting terminal for the load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting terminal for the control cable</td>
<td></td>
</tr>
<tr>
<td>Connecting terminal for the phase</td>
<td></td>
</tr>
</tbody>
</table>

Rotary dimmer for incandescent lamps in on/off circuit

Rotary dimmer for incandescent lamps in two-way circuit

Dimmable two-circuit with push-button

Rotary dimmer
MTN5132-0000

Two-way switch
MTN3116-0000

Push-button

Super dimmer as main unit
### Phase control dimmer

**for Low-voltage halogen lamps with conventional, wound transformers**

**Dimmer type:**

<table>
<thead>
<tr>
<th>Connections</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L /</td>
<td>Connecting terminal for the phase</td>
</tr>
<tr>
<td>1</td>
<td>Connecting terminal for the control cable</td>
</tr>
<tr>
<td>Connecting terminal for the load</td>
<td>RL</td>
</tr>
</tbody>
</table>

With this dimmers you can control conventional, wound laminated core transformers for LV halogen lamps. Several transformers can be connected in parallel up to a maximum connected load. Note that it is always the transformer's power that applies, even if it is only partly loaded.

Mixed operation of transformers and ohmic loads can be carried out without any problems if you observe the output data. For technical reasons, a power extension for the operation of inductive loads is not possible.

The use of conventional toroidal transformers can cause problems, if they have not been explicitly declared for dimming operation.
Phase alignment dimmer

for Low-voltage halogen lamps with electronic transformers

**Dimmer type:**

<table>
<thead>
<tr>
<th>Connections</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L / →</td>
<td>Connecting terminal for the phase</td>
</tr>
<tr>
<td>1</td>
<td>Connecting terminal for the control cable</td>
</tr>
<tr>
<td></td>
<td>Connecting terminal for the load</td>
</tr>
</tbody>
</table>

In contrast to conventional dimmers with phase control, these dimmers operate based on the principle of phase control. Only these dimmers can control electronic transformers for low-voltage halogen lamps. The maximum power that can be connected is limited for electronic transformers as well as incandescent lamps. It should be noted that it is always the maximum power for the transformer that is relevant. Conventional inductive, i.e. wound transformers must not be connected, as they can destroy the ET dimmer.

Advantages of the dimmers: no humming, no short circuits (no change of fuse required), overload protection, soft start function to protect the lamps and switching memory function.

Numerous electronic transformers of other manufacturers can be dimmed with the dimmers. Electronic transformers are smaller, lighter and safer than conventional wound transformers using the same power.
Universal dimmer with phase control or phase alignment

for incandescent lamps, Low-voltage halogen lamps with wound transformers or with electronic transformers

<table>
<thead>
<tr>
<th>Dimmer type:</th>
<th>RLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections:</td>
<td>Connecting terminal for the load</td>
</tr>
<tr>
<td></td>
<td>Connecting terminal for the control cable</td>
</tr>
<tr>
<td>L / N</td>
<td>Connecting terminal for the phase</td>
</tr>
</tbody>
</table>

With the universal dimmers MTN577099 and MTN568099, loads can be dimmed with inductive blind part (e.g. conventional wound laminated core transformers for LV halogen lighting) or with capacitive blind part (e.g. LV halogen lighting with electronic transformer). The universal dimmers automatically recognise the connected load.

Mixed operation of transformers and ohmic loads (incandescent lamps) can be carried out without any problems if you observe the output data.

Caution!
The combination of a load with inductive behaviour and a load with capacitive behaviour can damage the dimmer and must be avoided.

When determining the performance of transformers, observe that it is always the power of the transformer that applies, even if it is not fully loaded.

The use of conventional toroidal transformers can cause problems, if they have not been explicitly declared for dimming operation by the manufacturer.

Technical information

Dimmer system
Phase control/phase alignment dimmer

Extension operation with push-button and/or electronic extension units

Ohmic load

Inductive load

Capacitive load
Dimmer system
Control of fluorescent lamps and motors

Control of fluorescent lamps

Electronic potentiometer insert combined with electronic ballasts

Electronic potentiometer insert combined with electronic ballasts and contactor relay

Control of motors

Control of single-phase motor
## Technical information

### Dimmer system

#### Lamps/dimmer matrix

<table>
<thead>
<tr>
<th>Type</th>
<th>Version</th>
<th>Art. no.</th>
<th>Incandescent lamps AC 230 V</th>
<th>Halogen lamps AC 230 V</th>
<th>Dimmable wound transformers</th>
<th>Electronic transformers for phase alignment</th>
<th>Electronic transformers with 1-10 V interface</th>
<th>Fluorescent lamps with electronic ballast for 1-10 V interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flush-mounted rotary dimmer inserts/ potentiometer insert 1 - 10 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-420 W/VA</td>
<td>MTN138-0000</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>20-600 W/VA</td>
<td>MTN5139-0000</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-400 W</td>
<td>MTN5131-0000, MTN5132-0000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-600 W/VA</td>
<td>MTN5133-0000</td>
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<td></td>
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<td></td>
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<tr>
<td>60-1000 VA</td>
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<tr>
<td>20-315 W</td>
<td>MTN5136-0000</td>
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<td></td>
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<tr>
<td>20-630 W</td>
<td>MTN5137-0000</td>
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<td></td>
<td></td>
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<tr>
<td>1 - 10 V</td>
<td>MTN5142-0000</td>
<td></td>
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<tr>
<td>Universal super dimmer insert</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>25 - 420 VA</td>
<td>MTN577099</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2x 50 - 200 VA</td>
<td>MTN568099</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Memory super dimmer inserts, flush-mounted</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - 315 W</td>
<td>MTN577899</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Roller shutter switch and push-button

Special notes concerning 1-pole systems

Roller shutter switch
For a roller shutter with one operating unit. Roller shutter moves until the limit switch is activated.

Roller shutter push-button
For a roller shutter with one operating unit. Roller shutter moves on as long as the button is pressed, at longest until the limit switch is reached.

Roller shutter switch and push-button
For a roller shutter and the use of a Manual/Automatic selector switch in connection with time switches, sun detectors, storm detectors etc.

Normal push-button
For a circuit with reclosing relay (switching sequence: Up, Stop, Down, Stop) a make contact is used.

Switch and push-button
according to the manufacturer’s specifications. When central control units, time switches, sun guards, storm guards etc. are used.

Use of rocker with reverse lock-out:
Roller shutter rocker switches and push-buttons produced after 1981 have a reverse lock-out in addition to the electrical locking system. The devices can be recognised by the symbol on the black upper side of the base.

Operating principle of the reverse lock-out:
It ensures that the roller shutter switch’s first selected direction of movement must be switched off before the new direction can be switched on. It ensures that the roller shutter push-button’s first selected directional rocker must be released before the new directional rocker can be pressed. This makes the interval between forward and backward movement sufficiently long, so that no damage can be caused to the drive.

Special notes concerning 2-pole systems

Momentary/maintained-contact switch for roller shutters
For two roller shutters with one operating unit. Roller shutters move on until they are switched off or reach the limit switch.

Roller shutter push-button
For two roller shutters with one operating unit. Roller shutters move on as long as the button is pressed, at longest until the limit switch is reached.

Switch or push-button
according to the manufacturer’s specifications. When central control units, time switches, sun guards, storm guards etc. are used.

Locking of lock and switch

Switch and push-button for semi-cylinder locks
applies to art. no. MTN3185.., MTN3186.., MTN3187.., MTN3188.. and MTN3189..
The switches and push-buttons are to be used for semi-cylinder locks with a total length of approx. 40 mm.

Locks with 90–135° and 225° key bit positions:
Lock and switch are interlocked, i.e. they cannot be removed without a key. The key can be removed in all switched positions. The key bit must be next to the switch fork.

Locks with 315° key bit position:
Lock and switch are not locked, i.e. removal is possible without a key. The key can only be removed in zero position. The key bit for roller shutter switches and push-buttons must lie in the switch fork.
The blind control system is easy to install and has many uses. Two central flush-mounted inserts are combined with various inserts, following a modular conception. Blinds or roller shutters can be controlled manually, remotely, in groups or automatically, using the blind control system. Additional functions such as sun protection, twilight or wind alarm are possible. The blind control insert is the system’s basic component.

Standard blind control insert

The blind control insert standard, art. no. MTN580698 is only designed for the individual operation of blind or roller shutter motors. The standard insert has no extension input and can not be switched to group or central control. A wind monitoring function is not possible with the standard blind control insert.

- For a blind/roller shutter motor with limit switch
- Individual control

The blind control insert has 4 connecting terminals. Two terminals are for the power supply (L, N) with AC 230 V mains voltage, another two are for controlling the blind or roller shutter motor in the up or down direction.

Blind control insert with extension input

For blind control systems with central/group control or wind monitoring, the blind control insert with extension input, art. no. MTN580699, is required. Group or central control can be implemented via the integrated extension input.

- For a blind/roller shutter motor with limit switch
- Individual control
- Extension input for group/control
- Wind monitoring function can be implemented

The blind control insert with extension input has 6 connecting terminals. Two terminals are for the power supply (L, N) with AC 230 V mains voltage, another two are for controlling the blind or roller shutter motor in the up or down direction. Additionally, there are two terminals "1" and "2" for the extension input. If 230 V mains voltage is switched at one of these inputs, the motor is triggered for the relevant direction of movement. The motor continues to run as long as the extension input is supplied with mains voltage. The extension input enables the simultaneous operation of several inserts, ensuring that the motors run at the same time.

Installation

The blind control insert is mounted into a 60 mm flush-mounted outlet. If extension units and/or flush-mounted sensor cables are installed, then the use of a deep outlet is recommended, due to the increased amount of cabling. The attachment is plugged onto the insert together with the design frame.

Control

Individual control

Each blind motor must be provided with an insert. Every motor can then be operated manually or automatically on the spot (depending on the attachment used).

Central/group control via inserts art. no. MTN580699

By ‘interconnecting’ inserts (art. no MTN580699) via the extension inputs, a central/group control system can be set up, with little installation work involved. Every blind is provided with its own blind control insert with the required attachment.

Group control of several inserts

Inserts "2" and "3" control the roller shutter or blind motors. Insert "1" (master) controls the extension inputs of the other inserts and in doing so forms a central/group control unit, i.e. both motors are driven simultaneously via insert "1". A motor may not be connected to a blind control insert (master) which is simultaneously controlling other inserts via the extension inputs.
Central control with wind monitoring and group control

Connection of inserts (art. no. MTN580699) on two phases

In larger installations, it is not always possible to operate all components on the same phase. For example, insert "4" could be installed centrally in an office building in the gatehouse (in this case phase L2). After working hours, all blinds in the building are raised by time control or manual activation. The blind control inserts "1", "2" and "3" in the various offices run on a separate phase (in this case phase L1). Insert "1" is switched with group control functions, i.e. blinds "2" and "3" are run simultaneously with insert "1".

Connection of inserts to different phases
## Blind control system
### Functions and device overview

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| Blind push-button | | |
| 1* MTN5877.., MTN5862.. | | |
| 2* MTN5842.. | | |
| Blind push-button with memory function and sensor connection | | |
| 1* MTN5879.., MTN5863.. | | |
| 2* MTN5843.. | | |
| Blind push-button with IR receiver and sensor connection | | |
| 1* MTN5880.., MTN5864.. | | |
| 2* MTN5844.. | | |
| Standard blind time switch | | |
| 1* MTN5814.., MTN5819.. | | |
| 2* MTN5859.. | | |
| Blind time switch | | |
| 1* MTN5815.., MTN5861.. | | |
| 2* MTN5841.. | | |
| Blind time switch with sensor connection | | |
| 1* MTN5816.., MTN5867.. | | |
| 2* MTN5851.. | | |
| Wind sensor interface | | |
| MTN580693 with wind sensor MTN580690 or MTN580692 | | |

1* Merten System M/M-Smart/M-Arc/M-Star/M-Plan/M-Elegance
2* Merten Artec/Antique/Trancent
Blind control system

Control buttons

Blind push-button

<table>
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<td>2*</td>
<td>Art. no. MTN5842.</td>
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</table>

- Manual operation
- Slat adjustment
- For manual operation of the roller shutter or blind motors, the blind push-button is plugged onto the blind control insert.

The electronic blind button replaces a mechanical blind button. The blind push-button has two separate operating surfaces for up and down directions. With the ▲ button the blind/roller shutter drive moves up and with the ▼ button down. Short operating times of max. 1 second produce an impulse for the duration of the push-button actuation. These short impulses are evaluated by the blind motors to adjust the slats (e.g. to avoid direct sunlight). After holding the button down for at least 1 second, the drive switches to continuous movement. If the user no longer presses the button, the blind/roller shutter is moved up/down to its end position. The blind’s running time of 2 minutes is predefined by the software; this is sufficient time for even larger blinds/shutters with longer running times to move to the limit position.

Blind push-button with memory function and sensor connection

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<td>2*</td>
<td>Art. no. MTN5843.</td>
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- Manual operation
- Slat adjustment
- Automatic output control with Raising and/or Lowering times in 24 hour cycles
- Sun protection function with sensor, art. no. MTN580691

In addition to the functions of the blind push-button with sensor connection, individual automatic raising and lowering times can be saved. Both times are saved, once at the desired raising time and once at the desired lowering time. Then both these commands can be repeated automatically on a daily basis. Both running times can be replaced by other times whenever required.

The memory attachment is ideal
- where blinds or roller shutters have to be raised and lowered at defined times each day,
- for simulating presence at home e.g. when on a business trip or on holiday,
- for automatically operating blinds/roller shutters: operating blinds/roller shutters is not forgotten in rooms rarely used,
- for elderly or handicapped persons, in order to operate blinds/roller shutters in the entire house whenever desired, without having to go from room to room or remember to program a clock.

Example: the following setting was saved - Up in the morning at 7 o’clock, Down in the evening at 8 o’clock. Every day the blind is moved up at 7 o’clock and back down again at 8 o’clock in the evening. This happens every day until new times have been "learned". A complete movement of approx. 2 minutes is performed each time.

Saving Up and Down times

Saving the times is done in push-button or memory mode by holding the direction button for ▲ Up time or ▼ Down time. After approx. 2 seconds the built-in buzzer emits 5 to 6 short signal tones, then a longer beep of approx. 1.5 seconds. The movement command has been saved. If you release the button beforehand, the command is carried out (movement time approx. 2 minutes), but not saved. An Up time and a Down time can be saved. It is also possible to program just one time, Up or Down (e.g. a Down time for the evening, in the morning the blind is raised manually). If more than two commands are saved in the course of a day, then the first commands are overwritten, so that only the last two are recorded.

| Saved travel times are deleted after a power failure exceeding 30 minutes. |

Change of operating mode (push-button mode, memory mode)

By actuating the right rocker half or simultaneously pressing both direction buttons (▲ and ▼), the operating mode is switched within approx. 3 seconds:
- 4 short signal tones: The attachment is in memory mode.
- 1 second long beep: The attachment is in push-button mode.

Reset (reset learned times)

By actuating the right rocker half or simultaneously pressing both direction buttons (▲ and ▼), a reset is triggered after approx. 7 seconds. A long beep (approx. 3 seconds) can be heard, the saved times are deleted. The memory attachment switches to push-button mode.

Sun protection function

For the blind push-button with memory function and sensor connection, the sun protection function (see blind push-button with sensor connection) can be used by connecting a sun / twilight sensor (art. no. MTN580691). The brightness value is fixed at approx. 20.000 lux.

Blind push-button with IR receiver and sensor connection

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<th>1*</th>
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<tr>
<td>2*</td>
<td>Art. no. MTN5844..</td>
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</table>

- Manual operation
- Slat adjustment
- Can be remote controlled via IR remote control (art. no. MTN570222)
- Sun protection function with sensor, art. no. MTN580691

The blind push-button with IR receiver and sensor connection replaces a mechanical blind push-button and offers, in addition to the blind push-button functions, the remote control option with one of the IR remote controls (art. no. MTN570222).

The IR receiver in the blind push-button reveals its advantages in large offices or presentation rooms. In the office, it is very convenient to move blinds to a position to stop the sun from dazzling you while working, without having to get up to do so. For presentation purposes, lecture rooms can be darkened using an IR remote control. But it is also convenient for private use, e.g. for elderly or handicapped persons, who are able to raise and lower roller shutters or blinds using the IR remote control from a single point.

Sun protection function

For the blind push-button with IR receiver and sensor connection, the sun protection function (see blind push-button with sensor connection) can be used by connecting a sun / twilight sensor (art. no. MTN580691). The brightness value is fixed at approx. 20.000 lux.

1* Merten System M/M-Smart/M-Arc/M-Star/M-Plan/M-Elegance
2* Merten Art/Artic/Antique/TriCentr
Standard blind time switch

| 1* | Art. no. MTN5814.., MTN5819.. |
| 2* | Art. no. MTN5859.. |

The standard blind time switch enables the programmed, time-controlled switching of a blind motor, in conjunction with a blind control insert.

- Manual operation
- Slat adjustment
- Simple clock functions:
  - Simple operation using 4 button panel
  - Pre-programming possible without flush-mounted insert
  - Time block Mon-Fri.: 1 x raising, 1 x lowering time
  - Time block Sat.-Sun.: 1 x raising, 1 x lowering time
  - Quick programming function
  - Factory-programmed switching times
  - Power reserve > 6 hrs. via memory capacitor

Programming

If the memory capacitor is loaded (approx. 30 min after fitting it onto the insert), the clock can be removed from the flush-mounted insert to make programming easier and programmed within approx. 6 hrs, independent of the flush-mounted insert.

Caution: If the blind control insert with extension input, art. no. MTN580699, is used with the standard time switch, then the extension input has no function.

Blind time switch

| 1* | Art. no. MTN5815.., MTN5861.. |
| 2* | Art. no. MTN5841.. |

- Manual operation
- Slat adjustment
- Random function (time shift in the range of +/-15 min)
- Astro function (time shift in the range of +/- 2 hrs, depending on the time of the year)
- Complex clock functions:
  - 3 independent program memories
  - 18 programmable switching times
  - Menu-controlled operation / programming
  - Reserve power up to 24 hours (without battery)
  - Reset to restore factory settings
  - Simple to switch from summer to winter time
  - Individual running time can be programmed

Apart from manual operation, up to 18 switching times can be divided among 3 independent program memories. In this way, different programs can be saved and retrieved (e.g. for daily routines, holidays, weekends, etc.). Functions such as the astro and random functions are not used globally for all switching times, but can be individually assigned to any Up or Down time. These functions can vary the Up and Down time, creating the impression to outsiders that the flat/house is occupied. Astro and random functions can therefore simulate presence. Travel times can be set for the blinds using special menu items.

The astro function

If the blind is to be opened at sunrise and closed again at sunset, then recorded switching times in automatic mode must be continuously adapted to the time of the year. For this purpose, the blind time switch calculates sunrise and sunset times for every day of the year. The time control attachment carries out appropriate adjustments corresponding to the time of the year on a weekly basis.

The random function

If the random function has been activated for a certain switching time, this time can vary by a maximum of +/- 15 minutes. This random time is generated/modified on a daily basis in steps of 1 minute and used for all switching times for which the random function has been selected. If the astro function was also activated for this switching time, then the switching time is adapted to the relevant sunrise and sunset times and varied by 15 +/- minutes using the random function.
Blind time switch with sensor connection

- Manual operation
- Slat adjustment
- Random function (time shift in the range of +/-15 min)
- Astro function (time shift in the range of +/- 2 hrs, depending on the time of the year)
- Complex clock functions:
  - 3 independent program memories
  - pre-set switching times
  - 18 programmable switching times
  - menu-controlled operation / programming
  - reserve power up to 24 hours (without battery)
  - reset to restore factory settings
  - simple to switch from summer to winter time
  - individual running time can be programmed
- Sun protection function with sensor, art. no. MTN580691

By connecting a sun/twilight sensor (art. no. MTN580691), the sun protection or twilight functions can be used in addition to the blind time switch.

Sun protection and twilight functions

The sun protection and twilight functions allow switching times to be controlled by brightness, i.e. the blinds are moved down when a preselected brightness value has been exceeded in either direction.

Sun protection function

The brightness threshold for the sun protection function (see Blind push-button with sensor connection) can be programmed on the time switch.

Twilight function

The sensor on the window pane enables the twilight function. The twilight function is activated approx. 120 minutes before sunset (astro line). Approx. 4 minutes after brightness has fallen below the set value, the blinds are moved down.

Sensor connection

A separate terminal block, to which the sun/twilight sensor (art. no. MTN580691) cables can be connected, is supplied with the blind attachments with sensor connection. This terminal block is integrated in the blind control insert. The connected sensor is connected to the attachment using the plug-in contacts.

Sun/twilight sensor

The same sensor is used for twilight and sun protection functions. It is thus possible to implement both functions with one sensor.

The window pane and sensor should first be cleaned with a suitable cleaning agent. Then moisten the sensor lightly and attach it to the window pane.

The sun protection function enables automatic lowering of the blinds once the programmed brightness value has been exceeded. The electronic system has no information on the current position of the blinds. The blinds must therefore be moved to the upper limit position, taking at least 2 minutes. Then a defined initial position has been reached and the sun protection function is activated.

The blind's limit position can be selected individually by positioning the sensor on the window pane. Applications: Sun protection at workplaces with monitor, sun protection for windows with flowers, glasshouses etc.

The twilight function will only work if used with the blind time switch with sensor connection; it enables the automatic lowering of the blinds, once brightness has fallen below the programmed value. The twilight function is only activated 2 hours before the astro time. This means that the blinds/roller shutters are not lowered every time it gets dark, e.g. due to bad weather or clouds. When the twilight function has been activated and the brightness level has fallen below the set value, the blinds are moved to their lower limit position. The position of the twilight sensor on the window pane can be selected as required.

Application: Lowering the blinds once it gets dark.

The sensor for the blind time switch with sensor connection is connected to the clock using the plug or the 3-pole screw terminal in the insert (e.g. for flush-mounted installation of the sensor cable). The sensor of all other design covers with sensor connection is only connected to the blind control insert.
The wind monitoring functionality

The wind monitoring unit allows the blinds to be raised or lowered depending on the wind force. The Up position protects fragile blind slats, maintaining safety in windy weather.

The wind monitoring unit consists of two components:
- the wind sensor (art. no. MTN580692 or MTN580690)
- and the wind sensor interface (art. no. MTN580693).

The wind sensor (art. no. MTN580692) is installed on the roof or wall of the house. It must be mounted in a position most suitable for measuring the wind force. The device must therefore not be mounted in the lee of any objects. Ensure that the device is mounted in the correct position. The sensor with heating (art. no. MTN580690) is suitable for trouble-free operation in winter. A separate power supply unit is required for the heating.

The wind sensor interface (art. no. MTN580693) allows the wind sensor to be connected to the blind control insert or to KNX via binary inputs.

If there is a wind alarm, all blinds whose extension inputs are switched together with the wind sensor interface output at the blind control insert are locked in the top limit position. These blinds can then no longer be operated manually or automatically. The wind alarm is only reset once the wind force at the wind sensor interface has fallen below the set value.
Technical information

Blind control system
Brief instructions for the blind time switch

Setting the day of the week

In the top right corner of the display, a black bar flashes next to "Monday".

1 Press [▲] or [▼] to set the current day of the week.
2 To confirm, press [Set].

Time: Setting the hour

The display "1 2" (00 - 23) flashes.

1 Press [▲] or [▼] to set the current hour.
2 To confirm, press [Set].

Time: Setting the minutes

The display "00" (00 - 59) flashes.

1 Press [▲] or [▼] to set the current minutes.
2 To confirm, press [Set].

The device now shows the current time, day of the week and summer or winter time.

Setting the basic data is now completed.

Programming the Up and Down times

The blind time switch features three program memories (1, 2, and 3). The memories 1 and 2 have been preprogrammed at the factory with Up and Down times. You can change or delete these times. The memory 3 has not been preprogrammed. You can program your personal Up and Down times immediately.

memory slot 3

1 Hold down the [Set] button until "prog" appears on the display.
2 Press [s] until 3 flashes on the display.
3 To confirm, press [Set].

The memory 3 is selected, - - appears on the display: - -

The display - - indicates a free memory slot in the selected memory (1, 2, or 3).

Programming Up and Down times in the memory 3

The following display lights up: - - - -

1 Press the [Set] button.
2 Press [▲] or [▼] to determine the direction of movement (Up or Down) for which your switching time is to be carried out.
3 To confirm, press [Set].

Switching time: Setting the hours

The first two digits "00" flash on the display.

1 Press [▲] or [▼] to set the hour at which the blinds are to be raised/lowered.
2 To confirm, press [Set].


**Blind control system**

**Brief instructions for the blind time switch**

### Switching time: Setting the minutes

The last two digits "00" flash on the display.

1. Press [A] or [V] to set the minutes.
2. To confirm, press [Set].

### Switching time: Setting the days of the week

In the display, bars appear next to each day of the week (Mon. to Sun.). Also, there is a frame around the first bar (Monday) that flashes. The flashing frame shows that you can select or deselect this day of the week. The switching times are only carried out for selected days of the week.

1. Press [A] or [V] to shift the flashing frame.
2. Press [Mode] to select or deselect the day of the week marked by the frame.

### Setting the random function

A dot flashes under "Random". A flashing dot indicates that the random function is switched off.

1. Press [A] or [V] to switch the random function on or off.
2. To confirm, press [Set].

### Setting the astro function

A dot flashes under "Astro". A flashing dot indicates that the astro function is switched off.

1. Press [A] or [V] to switch the astro function on or off.
2. To confirm, press [Set].

The following display appears: - - : - -

### Ending programming

When you have stored all the switching times in the program memory:

1. Press [Set] for at least 3 seconds.
2. The device now shows the current time, day of the week and summer or winter time.

If you press the [Set] button for too long, the blind time switch switches back into the "prog" mode. Hold the [Set] button down again for at least 3 seconds until the display shows the current time, day of the week and a "W" for winter time or an "S" for summer time. Let go of the [Set] button. Select the memory 0 so that the blinds are automatically raised/lowered at the times you have set.

1. Press the [Mode] button until the display shows the memory selected 0.

### Programming the switching times is now completed.

### Selecting program memory 0, 1 or 2

The device now shows the current time, day of the week and summer or winter time.

1. Press the [Mode] button to switch between the individual program memories 0, 1 or 2.

If there is no program memory shown on the display, no programmed Up and Down times will be carried out.

### Deleting switching times

The device now shows the current time, day of the week and summer or winter time.

1. Hold down the [Set] button until "prog" appears on the display.
2. Press [A] or [V] until the required program memory 0, 1 or 2 flashes on the display.
3. To confirm, press [Set].
4. Press [A] or [V] to select the switching time that you want to delete.
5. Press [Mode] for at least 3 seconds to delete the switching time.

The empty memory slot is indicated by the symbol - - : - - .

To delete other switching times:

6. Select the required time by pressing [A] or [V].
7. Press [Mode] for at least 3 seconds to delete the switching time.

To end the "Deleting switching times" procedure:

8. Press [Set] for at least 3 seconds.

The device now shows the current time, day of the week and summer or winter time.

### Switching between winter and summer times

The device now shows the current time, day of the week and summer or winter time.

1. Press [Set] to switch between:

- Winter time W
- Winter time and individual raising or lowering time W Y
- Summer time S
- Summer time and individual raising or lowering time Y S

If the individual blind raising or lowering time is not activated, the blinds will operate for the default time of 2 minutes.

Further information about the blind time switches can be found in the operating instructions.
**Functional principle**

Conventional electrical installation within a building is wired. Where wiring becomes too complicated or is simply impossible, radio is used. Using radio systems makes sense especially when:
- Customer requirements change and for example functions are to be upgraded.
- A house or flat is to be modernised.
- Flexibility of the installation site is required.

A huge number of functions of a conventional electrical installation can be performed with the CONNECT radio system:
- Switching lights on/off
- Dimming lights
- Blind control
- Timer
- Scenes

*Scenes* can also be programmed. Not only one function is carried out at the push of a button but several different ones (for example switching on lights and simultaneously moving roller shutters).

An additional advantage of the CONNECT radio system is that it is a bi-directional radio network. That means that all devices can transmit and receive signals simultaneously. It is possible for signals to be routed or for alternative radio transmission paths to be found (e.g. during temporary faults).

Other properties:
- Secure transmission using frequency range 868 MHz
- Clear addressing enables interference-free operation of multiple radio systems side by side
- Very flexible installation and configuration
- Implementation of groups, scene controlling options and central functions
- The extensive range of products covers areas of application such as:
  - Lighting control
  - Roller shutter control
  - Time switching functions
  - Staircase lighting function
  - Scenes
- No cable required, due to the use of battery-powered transmitters
- Extension of existing installations
- Extremely flat battery-powered push-button, e.g. for attaching to glass
- Indoor transmission range: around 30 m (depending on installation site and building characteristics such as materials and wall thicknesses)
- Range in free field: approx. 100 m

**System administrator**

For both configuration methods, one device must always be included as a "system administrator". Information is saved in the system administrator, for instance routing tables, the functions of all integrated devices as well as a defined network ID and device IDs. A system administrator must therefore be available when programming or carrying out changes.

The device allocated the system administration function must be in a fixed location which is easily accessible. We therefore recommend you use a push-button (e.g. radio push-button 1-gang/2-gang) as a system administrator. You can see which devices may be used as system administrators in the following tables.

In the following, the push-button which is to adopt the system administrator function is referred to as the "system administrator".

**Symbols**

The following symbols can be found in the following circuits and device tables:

- The device can assume the functions of the system administrator. We recommend you use only fixed devices as system administrator (e.g. CONNECT radio push-button, 1-gang).
- The device has the routing function. It automatically relays signals and maintains fault-free operation.
- The device transmits signals.
- The device receives signals and switches accordingly e.g. light or roller shutter.
- The EASY CONNECT method is not available or only available with restrictions.
- Z-Wave standard: The device is compatible with Z-wave products from other manufacturers.

**Configuration**

You have two configuration possibilities, depending on your requirements:

**The EASY CONNECT method**

For connecting max. five devices which are in the direct vicinity of each other (e.g. in one room). Configuration is carried out manually.

**Using the CONNECT radio configuration tool**

For systems between different rooms with up to 100 devices and extensive functions (scenes, central switching function, switch times, individual key assignment). To do this you will need the CONNECT radio configuration tool which offers configuration, documentation and diagnostic tools. Configuration is carried out using a PC.
EASY CONNECT

The EASY CONNECT configuration method is used when the radio network consists of maximum five devices, which are located in direct reception range of each other (e.g. in a room).

Requirements

- With new radio systems the push-button, on which a receiver is firstly programmed, manages the system administration. The system administrator is installed last of all as you will need to be able to move it near the devices which are to be programmed.
- Install all devices, except for the system administrator, at their final installation locations and connect them.
- Connect the loads to the receivers. Some receivers use the load to display confirmation of commands received during the learning process.

Teaching devices

Connections between devices are established by first teaching all receivers individually to the system administrator. Subsequently, additional transmitters are taught to the system administrator. During this procedure the connections and functions of the system administrator are copied to the transmitters. That means the transmitters carry out the same functions as the system administrator.

The teaching process

Only three steps are necessary to carry out teaching. Basic procedure:

1. Move the (prospective) system administrator into the vicinity of the device which is to be taught.
2. First of all press the key on the (prospective) system administrator three times within approximately 1.5 seconds.
   - If a system administrator does not yet exist, the LED will start to flash for approximately 6 seconds and then will light up continuously for approximately 30 seconds.
   - If a system administrator exists already, the LED will immediately light up for 30 seconds.
   
   You have time to teach a different device during the 30-second period when the LED lights up continuously.
3. First of all press the key/programming button/sensor surface on the device to the taught three times within approximately 1.5 seconds. This is confirmed by the LED lighting up for approximately 1 second.

The system administrator and the device which was to be taught are now connected with each other. If you want to teach additional devices, repeat the three steps.

Example

Installation of a two-way circuit with two receivers:

Step 1: Teach receiver 2 to the system administrator.

Step 2: Teach receiver 3 to the system administrator.

Step 3: Teach transmitter 4 to the system administrator.

Result:
You have installed a two-way circuit with two transmitters (push-buttons) and two loads.
The CONNECT 1-gang radio push-button is always assigned the function of the left key on the system administrator.
CONNECT radio system
CONNECT radio configuration tool

You select this configuration method when you want to set up a radio network between rooms with a wide range of functions (scenes, central function, switching times, individual stored key functions to name but a few). The system is capable of managing up to 100 devices.

Requirements
- You need a laptop, the "CONNECT radio configuration tool" software and the "CONNECT radio USB data interface".
- Ensure that receivers are distributed throughout the entire building. Receivers are able to route radio commands. If a radio transmission path is temporarily disrupted by furniture, for instance, other receivers within range can route the radio commands. The more receivers in range of the transmitter and of each other, the more reliable and stable operation will be.
- Reduce your time and effort by simply installing a CONNECT radio system already exists, you ought to delete it and reset the device to its factory settings.
- If you have a configuration tool/programming the system administrator. Therefore you are prompted to actuate the system administrator. In the final step, the information must be supplied to the individual devices. This is done graphically by simply dragging a line from the transmitter to the receiver.
- The configuration tool automatically detects which functions are available for the connected channels and sets a logical function for this connection.
- Example: If you connect a push-button to a dimmable plug adapter, the dimmer function will then automatically be set.

Setting up a new CONNECT radio system

Basic procedure:
1. Install devices
2. Connect the configuration tool/program the system administrator
3. Register devices
4. Insert function channels in the "Building view"
5. Connect devices
6. Program devices

Installing devices
Install all the devices at their final installation locations and connect them. This is necessary as the devices recognize where other devices capable of routing radio commands are located even when being registered. Connect the loads to the receivers. Some receivers use the load in order to confirm commands received.

Connecting the configuration tool/programming the system administrator
The configuration tool must be connected to the network in order to register new devices or to change an existing radio network. The connection is always made via the system administrator. Therefore you are prompted to actuate the system administrator or the prospective system administrator three times within approximately 1.5 seconds. The system administrator is then transferred to the configuration tool so that you may set up or change the system.

As soon as the configuration tool is disconnected from the radio network, the system administration is transferred back to the original system administrator.

Registering devices
Once the configuration tool is connected to the radio network, you must register the devices. Here the configuration tool reads out all of the devices’ information in order to be able to integrate them into the radio network. Register all the receivers first and then all the transmitters in a room. Only receivers are able to route radio commands.

Information about which receivers are present is also stored in the transmitters. The sequence in which devices are registered is therefore important. In order to register a device you must actuate it three times within 1.5 seconds. To confirm, the receivers briefly change their current switching status; on the transmitters, the LED in the push-button flashes. The device to be registered must be located in the direct vicinity of the "CONNECT radio USB data interface" connected to the laptop.

Each of these channels can be allocated a function via a connection. The functions available depend on the properties of the device. The individual function channels are shown in the building view as a tree-structure according to their logical arrangement (place of actuation/operation). The logical arrangement is usually the same as the installation location.

In the case of flush-mounted devices, the installation location and the actuation/operation location may differ. Thus, a flush-mounted receiver may be located on a distribution board in the hallway but switch a lamp in the living room. In this case, the installation location of the flush-mounted receiver is the hall. Later inclusion in the building view however will be in the living room.

Connecting devices
If the devices have been registered and the function channels have been inserted in the building view, you have to link the individual devices or their function channels. This is done graphically by simply dragging a line from the transmitter to the receiver.

The configuration tool automatically detects which functions are available for the connected channels and sets a logical function for this connection.

Example: If you connect a push-button to a dimmable plug adapter, the dimmer function will then automatically be set.

The channels are pre-set for each device but can be changed.

Inserting function channels in the "Building view"
A device has one or several function channels which are used to carry out functions. A push-button, 2-gang, has up to four channels, for instance:

Each of these channels can be allocated a function via a connection. The functions available depend on the properties of the device. The individual function channels are shown in the building view as a tree-structure according to their logical arrangement (place of actuation/operation). The logical arrangement is usually the same as the installation location.

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The channels are pre-set for each device but can be changed.
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<tr>
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<th>Radio features</th>
<th>Radio functions</th>
<th>CONNECT radio configuration (additional)</th>
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<tr>
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<td>Central device eight freely programmable operating buttons</td>
<td><img src="image" alt="Central Device" /></td>
<td><img src="image" alt="Central Control" /></td>
<td>Central control and visualisation of the radio system, Administration of central functions of the radio system (scenes, annual time switch programs, history function)</td>
</tr>
<tr>
<td>CONNECT radio universal remote control MTN506923</td>
<td>Remote control for the radio receivers, Merten IR devices and up to five IR AV devices</td>
<td><img src="image" alt="Remote Control" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Graphic programming of the EASY CONNECT functions</td>
</tr>
<tr>
<td>CONNECT radio push-button, Move 1* MTN5080.., MTN5081.. 2* MTN5082..</td>
<td>Battery-powered mobile radio transmitter</td>
<td><img src="image" alt="Remote Control" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Switch on, switch off, push-button operation (bell), scene</td>
</tr>
<tr>
<td>CONNECT radio push-button, 1-gang 1* MTN5061.., MTN5051.. 2* MTN5071..</td>
<td>Operator button, battery-powered, 2 channels, 12 radio receivers per channel</td>
<td><img src="image" alt="Operator Button" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Switch on, switch off, dim, raise/lower roller shutters, Additionally toggle, push-button operation (bell), scenes, division of channels</td>
</tr>
<tr>
<td>CONNECT radio push-button, 2-gang 1* MTN5062.., MTN5052.. 2* MTN5072..</td>
<td>Operator button, battery-powered, 4 channels, 12 radio receivers per channel</td>
<td><img src="image" alt="Operator Button" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Switch on, switch off, dim, raise/lower roller shutters, Additionally toggle, push-button operation (bell), scenes, division of channels</td>
</tr>
<tr>
<td>CONNECT radio sensor surface, for switch inserts 1* MTN5034.., MTN5024.. 2* MTN5044..</td>
<td>Operator button</td>
<td><img src="image" alt="Operator Button" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Switch on (to memory value), switch off, dim, Additionally staircase lighting function, ON/OFF delay, master/slave</td>
</tr>
<tr>
<td>CONNECT radio sensor surface for dimmer inserts 1* MTN5036.., MTN5026.. 2* MTN5046..</td>
<td>Operator button</td>
<td><img src="image" alt="Operator Button" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Switch on (to memory value), switch off, dim, Additionally adjustable dimming speed, staircase lighting function, master/slave, brightness limit, switch on to brightness limit, memory function that can be switched off</td>
</tr>
<tr>
<td>CONNECT radio roller shutter push-button with sensor connection 1* MTN5035.., MTN5025.. 2* MTN5045..</td>
<td>Operator button</td>
<td><img src="image" alt="Operator Button" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Roller shutters Up/Down, save sun sensor light value locally, Additionally master/slave, louvres, up/down duration</td>
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<tr>
<td>CONNECT radio transmitter flush-mounted, 4-gang MTN506004</td>
<td>Battery-powered, for up to 4 floating switch contacts</td>
<td><img src="image" alt="Battery-powered" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Switch on, switch off, dim, raise/lower shutters, push-button operation (bell), configuration as push-button or switch for all inputs</td>
</tr>
<tr>
<td>CONNECT radio receiver, flush-mounted, 1-gang switch MTN507501 AC 230 V, 10 A</td>
<td>Switching one load via make contact</td>
<td><img src="image" alt="Switching Contact" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Additionally staircase lighting function, ON/OFF delay</td>
</tr>
<tr>
<td>CONNECT radio receiver, flush-mounted, 1-gang universal dimmer MTN507900 AC 230 V, 25 VA-250 VA</td>
<td>Switching and dimming external loads</td>
<td><img src="image" alt="Switching Contact" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Additionally adjustable dimming speed, staircase lighting function, master/slave, brightness limit, switch on to brightness limit, memory function that can be switched off</td>
</tr>
<tr>
<td>CONNECT radio receiver, flush-mounted, 2-gang switch MTN507502 AC 230 V, 6 A</td>
<td>Switching two loads via make contact</td>
<td><img src="image" alt="Switching Contact" /></td>
<td><img src="image" alt="Switch Functions" /></td>
<td>Channel 2 can be used, additionally staircase lighting function, ON/OFF delay</td>
</tr>
</tbody>
</table>

1* Merten System M/M-Smart/M-Arc/M-Star/M-Plan/M-Elegance  
2* Merten Artec/Antique/Trancient
## CONNECT radio system
### Functions and device overview

### Devices

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<th>Radio features</th>
<th>Radio functions</th>
<th>EASY CONNECT</th>
<th>CONNECT radio configuration (additional)</th>
</tr>
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<td>CONNECT radio receiver, flush-mounted, 1-gang switch, 2-pole MTN507601 AC 230 V, 10 A</td>
<td><img src="image" alt="Switching one load via make contact a 2-pole make contact" /></td>
<td><img src="image" alt="Switch on, switch off, toggle" /></td>
<td><img src="image" alt="Additionally staircase lighting function, ON/OFF delay" /></td>
<td></td>
</tr>
<tr>
<td>CONNECT radio receiver, flush-mounted, 1-gang roller shutter MTN507801 AC 230 V, 6 A, cosφ =0.6 500 VA</td>
<td><img src="image" alt="Controlling one roller shutter drive" /></td>
<td><img src="image" alt="Roller shutter Up/Down, Stop" /></td>
<td><img src="image" alt="Slat, up/down duration" /></td>
<td></td>
</tr>
<tr>
<td>CONNECT radio plug adapter, switch MTN508519 AC 230 V, 50 Hz 16 A, cosφ=1, max. 35 μF</td>
<td><img src="image" alt="Switching external loads with SCHUKO plug." /></td>
<td><img src="image" alt="Switch on, switch off, toggle" /></td>
<td><img src="image" alt="Additionally staircase lighting function, ON/OFF delay" /></td>
<td></td>
</tr>
<tr>
<td>CONNECT radio plug adapter, universal dimmer MTN508619 AC 230 V, 50 Hz 40 VA-350 VA</td>
<td><img src="image" alt="Switching and dimming external loads with SCHUKO plug" /></td>
<td><img src="image" alt="Switch on (to memory value), switch off, dim" /></td>
<td><img src="image" alt="Additionally adjustable dimming speed, staircase lighting function, brightness limit, switch on to brightness limit, memory function that can be switched off" /></td>
<td></td>
</tr>
</tbody>
</table>

### Inserts

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<th>Design cover</th>
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<tr>
<td>CONNECT radio sensor cover for switch inserts</td>
<td><img src="image" alt="CONNECT radio sensor cover for switch inserts" /></td>
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<tr>
<td>CONNECT radio sensor cover for dimmer inserts</td>
<td><img src="image" alt="CONNECT radio sensor cover for dimmer inserts" /></td>
</tr>
<tr>
<td>CONNECT radio roller shutter push-button with sensor connection</td>
<td><img src="image" alt="CONNECT radio roller shutter push-button with sensor connection" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1*</th>
<th>2*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1* MTN5034.., MTN5024.. MTN5036.., MTN5026.. MTN5035.., MTN5025..</td>
<td>1* MTN5044.. MTN5046.. MTN5045..</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Inserts</th>
<th>Functions</th>
<th>Design cover</th>
</tr>
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<tbody>
<tr>
<td>Electronic switch insert MTN576799 (40-300 W)</td>
<td>Switching ohmic loads</td>
<td><img src="image" alt="Switching ohmic loads" /></td>
</tr>
<tr>
<td>Relay switch insert MTN576897 0-1000 W/VA, max. 140 μF</td>
<td>Switching of ohmic, inductive or capacitive loads</td>
<td><img src="image" alt="Switching of ohmic, inductive or capacitive loads" /></td>
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<tr>
<td>Universal super dimmer insert MTN577099 bei 50 Hz: 25 - 420 VA; bei 60 Hz: 25 - 340 W</td>
<td>Dimming of ohmic, inductive and capacitive loads</td>
<td><img src="image" alt="Dimming of ohmic, inductive and capacitive loads" /></td>
</tr>
<tr>
<td>Standard blind control insert MTN580698 (max. 1 Motor 1000 VA)</td>
<td>Controlling a blind/roller shutter drive</td>
<td><img src="image" alt="Controlling a blind/roller shutter drive" /></td>
</tr>
<tr>
<td>Blind control insert with extension input MTN580699 (max. 1 Motor 1000 VA)</td>
<td>Controlling a blind/roller shutter drive</td>
<td><img src="image" alt="Controlling a blind/roller shutter drive" /></td>
</tr>
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</table>
**Alternative to socket connection**

Combination socket-outlet RJ45/TAE (Cat 3), art. no. MTN465707

**Assignment for the upper connection strip (RJ45)**

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<thead>
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<th>Connecting terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>analogue DTAG</td>
<td>b</td>
<td></td>
<td></td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>int. standard</td>
<td>a</td>
<td></td>
<td>b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>digital ISDN (S0)</td>
<td>2a</td>
<td>1a</td>
<td>1b</td>
<td>2b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up0</td>
<td>a</td>
<td></td>
<td>b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSL</td>
<td>TX+</td>
<td>TX-</td>
<td>RX+</td>
<td></td>
<td>RX-</td>
<td></td>
</tr>
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</table>

**Assignment for the lower connection strip (TAE)**

<table>
<thead>
<tr>
<th>Connecting terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>analogue DTAG</td>
<td>La</td>
<td>Lb</td>
<td>W</td>
<td>E</td>
<td>b2</td>
<td>a2</td>
</tr>
</tbody>
</table>

Technical information

Network technology

Pin assignment for communications inserts

additional telephone installations, if required

**Alternative to socket connection**
Fitting dimensions

D-type plug 9-pole (art. no. MTN464391)
- RS 232
- 2x9-pole D-type plug socket or
- 2x9-pole D-type plug
- 1 opening can be broken out

D-type plug 15-pole (art. no. MTN464392)
- 2x15-pole D-type plug socket or
- 2x15-pole D-type plug
- 1 opening can be broken out

D-type plug 25-pole (art. no. MTN464393)
- 2x25-pole D-type plug socket or
- 2x25-pole D-type plug
- 1 opening can be broken out

BNC/TNC (art. no. MTN464395)
- 2xBNC/TNC cable built-in socket or
- 2xTNC built-in socket
- 1 opening can be broken out

Modular Jack (art. no. MTN464398)
- 2xAMP-Modular Jack System
- 1 opening can be broken out

Audio socket XLR (art. no. MTN464390)

Optical fibre ST connectors (art. no. MTN464386)
- For 2 optical fibre ST connectors

Duplex SC (art. no. MTN464381)
- For 2 Duplex SC connectors

Reichle & De-Massari (art. no. MTN464384)

IBM-System ACS type Mini C (art. no. MTN464383)
- For 2 IBM Advanced Connectivity System (ACS) type Mini C modules
## Heating control
### Functions and device overview

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<th>Design cover</th>
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<td>Central plate for room temperature control unit insert with switch</td>
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<tr>
<td></td>
<td>MTN5364..</td>
<td>Central plate for room temperature control unit insert with changeover contact</td>
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<tr>
<td></td>
<td>MTN5365..</td>
<td>Central plate for floor thermostat insert with switch</td>
</tr>
<tr>
<td></td>
<td>MTN5367..</td>
<td>1* MTN5348..</td>
</tr>
<tr>
<td></td>
<td>MTN5361..</td>
<td>MTN5347..</td>
</tr>
<tr>
<td></td>
<td>MTN5362..</td>
<td>MTN5349..</td>
</tr>
<tr>
<td></td>
<td>MTN5368..</td>
<td>MTN5358..</td>
</tr>
<tr>
<td></td>
<td>MTN5397..</td>
<td>2* MTN5363..</td>
</tr>
<tr>
<td></td>
<td>MTN5374..</td>
<td>MTN5375..</td>
</tr>
</tbody>
</table>

#### Room temperature control unit
- For electromotive valve drives not connected to the power source
- 1 x make contact
- Differential gap 0.5 K
- Temperature range approx. 5-30 °C
- Connection for time-controlled temperature reduction at night by approx. 4 K
- With ON/OFF switch and control lamp
- With thermal recirculation

#### Room temperature control unit insert with switch
- MTN536302 (AC 230 V)
- MTN536304 (AC 24 V)

#### Room temperature control unit insert with changeover contact
- MTN536400 (AC 230 V)
- MTN536401 (AC 24 V)

#### Floor thermostat insert with switch
- MTN537100 (AC 230 V)

---

1* Merten System M / M-Smart / M-Arc / M-Star / M-Plan / M-Elegance
2* Merten Artec / Antique / Trancent

### Circuit diagrams

- **Room temperature control insert with switch**
  - MTN5363..

- **Room temperature control unit insert with changeover contact**
  - MTN5364..

- **Floor thermostat insert with switch**
  - MTN537100

---

ISC02052 06/10
ARGUS movement detector
Basics

Functional principle

The principle of nearly all movement detectors is passive infrared technology, this also applies to the ARGUS. The infrared emission within the area of detection is measured and compared, so the device is passive because it does not emit any radiation itself. All bodies (people, animals, vehicles, trees etc.) emit infrared radiation. Registering a movement within an area of detection depends on several factors:

- The direction of movement of the object in the detection area. The largest range is achieved, when active and passive zones cross each other at right angles.
- The difference in temperature between the body and its surroundings (the larger the difference, the higher the sensitivity of the movement detector and therefore the greater the range).
- The size of the object to be detected.
- The speed at which the object passes through the area of detection.
- The influence of the weather like rain, snow or fog, that all absorb infrared radiation, therefore reducing the range.

The duration of a detected switching process can be adjusted at the devices and is reset each time a movement is detected. This means that somebody staying in the area of detection will result in the lights remaining switched on.

Installation site

1. Mounting height
   The mounting height has a direct influence on the movement detector's range. The optimum mounting height is 2.50 m. Deviating values result in varying ranges.

2. Fixed installation
   ARGUS should be installed on a solid, firm surface, as any movement of the device can trigger switching.

3. Distance to the switched luminaire
   To prevent the load from being switched on unnecessarily, the installation site should be selected so that the switched luminaire is not directly mounted in the area of detection of the ARGUS detector. Installation of the movement detector above a luminaire should also be avoided. The heat emitted by a light can influence the movement detector's functionality and even result in the light staying on permanently.

   If switched lights are installed within the detection area of the ARGUS, make sure there is sufficient distance between the light and the detector. This can be 5 m for a high connected load. If such a distance cannot be implemented, the detection area of ARGUS can be covered in the direction of the light source using the supplied blanking segments.

4. Distance to sources of interference
   Sources of interference, such as roads and neighbouring premises, should not be within the ARGUS area of detection, so that no unwanted switching actions are triggered. Bear in mind that large and fast-moving objects such as cars, lorries or buses can be detected at long distances. Branches, twigs and shrubbery can also temporarily have temperature values differing from their surroundings. If they are moved by the wind, this can trigger the ARGUS. This influence becomes smaller, the greater the distance (5-6 m).

5. Installation to the side of the direction of walking
   For the best possible movement detection, the ARGUS must be mounted sideways to the area of detection, so that movement detection occurs at a right angle. If the ARGUS is mounted in such a way that the object to be detected would move directly towards the movement detector, this would result in a significant reduction of the range.

6. Sheltered installation site
   Raindrops running down the lens of the movement detector and direct sunlight can influence the momentary infrared perception of the ARGUS. Like all passive infrared detectors, the ARGUS should be installed in such a way that it is protected against rain and direct sunlight, to avoid unwanted switching.

7. Installing several ARGUS
   If several ARGUS are to be installed next to each other to monitor a long section outside, make sure that the beam paths of the individual movement detectors do not cross each other. Only then will you have an area of detection without gaps.

   The formation of large groups of devices with more than 4 movement detectors is not favourable, neither technically nor functionally, and is not recommended.

8. Switching inductive loads
   If ARGUS is used to switch inductive loads such as transformers, relays, contactors and fluorescent lamps, this can result in current surges that would switch loads back on again (“maintained light effect”). Such current surges can be reduced by switching a capacitor (art. no. 542895) in parallel to the inductive load. Movement and presence detection in combination with alarm systems

   Movement/presence detectors are not considered to be suitable components of an alarm system, according to the association of property insurance companies (VdS), because the devices are supplied with mains power. After a power failure, detectors will switch independently of movements, as soon as the supply voltage is recovered. This could in turn trigger the alarm function.

   Movement/presence detectors can trigger false alarms, if the installation site has been chosen unfavourably.

   Movement/presence detectors switch as soon as they detect a moving heat source. This can be a person, but also trees, cars or differences in temperature in windows. In order to avoid false alarms, the chosen installation site should be such that undesired heat sources cannot be detected. Undesired sources of heat could include the following:

   - moving trees, shrubbery etc. with a temperature that differs from that of their surroundings
   - windows where the influence of alternating sunlight and clouds could cause rapid changes in temperature.
   - larger heat sources (e.g. cars), that are detected through windows.
   - insects moving across the lens.
   - small animals
   - rooms flooded with light where light is reflected on objects (e.g. the floor) which can be the cause of rapid changes in temperature.
ARGUS surface-mounted movement detector
ARGUS 220 Advanced

Area of detection

- **A** = Inner safety area with an area of detection of 360° within a radius of approx. 4 m.
- **B** = Middle safety zone with a detection angle of 220° and an area of detection of approx. 9 m x 18 m.
- **C** = Outer safety zone with a detection angle of 220° and an area of detection of approx. 16 m x 28 m.

The specified ranges refer to average conditions and a mounting height of 2.50 m and should therefore be taken as guide values. The range can vary greatly depending on the weather.

Operating elements

The ARGUS operating elements are protected under a cover plate. To open, the plate is moved up until it can be felt to engage, then removed. The set values can be read off according to the position of the arrows.

- **A** = Sensitivity controller: infinitely adjustable
- **B** = Switching duration controller: adjustable in 6 levels of approx. 1 sec. to approx. 8 minutes
- **C** = Brightness threshold controller: Daytime/nighttime operation, infinitely adjustable from approx. 3 to 1000 Lux
- **D** = Functional display, lights up each time movement is detected
- **E** = Brightness sensor, must not be covered

Aligning the ARGUS

In order to adjust the area of detection to suit local conditions in the best way, it is possible to adjust the sensor head for wall mounting in horizontal direction by 12° to the left or right and in vertical direction by 9° up or 24° down. The sensor head can be adjusted axially by 12°.

For ceiling mounting, the sensor head can be adjusted by 25° to the left or right and the vertical direction by 4° up or 29° down. The sensor head can be adjusted axially by 8.5°.

Align the sensor head in the direction of the detection area (change the direction of rotation at the end stops) and check if the ARGUS switches the load and the functional display by walking from outside into the area of detection.

Blocking off certain areas

The supplied segments for shading can be used to hide unwanted areas and sources of interference from the area of detection. The light-sensitive switch at the front must not be covered by segments, otherwise this would reduce light sensitivity.
Installation

One of the ARGUS features is its great flexibility regarding installation. Not just wall mounting, but also ceiling mounting is possible. For ceiling mounting, the lens must be rotated as described and the direction of rotation should be changed at the limit stops (see drawing).

- If the ceiling is inclined, always mount the ARGUS with the sphere facing downwards, so that condensation water can drain away.
- Mount the ARGUS at an inclination angle of between 15° and 90°. Otherwise the IP 55 type of protection is no longer guaranteed.

Mounted at inner/outer corners or on fixed pillars.

Electrical connection

Mounting the wall-mounting bracket

In order to lead the connecting cable, coming from above, into the back of the device, four spacers can be attached to the wall-mounting bracket.

Dimensions
**Area of detection**

ARGUS 110 Basic

A = Inner safety zone with an area of detection of 360° within a radius of approx. 4 m.
B = Middle safety zone with a detection angle of 110° and an area of detection of approx. 9 m x 18 m.
C = Outer safety zone with a detection angle of 110° and an area of detection of approx. 12 m x 24 m.

ARGUS 220 Basic

A = Inner safety zone with an area of detection of 360° within a radius of approx. 4 m.
B = Middle safety zone with a detection angle of 220° and an area of detection of approx. 9 m x 18 m.
C = Outer safety zone with a detection angle of 220° and an area of detection of approx. 12 m x 24 m.

**Operating elements**

The ARGUS operating elements are protected under a cover plate. To open, the plate is moved up until it can be felt to engage, then removed. The set values can be read off according to the position of the arrows.

A = Functional display, lights up each time movement is detected
B = Brightness sensor, must not be covered
C = Brightness threshold controller: Daytime/nighttime operation, infinitely adjustable from approx. 3 to 1000 Lux
D = Switching duration controller: adjustable in 6 levels of approx. 1 sec. to approx. 8 minutes

**Aligning the ARGUS**

In order to adjust the area of detection to suit local conditions in the best way, it is possible to adjust the sensor head for wall mounting in horizontal direction by 12° to the left or right and in vertical direction by 9° up or 24° down. The sensor head can be adjusted axially by 12°.

For ceiling mounting, the sensor head can be adjusted by 25° to the left or right and the vertical direction by 4° up or 29° down. The sensor head can be adjusted axially by 8.5°.

Align the sensor head in the direction of the area to be monitored (change the direction of rotation at the end stops) and check if the ARGUS switches the load and the functional display by walking from outside into the area of detection.

**Blocking off certain areas**

The supplied segments for shading can be used to hide unwanted areas and sources of interference from the area of detection. The light-sensitive switch at the front must not be covered by segments, otherwise this would reduce light sensitivity.
Installation

One of the ARGUS features is its great flexibility regarding installation. Not just wall mounting, but also ceiling mounting is possible. For ceiling mounting, the lens must be rotated as described and the direction of rotation should be changed at the limit stops (see drawing).

- If the ceiling is inclined, always mount the ARGUS with the sphere facing downwards, so that condensation water can drain away.
- Mount the ARGUS at an inclination angle of between 15° and 90°. Otherwise the IP 55 type of protection is no longer guaranteed.

Mounted at inner/outer corners or on fixed pillars.

Electrical connection

Mounting the wall-mounting bracket

In order to lead the connecting cable, coming from above, into the back of the device, four spacers can be attached to the wall-mounting bracket.

Dimensions
**Technical information**

**ARGUS surface-mounted movement detector**

**ARGUS 70**

Art. no. MTN545719

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**Installation**

Install sideways to the direction of motion for an optimum detection of movement.

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**Area of detection**

The actual values depend on a number of factors - heat source (size and temperature), direction of movement, speed, temperature difference - and can therefore be higher or lower than the values given.
ARGUS surface-mounted movement detector
ARGUS 300

Area of detection

The specified ranges refer to average conditions and a mounting height of 2.50 m and should therefore be taken as guide values. The range can vary greatly depending on the weather.

A = Inner safety zone with an area of detection of 360° within a radius of approx. 4 m.
B = Middle safety zone with a detection angle of 300° and a radius of approx. 7 m.
C = Outer safety zone with a detection angle of 300° and an area of detection of approx. 16 m x 20 m.

Setting the range for the three 100° sectors

The 300° area of detection is divided into three sectors of 100°; the range for each sector can be set individually. In this way, rising or falling ground in the outer safety zone can be compensated for each sector or the range reduced.

Aligning the ARGUS

In order to adapt the area of detection to local conditions, it is possible to rotate the lower part of the sensor head horizontally by 30° to the right or left. Also, the entire sensor head can be swivelled.

The red LED of the functional display is located under the time setting unit, behind the lens. The integrated function display allows the ARGUS to be aligned quickly and easily at the installation site.

Operating elements

The operating elements for setting the 6 different switching times, the brightness threshold, the entire sensitivity of all sensors and the range of each of the three 100° sectors are protected under the cap of the ARGUS that can be slid upwards. These elements are thereby best protected against moisture and manipulation by others. The cap is moved upwards by approx. 1 cm at an angle of 45°.

The 300° area of detection is divided into three sectors of 100°; the range for each sector can be set individually. In this way, rising or falling ground in the outer safety zone can be compensated for each sector or the range reduced.

Using the three adjusting screws F1, F2 and F3, the maximum and minimum range of each 100° sector is set. If the inscription "min" can be read horizontally, then this sector’s range has been reduced by 60%. The sensitivity setting applies to all three sectors.

Installation

The universal housing allows these detectors to be mounted on house corners without requiring additional accessories.

For changing sides, press the u-shaped unlocking clamp at the bottom side of the ARGUS into the openings as far as possible. Remove the sensor head. Rotate the wall bracket by 180° and then put the sensor head back on.
Installation of the extension

To prevent obstacles such as downpipes from blocking off the 300° area of detection with corner installation, ARGUS 300 can be installed with an extension (length 117 mm, art. no. MTN554399).

Installation to the side of the direction of walking

For the best possible movement detection, the ARGUS must be mounted sideways to the area of detection, so that movement detection occurs at a right angle. If the ARGUS is mounted in such a way that the object to be detected would move directly towards the movement detector, this would result in a significant reduction of the range.

Blocking off certain areas

The supplied blanking inserts can be used to block off unwanted areas and sources of interference from the area of detection. Each blanking insert blocks off an area of 60° and is divided into 3 segments of 20° each. These segments can be separated individually.

Dimensions

A = Light-sensitive switch The light-sensitive switch at the front must not be covered by blanking inserts, otherwise this would reduce light sensitivity (allow for opening in blanking insert).
Area of detection

The specified ranges refer to average conditions and a mounting height of 2.50 m and should therefore be taken as guide values. The range can vary greatly depending on the weather.

A = Inner safety area with an area of detection of 360° within a radius of approx. 4 m.
B = Middle safety zone with an angle of detection of 360° and a radius of approx. 7 m.
C = Outer safety zone with a detection angle of 360° and an area of detection of approx. 30 m depth (16 m to the front and 14 m to the back) and 20 m width.

Operating elements

The infinitely adjustable setting for the internal light-sensitive switch and the 6 different time settings enable the best possible adaptation to local conditions. The integrated function display allows the ARGUS to be inspected quickly and easily at the installation site.

A = Brightness
B = Time setting
C = Functional display
D = Brightness sensor: must not be covered

Installation

The universal housing enables outdoor ceiling mounting.

The movement detector can also be attached to a wall/ceiling installation outlet (corresponding with standard DIN 49073 form B) with a diameter of 60 mm.

Ceiling mounting

Installation to the side of the direction of walking

For the best possible movement detection, the ARGUS must be mounted sideways to the area of detection, so that movement detection occurs at a right angle. If the ARGUS is mounted in such a way that the object to be detected would move directly towards the movement detector, this would result in a significant reduction of the range (not suitable for corridors or long passages).

Correct

Incorrect

Dimensions

ARGUS surface-mounted movement detector
ARGUS 360

Art. no. MTN564419

ARGUS 360

Schneider Electric

ISC02052 06/10
ARGUS permanently connected to the mains

ARGUS with two-way rocker switch as break contact switched (for retrofitting)

ARGUS always switched in parallel on the network

ARGUS switched with two-circuit switch

ARGUS switched with off/two-way switch

If the push-button is pressed for approx. 2 s, ARGUS switches the light on. After the set time, the ARGUS switches it back off again automatically.

The ARGUS can be switched on and off with the help of the two-circuit switch. Manual or automatic mode depends on the position of both switches.

ARGUS in existing two-way circuit

ARGUS can be switched on and off with the one-way switch. Depending on the position of the two-way switch, manual or automatic mode is achieved.
ARGUS parallel to staircase timer

Either the ARGUS or the staircase lighting timer switches the lights on for a certain period.

ARGUS and relay instead of surge relay

Replace surge relay with relay. Press push-button for 2 - 3 s to switch on. Also, ARGUS switches automatically.

ARGUS and one-way switch
Function

Installed on the ceiling of a room, ARGUS Presence registers the presence of persons within a radius of approx. 7 m while simultaneously measuring the intensity of the natural light. If brightness has fallen below a preselected value (10 - 1000 lux), the smallest movements in the room are sufficient to switch on the lighting via channel 1 (presence channel). However, if the brightness of the surroundings is adequate or if ARGUS does not detect anyone in the room, the lights are switched back off again.

Example: A room has a daylight value of 200 lux. The ARGUS Presence is set to a brightness threshold of 500 lux. If movement is detected and the artificial light is switched on with 400 lux, the room now has 600 lux. Normally, it would switch the light back off again. Because, however, ARGUS Presence "thinks", the artificial light remains switched on. If daylight brightness increases by another 300 lux (900 lux are registered in the room), the device switches off the 400 lux artificial light.

The device can be used, for example, in offices, schools, public buildings or at home. The area of detection is divided into 6 planes with 136 zones and 544 switching segments.

ARGUS Presence has a second relay channel. It controls all connected systems efficiently and independent of brightness, such as heating or ventilation. Example: Someone enters the office and the light is switched on automatically, as well as the heating/ventilation. If there is sufficient external brightness, the presence channel switches the light off, but the heating/ventilation remains switched on.

Area of detection/ Mounting heights

Indoor area of detection:

The smaller the distance between the person to be registered and the ARGUS Presence, the better the smallest of movements are detected.

Outdoor area of detection:

When a person is walking, a larger area of detection is available. The reference level for detection is the ground. Increased mounting height results in reduced sensitivity and detection density. Depending on requirements, high sensitivity may not be required (e.g. storerooms, gymnasiums...).

<table>
<thead>
<tr>
<th>Mounting height</th>
<th>Seated person</th>
<th>Walking person</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 m</td>
<td>10 m</td>
<td>11 m</td>
</tr>
<tr>
<td>2.5 m</td>
<td>12 m</td>
<td>14 m</td>
</tr>
<tr>
<td>3.0 m</td>
<td>14.5 m</td>
<td>17 m</td>
</tr>
</tbody>
</table>

Connection examples

If the device's switching capacity is insufficient, a relay or contactor must be connected upstream.

Movement and presence detection in combination with alarm systems: see Chapter "Movement detectors - Functional principle"
ARGUS Presence detector
ARGUS Presence

ARGUS Presence (art. no. MTN550590) starting behaviour:

When the mains voltage is connected, within a minute, the device checks its function and switches both channels on for the initialisation period (if there is sufficient ambient brightness, channel 1 is switched off after approx. 20 s). Then the ARGUS is ready for operation.

Starting behaviour: ARGUS Presence with IR receiver, art. no. MTN550591:

When connected to mains voltage or if the power supply is interrupted briefly (> 1 s, e.g. when switched with a push-button as break contact), the outputs are switched on immediately. Within the first minute, the device checks all of its set functions. Then, the set overshoot time for channel 1 is started and the brightness threshold value reduced, so that the ARGUS is not immediately switched back off again. When the overshoot time is over, channel 1 switches off its output. Now the device records brightness and reacts again to movement.

IR receiver (art. no. MTN550591)

ARGUS Presence reacts automatically to key no. 10 on the Distance IR remote controls (art. no. MTN570222). You can only use button no. 10 to activate the ARGUS Presence IR functions. No teaching process is necessary. Channel 1 switches between three functions, when key 10 is used.

<table>
<thead>
<tr>
<th>Mode</th>
<th>LED Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent ON</td>
<td>Red LED lights up</td>
</tr>
<tr>
<td>Permanent OFF</td>
<td>Red LED flashes slowly</td>
</tr>
<tr>
<td>Automatic</td>
<td>Red LED is off</td>
</tr>
</tbody>
</table>

Dimensions

Flush-mounted installation: Surface-mounted installation:

Operating elements

The operating units for both overshoot times and the brightness threshold are at the back of the sensor head.

The overshoot time for channel 1 is 1 s in the test position and the brightness-dependance is switched off. The overshoot time for channel 2 is 3 s in test position.

Dimensions:

- **Ø 105**
- **42.6**
Function

ARGUS Presence System (art. no. MTN550499)

The system consists of the sensor head and a power section with a permanently attached interconnecting cable (length 2.5 m) plugged into the sensor head. The sensor head has two sockets to enable through-wiring. In such a way, a maximum of 8 sensor heads (art. no. MTN550419) can be connected to one power section (master-slave principle). Installing several sensor heads makes it possible to seamlessly monitor long corridors and large rooms for example. Make sure that the sensors' beam paths overlap, so that there are no gaps in the area to be monitored.

The sensor head that registered the last movement determines the overshoot time. Can also be controlled via an extension input. The sensor heads are installed in 68 mm ceiling openings (outlet drill) with retaining springs.

Installed on the ceiling of a room, every sensor head registers the presence of persons within its area of detection while simultaneously measuring the intensity of natural light. If the brightness threshold set in the sensor head (10 - 1000 lux) is not reached, the smallest movements in the room will be sufficient to automatically activate the lighting's power unit via channel 1 (presence channel). The switch function of the presence channel at the power unit is passed on to all sensor heads linked via the interconnecting cable. Each sensor head can thereby determine its own share of artificial light. If there is sufficient ambient brightness, the light is switched off via the power unit to save energy, even if there is movement detection.

The power section has a second relay channel with a floating contact. Channel 2 only reacts with increased protection against false alarms to movement, independent of ambient brightness. With this outlet, the ARGUS Presence system can be used to control the heating, air conditioning, ventilation or for room monitoring purposes.

ARGUS Presence system sensor (art. no. MTN550419)

The sensor head with pre-assembled connection line is to be used for extending the ARGUS Presence system (art. no. MTN550499). Each sensor head has two sockets allowing through-wiring to other sensor heads. The 8 m long interconnecting cable has angled connectors at both ends. The sensor head is mounted in a 68 mm ceiling cutout with retaining springs.
Area of detection
The mounting height has a direct influence on the range and sensitivity of the movement detector. The optimal mounting height is 2.50 m. The minimum mounting height is 1.7 m.

Extension input
If ARGUS Presence System is to be operated at several operating units and/or with an IR remote control (art. no. MTN570222), then the extension input of the power section is used. To operate, any number of conventional push-buttons (make contact, art. no. MTN315000) or a maximum of 10 extension TELE inserts (art. no. MTN73998, with IR remote control), also mixed, are used. The operating units and the power unit must be connected in phase. The maximum length of the control cable at the extension input must not exceed 20 m.

Switching on the system via extension input:
When the extension unit is operated, channel 1 is activated. If the system is switched on using the extension input, the lighting is switched on for the longest period set at the sensor heads and retriggered by movement, when brightness measured at the sensor head has fallen below the threshold value.

Switching off the system via extension input:
If the presence channel is switched on (channel 1 contact is closed), the relay is switched off, when the extension unit is used. The time for switching the system off is determined by the longest time set at the sensor heads and retriggered by movement, when the brightness measured at the sensor head has fallen below the threshold value. If no movement is detected within 8 minutes after the switching off time has elapsed, automatic mode is re-activated. The status when the extension unit push-button is being used always depends on the position of the relay:
1. Light off => extension unit actuated => light on
   - Movement => extends ON mode (only when dark)
   - After longest sensor period => light off
   - Dark => movement => light on
   - Light => movement => light remains off
2. Light on => extension unit actuated => light off
   - OFF mode => light remains off for longest sensor period
   - Movement => extends OFF mode (only when dark)
   - No movement => after 8 min. => Automatic mode
   - Automatic mode: Dark => movement => light onLight => movement => light remains off
Installation of the ARGUS Presence system

The sensor head is mounted in a 68 mm ceiling cutout (outlet drill) with retaining springs.

Operating elements

The operating elements for both overshoot times and the brightness threshold are at the back of each sensor head. The overshoot time for channel 1 is 1 s in the test position, the brightness dependence unit is switched off. The overshoot time for channel 2 is 3 s in test position.

Dimensions
ARGUS flush-mounted movement detector

ARGUS 180 flush-mounted

ARGUS 180 flush-mounted sensor module
Merten System M / M-Smart / M-Arc / M-Star / M-Plan / M-Elegance (art. no. MTN5784... MTN5755...); Merten Artec / Antique / Trancent (art. no. MTN5786...); Merten Aquadesign (art. no. MTN5781...)

ARGUS 180 flush-mounted sensor module with switch
Merten System M / M-Smart / M-Arc / M-Star / M-Plan / M-Elegance (art. no. MTN5785... MTN5728...); Merten Artec / Antique / Trancent (art. no. MTN5795...)

ARGUS 180/2.20 m flush-mounted sensor module
Merten System M / M-Smart / M-Arc / M-Star / M-Plan / M-Elegance (art. no. MTN5687... MTN5688...)

Movement and presence detection in combination with alarm systems: see Chapter "Movement detectors - Functional principle"

Function

The ARGUS sensor module, is an indoor movement detector for flush mounting. It detects moving sources of heat, e.g. people, within a radius of 180°. The ARGUS is plugged onto an electronic switch insert (art. no. MTN576799, for ohmic loads) or onto a relay switch insert (art. no. MTN576897 for ohmic, inductive or capacitive loads) and easily replaces a light switch.

If ARGUS detects a movement, it switches on the downstream connected load, e.g. an incandescent lamp. After the set time, the ARGUS switches the load back off again. The time can be adjusted in levels between 1 second and 8 minutes. If, during this period, another movement is detected, the load remains on for the full set time again.

The ARGUS has an integrated light sensor. This means that automatic switching is dependent on the ambient brightness (infinitely adjustable from 5 to 1000 lux). The version with a switch also enables switching to maintained light or to manual operation.

Electronic switch insert and relay switch insert

A maximum of two ARGUS with electronic switch insert and a maximum of four ARGUS with relay switch insert can be connected in parallel on the output side.

The ARGUS with electronic switch insert is a 2 conductor system, it can therefore be installed in existing switch outlets without neutral conductor. With this device, only ohmic loads can be switched.

The ARGUS with relay switch insert has a relay output and requires a neutral conductor. With this device, ohmic loads, inductive and capacitive loads can be switched.

Installation site

Only mount the ARGUS, in positions which allow the best possible surveillance of the required area.

- Correct
- Not optimal

Correct

Open fires, e.g. chimney fires, can be detected by the ARGUS.
- No switched lamps should be mounted in the detection area of the ARGUS, as the movement detector can be influenced by the heat radiated by the lamp.
- Avoid direct sunlight. This can destroy the sensor in extreme cases.
- The ARGUS should be installed on firm ground because any movement can make the ARGUS switch.

For ARGUS 180/2.20 m flush-mounted sensor module:
- Mount on a wall at a height of approx. 2.2 m above the floor.

For ARGUS 180 flush-mounted sensor module:
- Mount on a wall at a height of approx. 1–1.5 m above the floor.
- If mounted on the wall at a height of approx. 1–1.5 m, in most cases pets like cats and dogs will not be detected (depending on room conditions).

Blocking off certain areas

ARGUS 180/2.20 m flush-mounted sensor module

When there are sources of interference such as lights in the area of detection of the ARGUS that make the connected luminaires switch on when they are not supposed to, you can mask these areas using the segments supplied.
**Technical information**

**ARGUS flush-mounted movement detector**

**Functions and device overview**

**Area of detection**

The range specifications are based on average conditions and are therefore only guide values.

<table>
<thead>
<tr>
<th>ARGUS 180/2.20 m flush-mounted sensor module</th>
<th>ARGUS 180 flush-mounted sensor module</th>
</tr>
</thead>
<tbody>
<tr>
<td>The range is infinitely adjustable:</td>
<td>The range is infinitely adjustable from about 2.5 - 8 m.</td>
</tr>
<tr>
<td>to the right and left: 2.5 - 8 m</td>
<td></td>
</tr>
<tr>
<td>to the front: 2.5 - 12 m</td>
<td></td>
</tr>
</tbody>
</table>

![Graph showing area of detection](image)

**Functions and device overview**

<table>
<thead>
<tr>
<th>Function</th>
<th>Inserts</th>
<th>Design cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor movement detection</td>
<td></td>
<td>ARGUS 180 flush-mounted sensor module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARGUS 180 flush-mounted sensor module with switch</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARGUS 180/2.20 m flush-mounted sensor module</td>
</tr>
<tr>
<td></td>
<td>1* MTN5755..</td>
<td>MTN5728.., MTN5785.., MTN5687.., MTN5688..</td>
</tr>
<tr>
<td></td>
<td>2* MTN5786..</td>
<td>MTN5795..</td>
</tr>
<tr>
<td></td>
<td>3* MTN5781..</td>
<td>MTN5781..</td>
</tr>
</tbody>
</table>

**Electronic switch (2 conductors - neutral conductor is not required)**

**Switching of ohmic loads**

- Incandescent lamps, 230 V halogen lamps

**Electronic switch insert**

- MTN576799 (25-300 W)

**Relay switch (3 conductors - neutral conductor is required)**

**Switching of ohmic, inductive or capacitive loads**

- Switching function
- Incandescent lamps, energy-saving lamps, LV halogen lamps with conventional transformer, fluorescent lamps

**Relay switch insert**

- MTN576897
  - 140 μF max. capacitive load
  - max. 1000 W/VA

1* Merten System M/M-Smart/M-Arc/M-Star/M-Plan/M-Elegance
2* Merten Artic/Antique/Trancent
3* Merten Aquadesign

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74

ISC02052 06/10
ARGUS module with electronic switch insert, switched individually

ARGUS module with electronic switch insert, connected in parallel

The ARGUS module with electronic switch insert can replace an existing surge relay or staircase timer and take over its functions.

- Maximum power 300 W.
- Only for ohmic load.
- A maximum of two ARGUS modules with electronic switch insert may be switched in parallel in one circuit.

ARGUS module with electronic switch insert instead of a surge relay or staircase timer combined with push-buttons

Circuit diagrams for relay switch insert

ARGUS module with relay switch insert

ARGUS module with relay switch insert instead of a two-way/intermediate switch circuit, combined with push-buttons

ARGUS module with relay switch insert, in parallel

A maximum of four ARGUS modules with relay switch insert can be connected in parallel.
**Functional principle**

ARGUS smoke detectors are optical smoke detectors and work using scattered light. They work by using a coated measuring chamber from which an LED constantly emits a beam of light (infrared). During normal operation the coating absorbs the beam of light. If the measuring chamber fills with smoke, part of the beam is scattered and is directed onto a light-sensitive sensor. The smoke detector alarm sounds instantaneously. This functional principle is the reason why smoke alarms detect smoke and not flames. It is set so that it is not sensitive to smoke from cigarettes or candles. As soon as the measuring chamber is again smoke-free, the smoke detector automatically switches off the signal.

**Installation sites**

Smoke detectors which are in accordance with EN 14604 are smoke detectors which can be used in flats, residential buildings or in rooms which have similar functions.

So that fires can be detected early and reliably, smoke detectors must be installed in such a way that smoke from a fire can reach the smoke detector easily. How many smoke detectors and where they ought to be installed depends on the number and size/shape of the rooms as well as the ambient conditions:

- In accordance with DIN 14676, one smoke detector may not monitor an area greater than 60 m².
- Usually one smoke detector per room is sufficient. Larger rooms as well as specially shaped rooms and unusual ambient conditions can make it necessary to install several smoke detectors in a room.

**Minimum protection (Fig. 1)**

- During sleep the sense of smell is greatly reduced. It is therefore especially important that bedrooms, children's rooms and hallways are monitored by smoke detectors.
- For multi-storey flats with open stairways, at least one smoke detector should be installed in the top floor.

**Recommended protection (Fig. 2)**

- Every room is monitored by a smoke detector.
- For multi-storey flats with open stairways, at least one smoke detector per floor should be installed.

**Special features**

- Smoke detectors should only be installed in kitchens when false alarms can be ruled out due to the smoke detector's properties or because of its installation position.
- In bathrooms there is a reduced fire load. These rooms can therefore be excluded and do not require monitoring. In addition, false alarms cannot be excluded due to the build up of steam.

**Installation sites in rooms**

- Smoke detectors should always be mounted on the ceiling and if possible in the centre of the room. A distance of 50 cm must be maintained from walls, beams, fluorescent lamps or from furniture (Fig. 3).
- In rooms with ceiling-high divides (partition walls, furniture etc.), a smoke detector should be installed in each part of the room.
- The distance between two smoke detectors may be no greater than 15 m in hallways or corridors with a maximum width of 3 m. The distance of a detector to the narrow end of a hallway or corridor may not be greater than 7.5 m (Fig. 4).

**Unsuitable installation sites**

- Smoke detectors ought not to be installed in very draughty areas (e.g. air conditioning and ventilation inlets). Air movement may under some circumstances prevent smoke from reaching the detector.
- Do not install near open fireplaces or fire appliances (Fig. 5).
- Do not install in rooms where it is normally very dusty or where there is a high level of humidity. False alarms can in this case not be excluded (Fig. 6).
- Do not fit directly into a rooftop as smoke-free air may accumulate here. Maintain a minimum distance of 30 cm from the rooftop (Fig. 7).
- Do not mount in rooms where the temperature drops below 0°C or exceeds +60°C.

**Technical information**

**ARGUS smoke detector**

**Basics**

- In L-shaped rooms the smoke detector ought to be installed on the mitre line. For large L-shaped rooms each section of the L-shape is to be regarded as a separate room (Fig. 8).

**Functional principle**

ARGUS smoke detectors are optical smoke detectors and work using scattered light. They work by using a coated measuring chamber from which an LED constantly emits a beam of light (infrared). During normal operation the coating absorbs the beam of light. If the measuring chamber fills with smoke, part of the beam is scattered and is directed onto a light-sensitive sensor. The smoke detector alarm sounds instantaneously. This functional principle is the reason why smoke alarms detect smoke and not flames. It is set so that it is not sensitive to smoke from cigarettes or candles. As soon as the measuring chamber is again smoke-free, the smoke detector automatically switches off the signal.

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- Do not fit directly into a rooftop as smoke-free air may accumulate here. Maintain a minimum distance of 30 cm from the rooftop (Fig. 7).
- Do not mount in rooms where the temperature drops below 0°C or exceeds +60°C.

**Special features**

- When mounting onto flush-mounted or empty tubes a gasket must be installed on site between the ceiling and the smoke detector.
ARGUS smoke detector
Basics

Recommendations

Think about how you can prevent fires and what to do in case of a fire (escape plan, assembly point, location of fire extinguishers, etc.). Make sure that everyone in the building is familiar with the signals of the smoke detector.

Smoke fumes are poisonous and can quickly lead to a loss of consciousness. In the event of fire, inform everyone in the household (smoke will not wake people up, children tend to hide when in a panic) and leave the building immediately. If there is a lot of smoke, crawl along the floor.

Do not expose yourself to unnecessary danger. Inform the fire brigade (WHO, WHERE, WHAT)!

Your local fire brigade is happy to advise you.
Safety instructions

- A smoke detector detects smoke and not flames.
- Smoke detectors do not extinguish a fire. As soon as smoke detectors detect smoke a loud warning tone is emitted.
- Warning of malfunction! Never paint the smoke detector, as it will no longer work.
- The loud warning sound may damage your hearing. Protect your ears when performing a function test.
- The smoke detector operates only with a functioning, correctly inserted and fitted battery. Installation is only possible with a battery.
- Do not use rechargeable batteries or power packs.
- The smoke detector monitors the specific area around its installation location and not necessarily other rooms or other floors.

Functional test

1. Press the test button for at least 1 second.

While the test button is actuated, a pulsating warning tone is emitted and the LED flashes. If not, check the battery/battery connection or replace the smoke detector.

Perform the functional test after installation every time you change the battery after a long absence at least once a year.

It is recommended that you replace the smoke detector after about ten years.

Signals emitted by the ARGUS smoke detector

Smoke alarm

Normal operation

Empty battery

Fault

Changing the battery

Battery failure signal: approx. every 40 seconds, for at least 30 days.

If you are away for longer than 30 days, you will not hear the warning tone. Therefore, immediately perform a functional test upon returning.
**ARGUS smoke detector**

**ARGUS smoke detector Basic**

### Functions

The ARGUS smoke detector Basic and the Basic Longlife are smoke detectors for indoors.

- **Self-test**
- **Battery test:** A weak battery is indicated via an acoustic signal as well as a flashing LED.
- **Push-button for functional test**

### Overview

| A | Battery |
| B | Battery connection |
| C | LED, test button |
| D | Siren |
| E | Smoke detector |
| F | Base |

### Installation

Mounting options:

- On the ceiling with two screws
- On the ceiling with a central screw
- On flush-mounted outlets and cavity wall boxes
**Functions**

- In networked systems: A detector detects smoke and then the alarm is set off by all connected smoke alarms.
- Self-test
- Battery test: A weak battery is indicated via an acoustic signal as well as a flashing LED.
- Push-button for functional test

**ARGUS smoke detector Connect art. no. MTN5480.**

is a battery-operated indoor smoke detector. Due to its integrated networking option:
- up to 40 wired smoke detectors and
- up to 10 smoke detectors can be radio-networked in one radio cell.

Wired networking is effected via a separate 2-wire cable (SELV).

- **Wired networking with ARGUS smoke detector Connect 230 V or ARGUS smoke detector 230 V is not allowed.**

**ARGUS smoke detector Connect 230 V art. no. MTN5485.**

is a mains-operated indoor smoke detector with backup battery. Due to its integrated networking option:
- up to 25 wired smoke detectors and
- up to 10 smoke detectors can be radio-networked in one radio cell.

Wired networking is carried out via a separate core in the 230 V network.

- **Wired networking with the ARGUS smoke detector Connect is not allowed.**

**ARGUS smoke detector 230 V art. no. MTN5475.**

is a mains-operated indoor smoke detector with backup battery. You can:
- wire-network up to 25 smoke detectors.

Wired networking is carried out via a separate core in the 230 V network.

- **Wired networking with the ARGUS smoke detector Connect is not allowed.**

**Networking**

**Wired networking**

<table>
<thead>
<tr>
<th>ARGUS smoke detector</th>
<th>Connect art. no. MTN5480.</th>
<th>Connect 230 V art. no. MTN5485.</th>
<th>230 V art. no. MTN5475.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connect art. no. MTN5480.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connect 230 V art. no. MTN5485.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230 V art. no. MTN5475.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Radio networking**

<table>
<thead>
<tr>
<th>ARGUS smoke detector</th>
<th>Connect art. no. MTN5480.</th>
<th>Connect 230 V art. no. MTN5485.</th>
<th>230 V art. no. MTN5475.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connect art. no. MTN5480.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connect 230 V art. no. MTN5485.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230 V art. no. MTN5475.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Display and operating elements

1. Battery
2. Battery connection
3. LED, test button
4. Siren
5. Smoke detector
6. DIP switch for radio networking (only art. no. MTN5480.., MTN5485..)
7. Connecting pins for wired networking via 2-wire cable (only art. no. MTN5480..).
8. Connecting pins for 230 V connection and wired networking using a core in the 230 V network (only art. no. MTN5485.., MTN5475..). The wiring compartment is in the base.
9. Connecting pins for 230 V wired networking using a core in the 230 V network (only art. no. MTN5485.., MTN5475..)
10. Base

Networking ARGUS smoke detectors

The following description refers to the ARGUS smoke detector Connect. Generally these networking rules also apply to ARGUS smoke detectors Connect 230 V or ARGUS smoke detectors 230 V. The difference being that for these devices, wired networking is carried out via a separate core in the 230 V network. In addition ARGUS smoke detectors 230 V can only be networked using wiring.

Networking several smoke detectors

When using several smoke detectors it can make sense to network the detectors with each other. When a smoke detector triggers the alarm within such a network, all the other networked detectors receive this signal and also trigger the alarm. ARGUS smoke detectors Connect can be wire-networked as well as radio-networked to each other.

Radio networking

Radio networking is activated by assigning an identification number (ID). You can set up the ID using the DIP switches on the switch block:

- ID for radio group
- ID for individual addressing of devices

All smoke detectors with the same radio group ID belong to the same radio cell. If a smoke detector triggers the alarm, it then transmits a signal. All smoke detectors with the same ID which are within the transmission range receive the signal and also trigger the alarm. Detectors receiving a signal are no longer able to transmit the signal via radio, as they can only be receivers or transmitters. A maximum of 10 radio-networked smoke detectors can be in a radio cell.

By assigning different IDs you can, for instance, ensure that neighbouring smoke detectors are not accidentally triggered.

Assignment of different IDs. At the most 10 radio-networked smoke detectors in one radio cell.

Installation

Mounting options:

- On the ceiling with two screws
- On the ceiling with a central screw
- On flush-mounted outlets and cavity wall boxes
- Surface-mounted installation (only art. no. MTN5485.., MTN5475..)

1. Mount the base onto the ceiling.
2. Connect to the mains voltage (only art. no. MTN5485.., MTN5475..).
3. When networking:
   - For radio networking set the smoke detector address (only art. no. MTN5480.., MTN5485..).
   - For wired networking set the smoke detector address (only art. no. MTN5480.., MTN5485..).
   - For wired networking connect the separate 2-wire cable to the smoke detector (only art. no. MTN5480..).
4. Connect the battery.
5. Place the smoke detector onto the base.
Wired networking
ARGUS smoke detectors Connect are networked with one another via a separate 2-wire cable. A maximum of 40 smoke detectors may be wired to a network. Example:

ARGUS smoke detector Connect 230 V and ARGUS smoke detector 230 V are networked via a separate core in the 230 V network. A maximum of 25 smoke detectors may be wired to a network. Example:

Cable lengths:
- Cable length between two detectors: max. 25 m
- Total cable length: max. 500 m

Networking rules
The detector which detected the smoke will transmit the alarm signal for at least 60 seconds and until it no longer detects smoke. A receiving detector will check for an alarm signal every 50 seconds. If no alarm signal comes from the transmitting detector, the receiving detector will also stop the alarm.

Network a maximum of 40 smoke detectors
As a rule, several smoke detectors are combined to form a system. More than 40 smoke detectors should never be networked, regardless of whether the connections are wireless or wired. If more radio detectors are combined to form a network, then the time required until the last detector has reacted will be too long to guarantee a reliable fire alarm.

Maximum of 10 radio-networked smoke detectors in one radio cell
The maximum range of 30 m that the radio modules have means that devices have a radio cell around them with a diameter of 30 m. A maximum of 10 radio smoke detectors may be networked to one another within this type of radio cell.

Please note: In reality, the size of a radio cell is reduced by many factors. Walls and furniture and similar cause attenuation, which must be taken into account. This is why a functional test is obligatory before final installation.

A maximum of 2 radio-networked smoke detectors in one wired line.
When Connect smoke detectors are wire networked they form a line. Within such a line, a maximum of 2 radio-networked smoke alarms are allowed. Both of these smoke alarms must always be assigned to different wireless group IDs. Such a construction is conceivable in a multiple family house, where two flats are connected to each other. Radio operation for all other smoke detectors in this wired line must be switched off (ID = 0.0).
At the most 2 radio-networked smoke detectors in one wired line: do not connect any further wired lines via radio. If 2 radio-networked smoke alarms already exist in the wired line, then no additional wired lines may be connected to this system via radio. Again, the reason is the running time for the signals, which would be too long in such a system. The time between activation of the first detector and the reaction of the last one would be too long to guarantee a reliable alarm transmission.

When there is 1 radio-networked smoke detector in a wired line: A maximum of 10 additional wired lines can be connected via radio. If there is only one radio-networked smoke alarm in wired lines, then up to 10 wired lines may be networked via radio. The radio-networked smoke alarms of these wired lines must all be in the same radio cell.

Examples

Example 1
Four radio-networked smoke detectors are in a radio cell and all have the radio group ID "1". Smoke detector 1.1 detects smoke:
- Smoke detector 1.1 transmits the alarm signal with its radio group ID via radio and sounds the alarm.
- Smoke detectors 1.2, 1.3 and 1.4 receive the signal and also trigger the alarm.

Example 2
Combined radio networking and wired networking. Smoke detectors 1.1 and 1.2 have the radio group ID "1". Smoke detectors 4.5 and 4.6 have the radio group ID "4". Smoke detectors R2 and R3 are only wire-networked. Smoke detector 1.1 detects smoke:
- Smoke detector 1.1 transmits the alarm signal with its radio group ID via radio and sounds the alarm.
- Smoke detector 1.2 receives the signal and transmits the alarm signal via the wired network to smoke detectors R2, R3 and 4.5.
- Smoke detectors 1.2, R2, R3 and 4.5 sound the alarm.
- Smoke detector 4.5 transmits the alarm signal with its radio group ID via radio.
- Smoke detector 4.6 receives the signal and sounds the alarm.
### Technical information

#### ARGUS light-sensitive switch

**ARGUS light-sensitive switch with switching delay**  
Art. no. MTN544819

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected load:</td>
<td>up to 2300 VA</td>
</tr>
<tr>
<td>Max. switching current:</td>
<td>AC 230 V, 10 A cosφ = 0.6</td>
</tr>
<tr>
<td>Halogen lamps:</td>
<td>AC 230 V, up to 2000 W</td>
</tr>
<tr>
<td>Incandescent lamps:</td>
<td>AC 230 V, up to 2300 W</td>
</tr>
<tr>
<td>Capacitive load:</td>
<td>max. 140 μF</td>
</tr>
<tr>
<td>Switch threshold:</td>
<td>approx. 3 to approx. 700 lux, adjustable</td>
</tr>
</tbody>
</table>
| Switching delay:                 | when switching on approx. 40 s  
when switching off approx. 100 s |
| Dimensions:                      | approx. 97 x 80 x 47 mm                             |
| Colour:                          | polar white                                        |

**ARGUS light-sensitive switch without switching delay**  
Art. no. MTN544829

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected load:</td>
<td>up to 2300 VA</td>
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<tr>
<td>Max. switching current:</td>
<td>AC 230 V, 10 A cosφ = 0.6</td>
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<tr>
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</tr>
</tbody>
</table>
| Switching delay:                 | when switching on approx. 40 s  
when switching off approx. 100 s |
| Dimensions:                      | approx. 97 x 80 x 47 mm                             |
| Colour:                          | light grey                                         |

**ARGUS light-sensitive switch with switching delay**  
Art. no. MTN544894

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
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<tr>
<td>Connected load:</td>
<td>up to 2300 VA</td>
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</table>
| Switching delay:                 | when switching on approx. 40 s  
when switching off approx. 100 s |
| Dimensions:                      | approx. 97 x 80 x 47 mm                             |
| Colour:                          | polar white                                        |

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### Installation

The switched light must not hit the light incidence aperture (optical feedback)

- North and east walls are particularly suitable for installation.
- Installation sites under roof protrusions and similar covers are suitable.
- If possible, the connection line should be inserted into the device from below. When inserting the cable from above, make sure the seal is particularly good.
**Functional principle**

KNX consists of a twin-core bus line and bus-compatible installation devices such as sensors, actuators and system components, that are connected to it.

Sensors record information that is transmitted to the bus in the form of a data telegram. Sensors are e.g. KNX push-buttons and binary inputs for connecting floating contacts.

Actuators receive data telegrams and convert these into switching or dimming signals, for example.

System devices and components are required for the basic system functionality. They consist essentially of power supply units for generating bus voltage, couplers for connecting bus segments and interfaces for connecting programming devices.

Both power for the bus device electronics and information are transmitted via the twin-core bus line. The bus line leads to every bus device. As a rule, sensors require only the bus line. Actuators usually also need the 230/400 V mains supply for controlling loads. Bus line and mains supply are separated strictly from each other.

**Sensors**

Sensors and actuators are selected depending on the required application and consist of a bus coupler and an application module with the corresponding application program. The application programs are part of the Merten product database. They are loaded into the devices together with the projecting and operational software ETS via a PC serial interface and bus.

KNX is a decentralised bus system. Every KNX device has its own microcontroller. The devices can exchange information directly, i.e. without a central unit, using the serial bus. All devices are equal bus devices (multi-master operation). To avoid telegram collision and the destruction of data, the CSMA/CA procedure is used.

KNX is operated using low-voltage SELV. The bus voltage is DC 24 V (+6/-4 V) When the voltage is below 20V the devices power off from the bus. The data transmission speed is 9.6 kbit/s, so terminating resistors are not required.

**Topology**

KNX is divided into segments of hierarchical structure. The line is the smallest unit. A line can include up to 64 bus devices (TLN) as well as a power supply with choke (PSU). Using line couplers (LC), that are connected to a main line, up to 15 lines can be coupled. This forms the area. For larger installations, backbone couplers can be used to connect another 15 areas via a backbone line. Main and area lines also require a power supply with choke.

If all lines and areas are used, over 12,000 bus devices can be connected to KNX.
**Cable routing**

Cable routing within a line can be done in line, star or tree shape. However, all kinds of other combinations are also possible.

**Line structure**

The KNX devices are connected in parallel using the red/black core pair of the bus line with the help of bus connecting terminals. Up to four bus cable pairs (red and black) can be connected to each bus connecting terminal. The bus connecting terminal (art. no. 689701) can also be used as a junction terminal in the switch terminal boxes. Make sure that the polarity is correct when installing.

**Lines**

The following cable types can be used as bus lines:

<table>
<thead>
<tr>
<th>Type</th>
<th>Construction</th>
<th>Cabling</th>
</tr>
</thead>
<tbody>
<tr>
<td>YCYM 2 × 2 × 0,8</td>
<td>EIBA guideline (Based on: DIN VDE 0207 and 0815)</td>
<td>Fixed cabling: in dry, damp and wet rooms, for surface mounting, flush mounting, in pipes. Outdoors, if protected from direct sunlight.</td>
</tr>
<tr>
<td></td>
<td>Cores red (+KNX)black (-KNX)yellow (not assigned)white (not assigned)</td>
<td></td>
</tr>
<tr>
<td>J Y (St) Y2 × 2 × 0,8</td>
<td>DIN VDE 0815 (Based on: DIN VDE 0815)</td>
<td>Fixed cabling: in dry and damp plants, surface mounting, flush mounting, in pipes outdoors, in and beneath plaster.</td>
</tr>
<tr>
<td>KNX version*</td>
<td>Cores red (+KNX)black (-KNX)yellow (not assigned)white (not assigned)</td>
<td></td>
</tr>
</tbody>
</table>

*The DIN VDE 0829 standard determines the testing voltage for an additional test between cores and outer casing surface in accordance with DIN VDE 0472 part 508 as 4 kV. This value is expected to change to 2.5 kV as a result of European harmonisation efforts.

*If the second, non-assigned core pair of the bus cable is used, observe the following:
- Only low-voltage SELV allowed
- Max. continuous current 2.5 A (short circuit and overload protection required)
- Voice transmission is allowed, but not for public telephone lines
- Avoid confusing them with cores assigned by KNX.

**Addressing**

KNX addressing distinguishes between physical addresses and group addresses. The physical address is the name of the bus device and is written in the form "Area . Line . Device" (e.g. 5.423). The group address determines the assignment of the bus devices to each other. Apart from servicing and programming procedures, a device is always addressed using its group address(es). The group address is divided into up to 15 main groups each with maximum 2048 subgroups. It is written in the form "Main group / Subgroup" (e.g. 1/127).
Push-buttons plus

With this installation principle, the push-button is equipped with a bus coupler. The retaining ring is fastened on the installation box with screws. After the bus connection terminal is plugged, the physical address is programmed with push-button and LED onto the back of the push-button. Push-button and frame are then clipped onto the retaining ring.

Depending on design, different push-buttons are available:

**Merten System M/M-Smart/M-Arc/M-Star/M-Plan/M-Elegance**
- Push-button 1-gang plus (two operating surfaces)
- Push-button 2-gang plus (four operating surfaces)
- Push-button 4-gang plus (eight operating surfaces)
- Push-button 4-gang plus with IR receiver (eight operating surfaces and IR receiver)
- Push-button 2-gang plus with room temperature control unit
- Push-button 4-gang plus with room temperature control unit

**Merten Artec/Antique/Trancent**
- Push-button 1-gang plus (three operating surfaces)
- Push-button 2-gang plus (five operating surfaces)
- Push-button 3-gang plus (seven operating surfaces)
- Push-button 4-gang plus (nine operating surfaces and IR receiver)
- Push-button 2-gang plus with room temperature control unit
- Push-button 4-gang plus with room temperature control unit

With the Merten Artec/Antique/Trancent design, the lower labelling field is parameterizable as an additional operating key.

The push-buttons can be assigned the following functions: switch, toggle, dim, blind control, pulse edge, pulse edge extended, sliding controller, scene retrieval, scene saving, disable function.

**Devices in Trancent design**

The bus coupler is screwed onto the flush-mounted outlet with the retaining ring. Then a Trancent frame is clipped on, the control electronics 1- to 4-gang (art. no. MTN6164-4600) snapped on, the fitting cover foil inserted and finally the glass sensor cover is screwed on.

**Push-button with push-button module**

On the basis of this installation principle, the push-button module is equipped with a bus coupler. The retaining ring for the screw fixing is attached to the installation box. After the bus connection terminal is plugged, the physical address is programmed with push-button and LED onto the back of the push-button module. Push-button module and frame are then fitted onto the retaining ring.

The push-button module provides you with two (1-gang push-button) or four (2-gang push-button) operating surfaces. The push-buttons can be assigned the following functions: switching, dimming, controlling blinds and retrieving scenes.

**Available push-button modules:**
- 1-gang and 2-gang

**Available rockers for push-button modules:**
- 1-gang and 2-gang each without imprint, with imprint 1/0, with arrow imprint
Rail mounted devices (REG)

These devices consist of:
- KNX bus coupler
- Application module
- Application program

The following product types of DIN rail mounted devices are available:
- REG-K
- REG

REG-K devices

REG-K devices are rail mounted devices for installation with bus connecting terminals. Data rails and connectors are therefore not required, and new flexible installation options open up.

REG-K devices can be mounted on rails EN 60715 as well as on high rails. At the same time, they can be combined with circuit-breakers with other switching devices on a rail. As data rails are no longer required, the REG-K devices can now be installed in small distribution boards with a width of less than 12 HP. This is not allowed for REG devices with pressure contacts, as data rails which comply with the KNX guidelines cannot be shortened or changed in any other way.

The REG-K devices can be easily connected and serviced. Screwed plug-in terminals make pre-wiring possible, so that devices need only be inserted when they are to be put into operation; they can be connected to the bus and the 230 V cables in no time.

All REG-K devices are equipped with control LEDs that provide an overview of important status information regarding devices and installations at any time.

Installation

REG-K devices are available in two different designs

1. Snapping onto the DIN rail

2. Removal from the DIN rail

3. Bus connection and cable cover

4. 5 mm
The bus connection

The bus connection is carried out via the bus connecting terminal supplied with the device. The cable cover is then placed over the bus connecting terminal to guarantee the safety clearance between the bus cable and the 230 V cables. Max. 4 core pairs can be connected to one bus connecting terminal (insulation strip length: 5 mm).

Cable connection

Plug-in screw terminals make pre-wiring possible, so that devices need only be inserted when they are to be put into operation and connected to the bus and the 230 V cables.

REG devices

“REG” devices have pressure contacts at the back that connect to the data line and the bus, when they are snapped onto the DIN rail. “REG” devices therefore always require a data rail with data rail connector, integrated in the DIN rail, for connecting the bus line.
### Operating elements

#### Merten System M / M-Smart / M-Arc / M-Star / M-Plan / M-Elegance

<table>
<thead>
<tr>
<th>Push-button, 1-gang plus</th>
<th>MTN6171.., MTN6275..</th>
<th>Push-button, 2-gang plus</th>
<th>MTN6172.., MTN6276..</th>
<th>Push-button, 4-gang plus</th>
<th>MTN6174.., MTN6278..</th>
<th>Push-button, 4-gang plus with IR receiver</th>
<th>MTN6175.., MTN6279..</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Push-button, 2-gang plus with room temperature control unit</th>
<th>MTN6212-03.., MTN6212-04..</th>
<th>Push-button, 4-gang plus with room temperature control unit</th>
<th>MTN6214-03.., MTN6214-04..</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rocker for 1-gang push-button module</th>
<th>MTN6191.., MTN6251..</th>
<th>Rocker for 1-gang push-button module with 1/0 imprint</th>
<th>MTN6193.., MTN6254..</th>
<th>Rocker for 1-gang push-button module with up/down arrow imprint</th>
<th>MTN6194.., MTN6255..</th>
<th>Rocker with up/down arrow imprints for 2-gang push-button module</th>
<th>MTN6197.., MTN6258..</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rocker for 2-gang push-button module</th>
<th>MTN6192.., MTN6252..</th>
<th>Rocker for 2-gang push-button module with 1/0 and arrow up/down imprint</th>
<th>MTN6195.., MTN6256..</th>
<th>Rocker for 2-gang push-button module with up/down arrow and 1/0 imprint</th>
<th>MTN6196.., MTN6257..</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>KNX ARGUS 180, flush-mounted</th>
<th>MTN6326.., MTN6316..</th>
<th>KNX ARGUS 180/2.20 m flush-mounted</th>
<th>MTN6327.., MTN6317..</th>
<th>KNX ARGUS Presence 180/2.20 m flush-mounted</th>
<th>MTN6306.., MTN6304..</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>KNX Room temperature control unit, flush-mounted/PI with 4-gang push-button interface</th>
<th>MTN6167.., MTN6168..</th>
<th></th>
</tr>
</thead>
</table>

#### Merten Artec / Antique / Trancent

<table>
<thead>
<tr>
<th>Push-button, 1-gang plus</th>
<th>MTN6280..</th>
<th>Push-button, 2-gang plus</th>
<th>MTN6281..</th>
<th>Push-button, 3-gang plus</th>
<th>MTN6282..</th>
<th>Push-button, 4-gang plus</th>
<th>MTN6283..</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Push-button, 4-gang plus with IR receiver</th>
<th>MTN6284..</th>
<th>Push-button, 2-gang plus with room temperature control unit</th>
<th>MTN6212-40.., MTN6212-41..</th>
<th>Push-button, 4-gang plus with room temperature control unit</th>
<th>MTN6214-40.., MTN6214-41..</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rocker for 1-gang push-button module</th>
<th>MTN6261..</th>
<th>Rocker for 1-gang push-button module with 1/0 imprint</th>
<th>MTN6264..</th>
<th>Rocker for 1-gang push-button module with up/down arrow imprint</th>
<th>MTN6265..</th>
<th></th>
</tr>
</thead>
</table>

| Rocker for 2-gang push-button module | MTN6262.. | Rocker for 2-gang push-button module with 1/0 and arrow up/down imprint | MTN6266.. | Rocker for 2-gang push-button module with up/down arrow and 1/0 imprint | MTN6267.. | Rocker with up/down arrow imprints for 2-gang push-button module | MTN6268.. |
|--------------------------------------|----------|----------------------------------------------------------------|---------------------------|----------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------|

<table>
<thead>
<tr>
<th>KNX ARGUS 180, flush-mounted</th>
<th>MTN6318..</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>KNX Room temperature control unit, flush-mounted/PI with 4-gang push-button interface</th>
<th>MTN6169..</th>
<th>Room temperature control unit with display</th>
<th>MTN6241-40.., MTN6241-41..</th>
<th></th>
</tr>
</thead>
</table>

#### Merten Trancent

| Control electronics, 1- to 4-gang | MTN623190 | | | | | | |
### Flush-mounted inserts and modules

<table>
<thead>
<tr>
<th>KNX 1-gang push-button module</th>
<th>KNX 2-gang push-button module</th>
<th>KNX 1-gang push-button module</th>
<th>KNX 2-gang push-button module</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTN625199</td>
<td>MTN625299</td>
<td>MTN626199</td>
<td>MTN626299</td>
</tr>
</tbody>
</table>
### Technical Information

**KNX**

Overview rail mounted devices

Switch actuator

<table>
<thead>
<tr>
<th>Article number</th>
<th>Number of switch contacts</th>
<th>Device width</th>
<th>Connecting terminal</th>
<th>Nominal voltage</th>
<th>Nominal current</th>
<th>Connection power max., AC 230 V</th>
<th>Software</th>
<th>Behaviour on bus voltage failure/bus voltage recovery adjustable</th>
<th>Scenes</th>
<th>Disable function</th>
<th>Priority control</th>
<th>Central function</th>
<th>Logic function</th>
<th>Safety function</th>
<th>Line monitoring</th>
<th>Current detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTN646808</td>
<td>8</td>
<td>4 modules</td>
<td>Plug-in screw terminals</td>
<td>AC 230 V, 50-60 Hz</td>
<td>6 A, cosφ = 0.6</td>
<td>Incandescent lamps: 1380 W</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649202</td>
<td>2</td>
<td>2.5 modules</td>
<td>■</td>
<td>AC 230 V, 50-60 Hz</td>
<td>10 A, cosφ = 1 / 10 A, cosφ = 0.6</td>
<td>Halogen lamps: 1700 W</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649204</td>
<td>4</td>
<td>4 modules</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>Fluorescent lamps: 1000 VA</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649208</td>
<td>8</td>
<td>4 modules</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>Capacitive load: 105 μF</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649212</td>
<td>12</td>
<td>6 modules</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
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<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
</tbody>
</table>

**Switch actuator REG-K/8x3/20/6 with manual mode**

<table>
<thead>
<tr>
<th>Article number</th>
<th>Number of switch contacts</th>
<th>Device width</th>
<th>Connecting terminal</th>
<th>Nominal voltage</th>
<th>Nominal current</th>
<th>Connection power max., AC 230 V</th>
<th>Software</th>
<th>Behaviour on bus voltage failure/bus voltage recovery adjustable</th>
<th>Scenes</th>
<th>Disable function</th>
<th>Priority control</th>
<th>Central function</th>
<th>Logic function</th>
<th>Safety function</th>
<th>Line monitoring</th>
<th>Current detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTN646808</td>
<td>8</td>
<td>4 modules</td>
<td>Plug-in screw terminals</td>
<td>AC 230 V, 50-60 Hz</td>
<td>6 A, cosφ = 0.6</td>
<td>Incandescent lamps: 1380 W</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649202</td>
<td>2</td>
<td>2.5 modules</td>
<td>■</td>
<td>AC 230 V, 50-60 Hz</td>
<td>10 A, cosφ = 1 / 10 A, cosφ = 0.6</td>
<td>Halogen lamps: 1700 W</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649204</td>
<td>4</td>
<td>4 modules</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>Fluorescent lamps: 1000 VA</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649208</td>
<td>8</td>
<td>4 modules</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>Capacitive load: 105 μF</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>MTN649212</td>
<td>12</td>
<td>6 modules</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
</tbody>
</table>

**Technical Information**

Overview rail mounted devices

**Switch actuators**

- **Switch actuator REG-K/8x3/20/6**
  - Article numbers: MTN646808, MTN649202, MTN649204, MTN649208, MTN649212
  - Number of switch contacts: 8, 2, 4, 8, 12
  - Device width: 4 modules, 2.5 modules, 4 modules, 4 modules, 6 modules
  - Manual mode: Mechanical, Electrical, Reset manual mode
  - Connecting terminal: Plug-in screw terminals
  - Nominal voltage: AC 230 V, 50-60 Hz
  - Nominal current: 6 A, cosφ = 0.6, 10 A, cosφ = 1 / 10 A, cosφ = 0.6
  - Connection power max., AC 230 V:
    - Incandescent lamps: 1380 W
    - Halogen lamps: 1380 W
    - Fluorescent lamps: 1000 VA
    - Capacitive load: 105 μF
  - Software:
    - ON/OFF delay
    - Staircase lighting function
      - Staircase timer with/witout break-off
      - Staircase time variable
      - Staircase time changeable
      - Staircase time addable
      - Prewarn
    - Flashing
    - Make/Break contact adjustable
    - Changeover contact adjustable
    - Status/Status feedback:
      - Active
      - Passive
      - Delayed
    - Behaviour on bus voltage failure/bus voltage recovery adjustable
    - Scenes:
      - Sending delay
    - Disable function
    - Priority control
    - Central function:
      - Time delay (optional)
    - Logic function:
      - Logic operation
      - Value comparison, logic, gate function, filter, time delay
    - Safety function:
    - Line monitoring (sending live signal)
    - Current detection:
      - AC/DC
      - Energy consumption
      - Limit monitoring
      - Switch counter
      - Hours counter
      - Combined counter (Switch and hour counter with limit monitoring)
## KNX Overview rail mounted devices switch actuators

<table>
<thead>
<tr>
<th>Switch actuator REG-K/x230/16 with manual mode</th>
<th>Switch actuator REG-K/x230/16 with manual mode and current detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTN647393</td>
<td>MTN647593</td>
</tr>
<tr>
<td>2 modules</td>
<td>4 modules</td>
</tr>
<tr>
<td>Screw terminals</td>
<td></td>
</tr>
<tr>
<td>AC 230 V, 50-60 Hz</td>
<td></td>
</tr>
<tr>
<td>16 A, cos φ = 0.6</td>
<td></td>
</tr>
<tr>
<td>3600 W</td>
<td>2500 W</td>
</tr>
</tbody>
</table>

**Notes:**
- MTN647393
- MTN647593
- MTN647893
- MTN648493
- MTN647395
- MTN647595
- MTN647895
- MTN648495

**Specifications:**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power rating</td>
<td>3600 W</td>
</tr>
<tr>
<td>Voltage</td>
<td>AC 230 V</td>
</tr>
<tr>
<td>Frequency</td>
<td>50-60 Hz</td>
</tr>
<tr>
<td>Current capacity</td>
<td>16 A</td>
</tr>
<tr>
<td>Power factor</td>
<td>cos φ = 0.6</td>
</tr>
<tr>
<td>VA rating</td>
<td>2500 VA</td>
</tr>
<tr>
<td>Capacitance</td>
<td>200 µF</td>
</tr>
</tbody>
</table>

**Features:**

- Screw terminals
- KNX compatibility
- KNX IS02052 06/10
### Symbols on products

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDE symbol</td>
<td>The VDE test symbol on the Merten device shows that it has passed the type test. The manufacture and inspection of Merten appliances is monitored by the national federal testing centre.</td>
</tr>
<tr>
<td>VDE monitoring symbol</td>
<td>The VDE monitoring symbol has the same meaning as the VDE test symbol. It is given for standard deviations of the device from the VDE test standard, e.g. couplings with sealing collars.</td>
</tr>
<tr>
<td>Symbol for harsh operating conditions</td>
<td>Proof of increased load capacity, such as for use on building sites, for plugs and connectors complying with standards DIN 49440 and DIN 49441. Merten SCHUKO rubber plugs and connectors have this quality and safety symbol. Merten offers e.g. a combination of extremely robust rubber plugs and couplings with screwed joints and an all-rubber triple connector.</td>
</tr>
<tr>
<td>Insulation symbol</td>
<td>Device cannot and must not be earthed.</td>
</tr>
<tr>
<td>Symbol for installation on inflammable surfaces and socket-outlets</td>
<td>Applies generally only to luminaires. Here also to base plates for switches and socket-outlets.</td>
</tr>
<tr>
<td>Symbol for temperature-protected converters</td>
<td>Mounting or contact surface subject to temperatures not higher than … °C, in normal as well as faulty operation.</td>
</tr>
<tr>
<td>This symbol refers to the mounting surface</td>
<td>Devices may be mounted on surfaces with unknown ignition properties.</td>
</tr>
<tr>
<td>Symbol for protection against dripping</td>
<td>Protection against water falling vertically.</td>
</tr>
<tr>
<td>Symbol for protection against splashing water</td>
<td>Protection against water splashed from any direction.</td>
</tr>
<tr>
<td>Symbol for waterproof version</td>
<td>Protection against water without pressure (temporary flooding, e.g. due to choppy sea).</td>
</tr>
<tr>
<td>IP 44</td>
<td>Symbol for protection against foreign matter and water</td>
</tr>
<tr>
<td>IP 54</td>
<td>Symbol for protection against contact, foreign matter and water</td>
</tr>
<tr>
<td>IP 55</td>
<td>Symbol for protection against foreign matter and water</td>
</tr>
<tr>
<td>IP 66</td>
<td>Symbol for protection against contact, foreign matter and water</td>
</tr>
<tr>
<td>Symbol for type of application</td>
<td>Unattached accessories for use outside of lights (VDE 0712, part 1)</td>
</tr>
<tr>
<td>SELV</td>
<td>Description of voltage</td>
</tr>
</tbody>
</table>
### Switch range:

### Colour of cover:

### Colour of frame:

### Building contractor:

### Building site:

### Floor:

### Date:

### Page:

### From:

#### Programme area

<table>
<thead>
<tr>
<th>Area of application</th>
<th>Living room</th>
<th>Bedroom</th>
<th>Children's room</th>
<th>Dining room</th>
<th>Guest room</th>
<th>Kitchen</th>
<th>Bathroom</th>
<th>Toilet</th>
<th>Hall</th>
<th>Stairway</th>
<th>Cellar room 1</th>
<th>Cellar room 2</th>
</tr>
</thead>
</table>

#### Inserts

- Two-way switch
- Two-circuit switch
- Intermediate switch
- Control switch
- Push-button
- SCHUKO socket-outlet
- SCHUKO socket-outlet with child protection
- SCHUKO socket-outlet with labelling field
- SCHUKO socket-outlet with hinged lid
- Rotary dimmer \( \ldots \ldots \) W
- Sensor super dimmer \( \ldots \ldots \ldots \ldots \ldots \) W
- Sensor super dimmer ET \( \ldots \ldots \ldots \ldots \ldots \) W
- Cover for antenna socket-outlet
- Telephone socket-outlet
- Central plate for telephone socket-outlet

#### Frame

- 1-gang
- 2-gang
- 3-gang
- 4-gang
- 5-gang

#### Rockers / covers for dimmers

- Two-way rocker switch
- Two-circuit rocker switch
- Control rocker switch
- Central plate for rotary dimmer
- Sensor cover