The all in one system for effective protection and load control

Acti 9 Reflex iC60
Integrated control circuit breaker
Technical guide

Acti 9: The efficiency you deserve
Reflex iC60

The all-in-one integrated control circuit breaker

A complement to the Acti 9™ system and exclusive to Schneider Electric, the Reflex iC60 combines an MCB (miniature circuit breaker) with an internal actuator. Designed to evolve and adapt with the dynamic requirements of tertiary and industrial lighting control applications, it easily communicates with PLCs without the need for add-ons, retrofits or extras. It is especially dedicated to the load remote management of tertiary buildings & industrial plants which combine local control and centralised control with a number of switching operations.

Ti24 interface
for connection to Acti 9 Smartlink or PLC

3 operating modes
for all applications

Integrated signalisation

Latched and impulse orders

Available only from Schneider Electric

Integrated padlocking
for complete safety

ComReady

VisiSafe

Protection against short circuits and overloads

‘With the Reflex iC60 we saved 15 percent on our energy use, due to its simplified control of lighting circuits. Normal lighting is controlled remotely by the controller (PLC) based on periods of activity and selected lighting. As a result, daily control of our loads is simple. Installation was easy; the ‘all in one’ concept reduced power terminal wiring by 50 percent. Plus, the Reflex iC60 allows direct connection to the PLC without any low current interfaces’.

H. Rascon, building technician

25%
space savings due to all in one design

24 V
direct connection to PLC or BMS

coordination between MCB and actuator
Reflex iC60H (curves C, D) (cont.)

- Tripping and disconnection device capable of:
  - disconnecting and padlocking (Ø 3 to 6 mm not supplied) in "open" position
  - neutralising remote control

- Ti24 interface for direct link to PLC and Acti 9 Smartlink

- IP20 insulated terminals

- Bi-stable operation: does not change state in the event of electrical power outage

- VisiSafe
  - Positive contact indication
  - Uimp: 6 kV
  - Ui: 500 V
  - Degree of pollution: level 3

- Operating state indicator lamp

- Pushbutton:
  - manual control: opening/closing
  - choice of operating modes

- Longer product service life due to:
  - good overvoltage withstand capacity: products designed to provide a high industrial performance level (degree of pollution, rated impulse withstand voltage and insulation voltage),
  - high limitation performances,
  - fast closure independent of the speed of resetting of the operating handle.

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**Legend**

<table>
<thead>
<tr>
<th>Ti24 interface</th>
<th>Circuit breaker state information</th>
</tr>
</thead>
<tbody>
<tr>
<td>+24VDC</td>
<td>V DC power supply</td>
</tr>
<tr>
<td>Y3</td>
<td>Remote control by latched order</td>
</tr>
<tr>
<td>auto/OFF</td>
<td>Control circuit state indication contact</td>
</tr>
<tr>
<td>O/C</td>
<td>V DC power supply</td>
</tr>
</tbody>
</table>

| Y1            | Latched order control           |
| Y2            | Control by impulse-type         |
| N             | 230 V AC power supply           |
| P             |                                  |
| O/C           | Control circuit state indication contact |
| auto/OFF      | Circuit-breaker tripping indication contact |
Reflex iC60H
(curves C, D)

IEC/EN 60947-2

The Reflex iC60 devices are integrated control circuit breakers which combine the following main functions in a single device:
- Remote control by latched and/or impulse-type order according to the 3 operating modes to be chosen by the user
- Circuit breaker, to provide:
  - circuit protection against short-circuit currents
  - circuit protection against overload currents
  - disconnection in the industrial sector

Resetting after a fault is performed manually, by the resetting handle.

The version with Ti24 allows direct interfacing of the Reflex iC60 with a PLC, to:
- Execute remote control (Y3)
- Indicate the state of the control circuit (O/C) and circuit-breaker state information (auto/OFF)

The Ti24 interface also allows fast, reliable connection of the Reflex iC60 to the Acti 9 Smartlink due to the prefabricated cables.

### Catalogue numbers

**Reflex iC60 circuit breaker**

<table>
<thead>
<tr>
<th>Type</th>
<th>2P</th>
<th>3P</th>
<th>4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating (In)</td>
<td>Curve</td>
<td>Curve</td>
<td>Curve</td>
</tr>
<tr>
<td>10 A</td>
<td>10 A9C65210</td>
<td>10 A9C66210</td>
<td>10 A9C65310</td>
</tr>
<tr>
<td>16 A</td>
<td>16 A9C65216</td>
<td>16 A9C66216</td>
<td>16 A9C65316</td>
</tr>
<tr>
<td>25 A</td>
<td>25 A9C65225</td>
<td>25 A9C66225</td>
<td>25 A9C65325</td>
</tr>
<tr>
<td>40 A</td>
<td>40 A9C65240</td>
<td>40 A9C65340</td>
<td>40 A9C65440</td>
</tr>
<tr>
<td>Width in 9 mm modules</td>
<td>9</td>
<td>11</td>
<td>13</td>
</tr>
</tbody>
</table>

**Alternating current (AC) 50 Hz**

<table>
<thead>
<tr>
<th>Voltage (Ue)</th>
<th>Reflex iC60H</th>
<th>Ultimate breaking capacity (Icu) as per IEC/EN 60947-2</th>
<th>Service breaking capacity (Ics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>220 to 240 V</td>
<td>10 to 40 A</td>
<td>30 kA 15 kA 50 % of Icu</td>
<td></td>
</tr>
<tr>
<td>380 to 415 V</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Remote control is possible by 3 operating modes to be set using the pushbutton on the front panel.

**Operating modes**

**Mode 1: Reflex iC60 opening/closing, locally or centrally controlled**
- The opening/closing orders come from various control points, and they are taken into account in their order of arrival
  - Y1: latched order local control
  - Y2: impulse-type local control
  - Y3: latched order centralised control

**Mode 2: Reflex iC60 opening/closing, possible inhibition of local impulse-type control**
- Y1 is used to inhibit Y2
  - Y1: local opening/Y2 inhibition latched order control
  - Y2: impulse-type local opening/closing control
  - Y3: latched order centralised opening/closing control

**Mode 3: Reflex iC60 opening/closing, possible inhibition of centralised latched order control**
- Y1 is used to inhibit Y3
  - Y1: inhibition local latched order control
  - Y2: impulse-type local opening/closing control
  - Y3: latched order centralised opening/closing control

**Weight (g)**

<table>
<thead>
<tr>
<th>Circuit breaker</th>
<th>Reflex iC60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>2P</td>
<td>480</td>
</tr>
<tr>
<td>3P</td>
<td>620</td>
</tr>
<tr>
<td>4P</td>
<td>750</td>
</tr>
</tbody>
</table>

**Dimensions (mm)**

**Table of modes**

<table>
<thead>
<tr>
<th>Reflex iC60 with interface Ti24</th>
<th>Mode 1</th>
<th>Mode 2</th>
<th>Mode 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible mode</td>
<td>Possible mode</td>
<td>Default mode</td>
<td></td>
</tr>
</tbody>
</table>
### Reflex iC60H (curves C, D) (cont.)

#### Power connection

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Rating</th>
<th>Tightening torque</th>
<th>Copper cables</th>
<th>Al terminal</th>
<th>Screw-on connection for ring terminal</th>
<th>Multi-cable terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rigid</td>
<td>Flexible or with ferrule</td>
<td>50 mm²</td>
<td>Rigid</td>
</tr>
<tr>
<td>Power</td>
<td>10 to 25 A</td>
<td>2 N.m</td>
<td>1 to 25 mm²</td>
<td>1 to 16 mm²</td>
<td>-</td>
<td>5 mm</td>
</tr>
<tr>
<td></td>
<td>40 to 63 A</td>
<td>3.5 N.m</td>
<td>1 to 35 mm²</td>
<td>1 to 25 mm²</td>
<td>50 mm²</td>
<td>3 x 16 mm²</td>
</tr>
</tbody>
</table>

#### Control connection

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Tightening torque</th>
<th>Copper cables</th>
<th>Flexible</th>
<th>Flexible with ferrule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply (N/P) Inputs (Y1/Y2)</td>
<td>1 N.m</td>
<td>1 to 10 mm²</td>
<td>1 to 8 mm²</td>
<td>1 to 4 mm²</td>
</tr>
<tr>
<td>Outputs (O/C, auto/OFF)</td>
<td>0.7 N.m</td>
<td>1 to 2.5 mm²</td>
<td>1 to 2.5 mm²</td>
<td>1 to 1.5 mm²</td>
</tr>
<tr>
<td>Ti24 interface</td>
<td>Spring-loaded terminals</td>
<td>0.5 to 1.5 mm²</td>
<td>0.5 to 1.5 mm²</td>
<td>0.5 to 1.5 mm²</td>
</tr>
</tbody>
</table>
## Technical data

### Control circuit
- **Supply voltage (Ue)** (N/P): 230 V AC - 50 Hz
- **Control voltage (Uc)**
  - Inputs (Y1/Y2): 230 V AC - 5 mA
  - Input (Y3): 24 V DC - 5.5 mA
- **Min. duration of control impulse (Y2)**: ≥ 250 ms
- **Response time (Y2)**: ≤ 200 ms
- **Consumption**: ≤ 1 W
- **Inrush consumption**: < 1000 VA
- **Length of control wires**
  - Inputs (Y1/Y2): Cable: 100 m
  - Wires in a sheath: 500 m
  - Input (Y3): 500 m
- **Inrush current at 230 V - 50 Hz**
  - 2P: 4.2 A
  - 3P: 8.2 A
  - 4P: 16.2 A

### Power circuit
- **Max. working voltage (Ue)**: 400 V AC
- **Insulation voltage (Ui)**: 500 V
- **Rated impulse withstand voltage (Uimp)**
  - Set to Disconnected: 8 kV
  - Set to Ready: 4 kV
- **Thermal tripping**: Reference temperature: 50°C
- **Magnetic tripping**
  - Curve B: 4 In ± 20 %
  - Curve C: 8 In ± 20 %
  - Curve D: 12 In ± 20 %
- **Overvoltage category (IEC 60364)**: IV
- **Temperature derating**: Consult us

### Indication / Remote control
- **Potential-free changeover contact outputs (O/C, auto/OFF)**
  - Min.: 24 V DC - 100 mA
  - Max.: 230 V AC - 1 A
- **Ti24 interface (as per IEC 61131)**
  - Outputs (O/C, auto/OFF): Ti24 interface
  - 24 V DC - 100 mA max

### Endurance (O-C)
- **Electrical**
  - AC1 - AC7a: Up to 50,000 cycles (1)
  - AC5a - AC5b: Up to 15,000 cycles (1)
  - AC7c: Up to 20,000 cycles (1)
- **Mechanical**: 50,000 cycles

### Additional characteristics
- **Degree of protection (IEC 60529)**
  - Device only: IP20
  - Device in a modular enclosure: IP40 (Insulation class II)
- **Degree of pollution**: 3
- **Operating temperature**: -25°C to +60°C
- **Storage temperature**: -40°C to +85°C
- **Tropicalization**: Treatment 2 (relative humidity of 93% at 40°C)
- **Immunity to voltage dips**: IEC 61000-4-11 class III
- **Immunity to power supply frequency variations**: IEC 61000-4-28 and IACS E10
- **Immunity to harmonics**: IEC 61000-4-13 class 2
- **Immunity to electrostatic discharges**
  - Air: 8 kV, IEC 61000-4-2
  - Contacts: 4 kV, IEC 61000-4-2
- **Immunity to stray magnetic fields**: 10 V/m up to 3 GHz, IEC 61000-4-3
- **Immunity to fast transients**: 4 kV from 5 to 100 kHz, IEC 61000-4-4
- **Immunity to shock waves**: IEC 61000-4-5
- **Immunity to power frequency magnetic fields**: 10 V from 150 kHz to 80 MHz, IEC 61000-4-6
- **Immunity to network frequency magnetic fields**: Level 3, 30 A/m to IEC 61000-4-8 and IEC 61000-4-9
- **Conducted emissions**: CISPR 11/22
- **Radiated emissions**: CISPR 11/22

---

(1) See the derating table according to the load types and ratings
The Reflex iC60 is the perfect all-in-one solution for remote load management of tertiary buildings, industrial plants and interior and exterior public infrastructure lighting applications.

Make the most of your energy™

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