Climatix™

Climatix Controllers

POL687.70/XXX
POL687.00/XXX

For control, switching and monitoring functions

The Climatix POL68X controllers are designed for use in ventilation, air conditioning and refrigeration plants.
They are products of the Climatix range.

Controller types

POL687.70 with inbuilt HMI
POL687.00 without inbuilt HMI

To create ventilation, air conditioning and refrigeration applications and to facilitate commissioning, powerful engineering and service tools are available (also refer to Data Sheet 3900 and Mounting Instructions M3910).
The Climatix™ 687 controllers offers the following features:

- Freely programmable (SAPRO)
- Object-orientated programming by graphical editor SAPRO
- Expandability via peripheral bus for local / remote extension modules
- Power supply AC 24 V or DC 24 V
- 8 universal I/Os
- 3 analog inputs NTC 10k and NTC 100k
- DC 24 V and DC 5 V power supply for active sensors on board
- 2 digital inputs for potential-free contacts
- 2 digital inputs galvanically isolated AC 24 V
- 2 digital inputs galvanically isolated AC 115/230 V
- 8 relay outputs (6 NO contacts, 2 relays switching type)
- 2 triac outputs (AC 24/115/230 V)
- RS-485 in Modbus RTU for third-party bus
- Process bus for network functionalities (based on KNX protocol)
- Integration interfaces with up to 3 additional communication modules
- Local service connector for user interface and PC tools (supporting USB)
- Ethernet port for local / remote servicing (by browsers) and tools over IP
- Full modem RS-232 port for remote service
- SD card interface for application and operating system upgrade
- Operating temperature -20…60 °C (without LCD -40…70 °C)
Connection terminals and connectors

Communication module interfaces

- Power supply
- Relay output
- Relay output
- Relay output
- Triac output
- Digital input (AC 24 V insulated)
- IP service interface (Ethernet 10/100)
- Local service interface (tool / HMI)
- Analog inputs
- Universal I/Os (Analog/digital inputs)
- Universal I/Os (Analog/digital outputs)
- Digital input (potential-free)
- Digital input (AC 24 V insulated)
- Third-party bus (RS-485 (Modbus RTU))
- Process bus (KNX-TP1)
### Technical data

#### Power supply

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>AC 24 V ±20%; DC 24 V ±10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>45...65 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Approx. 15 VA (without extension modules)</td>
</tr>
<tr>
<td>Max. AC current without extension modules</td>
<td>1.8 A @ AC 24 V</td>
</tr>
<tr>
<td>Max. DC current without extension modules</td>
<td>1.0 A @ DC 24 V</td>
</tr>
<tr>
<td>Max. current for extension modules</td>
<td>2.2 A @ AC 24 V / 3.0 A @ DC 24 V</td>
</tr>
<tr>
<td>Max. external supply line fusing</td>
<td>10 A slow wire fuse or circuit breaker</td>
</tr>
</tbody>
</table>

#### Mains

- AC 230 V

#### Other devices

- Safety transformer
- Relay: Type, contact
  - Monostable, NO/NC contact
  - Monostable, NO contact

#### Contact rating

- Switching voltage: AC 24 V…230 V (-20%, +10%)
- Rated current (res. / ind.): Max. AC 3 A / 2 A (cosφ 0.6)
- Switching current at AC 19 V: Min. AC 30 mA
- Max. external supply line fusing: 6.3 A slow wire fuse or circuit breaker

#### Warning

- Do not mix (SELV / PELV) and line voltage on the same terminal
- Use external protection for inductive load

#### Relay outputs

<table>
<thead>
<tr>
<th>Relay outputs</th>
<th>Q1…Q8 (T9, T10, T11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay: Type, contact</td>
<td>Monostable, NO/NC contact</td>
</tr>
<tr>
<td>Contact rating</td>
<td>Monostable, NO contact</td>
</tr>
</tbody>
</table>

#### Triac outputs

<table>
<thead>
<tr>
<th>Triac outputs</th>
<th>DO1,DO2 (T11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triac output values</td>
<td>AC 24 V…230 V (-20%, +10%)</td>
</tr>
<tr>
<td>Switching voltage</td>
<td>AC 24 V...230 V (-20%, +10%)</td>
</tr>
<tr>
<td>Switching capacity</td>
<td>Max. 500 mA / min. 30 mA</td>
</tr>
<tr>
<td>Max. external supply line fusing</td>
<td>2.0 A slow wire fuse or circuit breaker</td>
</tr>
</tbody>
</table>

#### Warning

- Do not mix SELV / PELV and line voltage on the same terminal
- Use external protection for inductive load
Analog inputs

B1…B3 (T1)

NTC 10k
Sensor current

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Accuracy</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>-50 °C</td>
<td>2.5 K</td>
<td>0.6 K</td>
</tr>
<tr>
<td>-40 °C</td>
<td>1.4 K</td>
<td>0.4 K</td>
</tr>
<tr>
<td>-30 °C</td>
<td>0.9 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>-10 °C</td>
<td>0.5 K</td>
<td>0.1 K</td>
</tr>
<tr>
<td>50 °C</td>
<td>0.7 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>70 °C</td>
<td>1.3 K</td>
<td>0.4 K</td>
</tr>
<tr>
<td>90 °C</td>
<td>2.5 K</td>
<td>0.7 K</td>
</tr>
<tr>
<td>100 °C</td>
<td>3.4 K</td>
<td>0.9 K</td>
</tr>
</tbody>
</table>

NTC 100k
Sensor current

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Accuracy</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 °C</td>
<td>1.8 K</td>
<td>0.5 K</td>
</tr>
<tr>
<td>10 °C</td>
<td>1.2 K</td>
<td>0.3 K</td>
</tr>
<tr>
<td>30 °C</td>
<td>0.7 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>70 °C</td>
<td>0.5 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>110 °C</td>
<td>0.8 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>120 °C</td>
<td>1.0 K</td>
<td>0.3 K</td>
</tr>
<tr>
<td>140 °C</td>
<td>1.5 K</td>
<td>0.4 K</td>
</tr>
<tr>
<td>150 °C</td>
<td>1.9 K</td>
<td>0.5 K</td>
</tr>
</tbody>
</table>

Connecting thermostats to analog inputs
### Universal I/Os

<table>
<thead>
<tr>
<th>CONFIGURABLE</th>
<th>Via software</th>
</tr>
</thead>
<tbody>
<tr>
<td>REFERENCE POTENTIAL</td>
<td>Terminals ⊥</td>
</tr>
<tr>
<td>CONTACT VOLTAGE</td>
<td>Max. DC 24 V (SELV)</td>
</tr>
<tr>
<td>OVERVOLTAGE PROTECTION</td>
<td>Up to 40 V</td>
</tr>
</tbody>
</table>

### Analog inputs (X1…X8)

#### Ni1000
- **Sensor current**: 1.4 mA
- **Resolution**: 0.1 K
- **Accuracy within the range -50…150 °C**: 0.5 K

#### Pt1000
- **Sensor current**: 1.8 mA
- **Resolution**: 0.1 K
- **Accuracy within the range -40…120 °C**: 0.5 K

#### NTC 10k
- **Sensor current**: 140 μA
- **Temperature range**
  - -50…-26 °C: 1 K, 0.2 K
  - -25…74 °C: 0.5 K, 0.1 K
  - 75…99 °C: 1 K, 0.3 K
  - 100…124 °C: 3 K, 1 K
  - 125…150 °C: 6 K, 2.5 K

#### NTC 100k
- **Sensor current**: 140 μA
- **Temperature range**
  - -25…-11 °C: 3 K, 0.2 K
  - -10…9 °C: 1 K, 0.1 K
  - 10…99 °C: 0.5 K, 0.1 K
  - 100…150 °C: 1 K, 0.2 K

#### 0…2.5 kΩ
- **Sensor current**: 1.8 mA
- **Resolution**: 1 Ω
- **Accuracy**: 4 Ω

#### DC 0…5 V input for ratiometric sensors
- **Resolution**: 1 mV
- **Accuracy at 0 V**: 10 mV
- **Accuracy at 5 V**: 25 mV
- **Input resistance**: 100 kΩ

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**Connecting a ratiometric sensor to universal I/O**

**Connecting NTC to universal I/O**
Analog inputs (X1…X8)

DC 0…10 V input

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1 mV</td>
</tr>
<tr>
<td>Accuracy at 0 V</td>
<td>10 mV</td>
</tr>
<tr>
<td>Accuracy at 5 V</td>
<td>25 mV</td>
</tr>
<tr>
<td>Accuracy at 10 V</td>
<td>50 mV</td>
</tr>
<tr>
<td>Input resistance</td>
<td>100 kΩ</td>
</tr>
</tbody>
</table>

DC 0/4…20 mA input

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1 μA</td>
</tr>
<tr>
<td>Accuracy at 4 mA</td>
<td>40 uA</td>
</tr>
<tr>
<td>Accuracy at 12 mA</td>
<td>70 uA</td>
</tr>
<tr>
<td>Accuracy at 20 mA</td>
<td>120 uA</td>
</tr>
</tbody>
</table>

Connecting floating contacts to universal I/Os

Digital inputs (X1…X8)

0/1 digital signal (binary)

For potential-free contacts

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling voltage / current</td>
<td>DC 24 V / 8 mA</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>Max. 200 Ω (closed)</td>
</tr>
<tr>
<td></td>
<td>Min. 50 kΩ (open)</td>
</tr>
<tr>
<td>Delay</td>
<td>10 ms</td>
</tr>
<tr>
<td>Pulse frequency</td>
<td>Max. 30 Hz</td>
</tr>
</tbody>
</table>

Connecting floating contacts to universal I/Os
**Analog outputs (X1…X4)**

DC 0…10 V output

- Resolution: 11 mV
- Accuracy at 0 V: 66 mV
- Accuracy at 5 V: 95 mV
- Accuracy at 10 V: 124 mV
- Output current: 1 mA (short-circuit-proof)

DC 4…20 mA output

- Resolution: 22 μA
- Accuracy at 4 mA: 150 μA
- Accuracy at 12 mA: 196 μA
- Accuracy at 20 mA: 243 μA

**Analog / digital outputs (X5…X8)**

DC 0…10 V output

- Resolution: 11 mV
- Accuracy at 0 V: 66 mV
- Accuracy at 5 V: 95 mV
- Accuracy at 10 V: 124 mV
- Output current: 1 mA (short-circuit-proof)

DC output for off board loads

- Switching voltage: DC 24 V
- Switching capacity: Max. 25 mA

Connecting voltage output and off board relays to universal I/Os
**Powering sensors**
active / ratiometric
5 V, 24 V

**2 x 2 outputs**
- Voltage / current: DC 5 V ±2.5% / 2 x 20 mA
- Voltage / current: DC 24 V +10 %, -25% / 2 x 40 mA
- Reference potential: Terminals ⊥
- Connection: Short-circuit-proof

![Diagram of 2 x 2 outputs](image)

**Digital inputs**
potential-free
D1, D2 (T4)

- 0/1 digital signal (binary): For potential-free contacts
- Sampling voltage / current: DC 24 V / 8 mA
- Contact resistance: Max. 200 Ω (closed)
- Min. 50 kΩ (open)
- Delay: 10 ms
- Pulse frequency: Max. 30 Hz

![Diagram of digital inputs](image)

Connecting a ratiometric sensor
5 V sensor supply voltage

Connecting floating contact to digital input
**Digital input**
- **AC 24 V**
- **DU1,DU2 (T5)**

**0/1 digital signal (binary)**
- Galvanically isolated contact
- Rated voltage: AC / DC 24 V
- Input current: 8 mA
- Delay: 20 ms
- Pulse frequency: Max. 5 Hz

Connecting a DC 24 V signal to digital input

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**Digital input**
- **AC 230 V**
- **DL1,DL2 (T13)**

**0/1 digital signal (binary)**
- Galvanically isolated contact
- Rated voltage: AC 115 V…230 V (-15%, +10%)
- Frequency range: 45…65 Hz
- Input current: 3 mA @ AC 230 V
- Delay: 100 ms
- Pulse frequency: Max. 5 Hz

Connecting a AC 230 V signal to a galvanically isolated digital input
Interfaces

Peripheral bus

Connection via plug at bottom right of the controller.
Based on RS-485 interface for the I/O module connection.

- Power supply in the controller: $U_{eff} = AC\ 24\ V\ \pm\ 20\%$, $f_{main} = 45...65\ Hz$
  - or $U = DC\ 24\ V\ \pm\ 10\%$, no internal fuse
- Bus termination selectable: $(680\ \Omega / 120\ \Omega +1\ nF / 680\ \Omega )$
- Board-to-board (not included): ZEC1.0/4-LPV-3.5 GY35AUC2C1
- Board-to-wire (not included): ZEC1.0/4-ST-3.5 GY35AUC1R1.4
- Solid wire: $0.2...1.0\ mm^2$
- Stranded wire (twisted and with ferrule): $0.2...1.0\ mm^2$
- Bus cable: Shielded if length >3m , twisted pair
- Max. number of extension modules: 31 (1...31) 0 not usable
- Cable lengths: Total max. 30 m

Process bus

Based on KNX TP1

- Bus connection
- Bus electronics: CE+, CE-, not interchangeable
- Bus load: Max. 5 mA
- Bus cable: Must be shielded; also refer to KNX Manual “System Specifications”

- Bus cable length between 2 KNX nodes: Max. 700 m
- Total length of bus KNX cable: Max. 1,000 m
- Bus power supply via
  - Internal DPSU with 50 mA rated current
  - External standard KNX power pack

Third-party bus

RS-485 (EIA 485)

- Modbus RTU mode
- Bus connection: A+, B-, REF
- Bus electronics: Galvanically isolated
- Bus cable: Shielded if length > 3m , twisted pair
  - $680\ \Omega / 120\ \Omega +1\ nF / 680\ \Omega$
**COMM interface**

Connection via plug at bottom left of the controller. Based on SPI interface for the communication module connection.

- Low-voltage power supply for COM module
  - Voltage / current: DC 5 V ±10% / max. 1A
  - Short-circuit-proof

- Board-to-board (not included): ZEC1,0/10-LPV-3,5 GY35AUC2C11

**Tools / HMI**

**local service interface (Tₜₜ)**

Tool (on USB) and HMI (on RS485)

- RJ45 jack, 8 pins, length of cable <3 m
- Use USB cable POL0C2 for tools
- HMI cable included in POL895.51

**IP service interface**

**Ethernet (Tₑₑ)**

10/100 Mbit (IEEE 802.3U)

- RJ45 jack, 8 pins

**Ethernet TCP/IP example**

- Remote PC
- Internet Router
- Firewall
- Shared Printer
- File Server
- Intranet
- POL600

**Diagram**

- BSP
- BUS
- Ethernet (Tₑₑ)
- Tₑₑ
- Internet
- DMZ
- Web-Server
- FIrewall
- Firewall
- Internet Router
- Router
- POL600

**Diagram**

- Tool (on USB) and HMI (on RS485)
- RJ45 jack, 8 pins, length of cable <3 m
- Use USB cable POL0C2 for tools
- HMI cable included in POL895.51

**Diagram**

- Low-voltage power supply for COM module
  - Voltage / current: DC 5 V ±10% / max. 1A
  - Short-circuit-proof

- Board-to-board (not included): ZEC1,0/10-LPV-3,5 GY35AUC2C11
Modem service interface

Connection via plug at top right of the controller

Tool and modem (full modem interface)
- Cable connection: RJ45 jack, 8 pins, at top right
- Cable length: <3 m
- Supported modem types:
  - Siemens TC65 GSM modem terminal
  - Devolo Microlink 56k I

Connection via plug at top right of the controller

SD card
- SD card: Slot 128 MB…2 GB
- Slot: Laterally

Warning

Switching on/off during the read-and-write access can lead to loss of data.

LEDs for diagnostics

LED for BSP Run / Stop

<table>
<thead>
<tr>
<th>Mode</th>
<th>LED status</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW update mode (download active on a new</td>
<td>Every second alternating between red</td>
</tr>
<tr>
<td>BSP, application)</td>
<td>and yellow</td>
</tr>
<tr>
<td>Application running</td>
<td>Green on</td>
</tr>
<tr>
<td>Application loaded but not running</td>
<td>Yellow on</td>
</tr>
<tr>
<td>Application not loaded</td>
<td>Yellow flashing (50 ms on, 1000 ms off)</td>
</tr>
<tr>
<td>BSP error (software error)</td>
<td>Red blinking at 2 Hz</td>
</tr>
<tr>
<td>Hardware error</td>
<td>Red on</td>
</tr>
</tbody>
</table>

LED for BUS

<table>
<thead>
<tr>
<th>Mode</th>
<th>LED status</th>
</tr>
</thead>
<tbody>
<tr>
<td>No modem connected, or LED disabled</td>
<td>Off</td>
</tr>
<tr>
<td>Modem connected and initialized no</td>
<td>Yellow on</td>
</tr>
<tr>
<td>communication active</td>
<td></td>
</tr>
<tr>
<td>Modem connected and communication active</td>
<td>Green on</td>
</tr>
<tr>
<td>Modem connected but errors active (like</td>
<td>Red on</td>
</tr>
<tr>
<td>provider missing, no initialization possible)</td>
<td></td>
</tr>
<tr>
<td>BSP error (software error)</td>
<td>Red blinking at 2 Hz</td>
</tr>
<tr>
<td>Hardware error</td>
<td>Red on</td>
</tr>
</tbody>
</table>

This LED only indicates the status of the integrated modem communication. It does not indicate the status of the internal communication (like I/O extension, TCOM extension). This status is visible on the extension modules.

The modem LED can be enabled over the 'EnableModem' member in the modem object. The default is disable. Modem functionality itself is not influenced.
<table>
<thead>
<tr>
<th>Connection terminals</th>
<th>Possible plugs for I/O signals and communication (plugs not included)</th>
<th>Phoenix FKCVW 2.5 / x-ST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Possible plugs for power supply (plugs not included)</td>
<td>Phoenix FKCT 2.5 / x-ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phoenix MVSTBW 2.5 / x-ST</td>
</tr>
<tr>
<td></td>
<td>Solid wire</td>
<td>0.5...2.5 mm²</td>
</tr>
<tr>
<td></td>
<td>Stranded wire (twisted and with ferrule)</td>
<td>0.5...1.5 mm²</td>
</tr>
<tr>
<td></td>
<td>Cable lengths</td>
<td>In compliance with the load, local regulations and installation documents</td>
</tr>
<tr>
<td>Cable types</td>
<td>Process bus</td>
<td>Twisted pair cable; 0.5...1.5 mm² (as per KNX specification)</td>
</tr>
<tr>
<td></td>
<td>RS-485 interface</td>
<td>2-wire twisted pair, shielded</td>
</tr>
<tr>
<td></td>
<td>Peripheral bus</td>
<td>4-wire / 2-wire twisted pair, shielded</td>
</tr>
<tr>
<td>Real-time clock</td>
<td>Buffering with internal gold cap</td>
<td>Min. 3 days</td>
</tr>
<tr>
<td></td>
<td>Buffering with accessory battery</td>
<td>Min. 200 days</td>
</tr>
<tr>
<td>Inbuilt HMI</td>
<td>LCD with white backlight</td>
<td>144 x 64 dots</td>
</tr>
<tr>
<td>(POL687.70/MCQ only)</td>
<td>Navigation</td>
<td>Roll-and-push knob</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 function buttons</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>Operation</td>
<td>IEC 60721-3-3 class 3K5</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>-40...70 °C</td>
</tr>
<tr>
<td></td>
<td>Restriction LCD</td>
<td>-20...60 °C</td>
</tr>
<tr>
<td></td>
<td>Restriction process bus</td>
<td>-25...70 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>&lt;90% r.h. (non-condensing)</td>
</tr>
<tr>
<td></td>
<td>Atmospheric pressure</td>
<td>Min. 700 hPa, corresponding to max. 3,000 m above sea level</td>
</tr>
<tr>
<td></td>
<td>Transport</td>
<td>IEC 60721-3-2 class 2K3/2K4</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>-40...70 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>&lt;95% r.h. (non-condensing)</td>
</tr>
<tr>
<td></td>
<td>Atmospheric pressure</td>
<td>Min. 260 hPa, corresponding to max. 10,000 m above sea level</td>
</tr>
<tr>
<td></td>
<td>Mechanical conditions</td>
<td>IEC 60721-3-2 class 2M2</td>
</tr>
<tr>
<td>Reliability</td>
<td>MTBF</td>
<td>24 years</td>
</tr>
<tr>
<td>Protection</td>
<td>Degree of protection</td>
<td>IP20 (EN 60529)</td>
</tr>
<tr>
<td></td>
<td>Safety class</td>
<td>Suitable for use in installations of safety class II</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>Reinforced insulation between relay outputs and between relay outputs and system electronic</td>
<td>AC 3750 V to EN 60730-1</td>
</tr>
<tr>
<td>Standards</td>
<td>Product safety and EMC</td>
<td>EN 60730-1</td>
</tr>
<tr>
<td></td>
<td>Automatic electrical controls</td>
<td>EN 60730-1</td>
</tr>
<tr>
<td></td>
<td>Electromagnetic compatibility</td>
<td>Suitable for residential and industrial EMC environment</td>
</tr>
<tr>
<td></td>
<td>Immunity</td>
<td>EN 60730-1 +A16</td>
</tr>
</tbody>
</table>
### Emissions
- EN 60730-1 +A16

### CE conformity
- EMC directive 2004/108/EEC
- Low-voltage directive 2006/95/EEC

### C-lick conformity
- In accordance with Australian EMC framework
- Radio Communications Act 1992
- AS/NZS CISPR11
- Radio Emission Standard AS/NZS CISPR 22

### UL approvals
- UL916, UL873

### Signal equipment certified for Canada
- CSA C22.2M205

### RoHs compliance
- 2002/95/EC (Europe)
- ACPEIP (China)

### N474 C-Tick conformity to EMC emission standard
- AS/NSZ CISPR 22

### General data

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Controller without HMI</th>
<th>207 x 110 x 75 mm</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Controller with HMI</td>
<td>207 x 110 x 79 mm</td>
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<table>
<thead>
<tr>
<th>Weight excl. packaging</th>
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<tbody>
<tr>
<td>Controller without HMI</td>
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<table>
<thead>
<tr>
<th>Base</th>
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<tbody>
<tr>
<td>Plastic, pigeon-blue RAL 5014</td>
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<table>
<thead>
<tr>
<th>Housing</th>
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<tbody>
<tr>
<td>Plastic, light-grey RAL 7035</td>
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</tbody>
</table>

### Ordering data
- PolyCool 600 controller POL687.00/STD
- PolyCool 600 controller with inbuilt HMI POL687.70/STD

### Accessory parts
- Real-time clock battery BR2032 POL 0B1.20/STD
- PC service cable 0.8 m POL 0C2.20/STD
- PC service cable 1.5 m POL 0C2.40/STD
- SAPRO programming tool license ACX93.000
- Test and demo case POL 0G6.87/STD

<table>
<thead>
<tr>
<th>Connector set (spring cage, cable top entry)</th>
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</thead>
<tbody>
<tr>
<td>POL 068.76/STD</td>
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</tbody>
</table>

- 1 x Phoenix FKCT 2,5/2-ST OG
- 1 x Phoenix FKCT 2,5/2-ST GY7035
- 6 x Phoenix FKCT 2,5/3-ST KMGY
- 1 x Phoenix FKCT 2,5/5-ST GY7035
- 1 x Phoenix FKCT 2,5/6-ST GY7035
- 1 x Phoenix FKCT 2,5/7-ST GY7035
- 2 x Phoenix FKCT 2,5/8-ST GY7035

### Engineering notes

#### Warning
To ensure protection against accidental contact with relay connections carrying voltages above 42 V_{eff}, the controller must be installed in an enclosure (preferably a control panel). It must be impossible to open the enclosure without the aid of a key or tool.

AC 230 V cables must be double-insulated against safety extra low-voltage (SELV) cables.

### Disposal notes

The controller contains electrical and electronic components and must not be disposed of together with household waste.
Local and currently valid legislation must be observed!

Layout of controller

**POL 687.00/XXX**

Dimension in mm

**POL 687.70/XXX**