



Climatix™

Climatix AHU ext. module 14 I/O

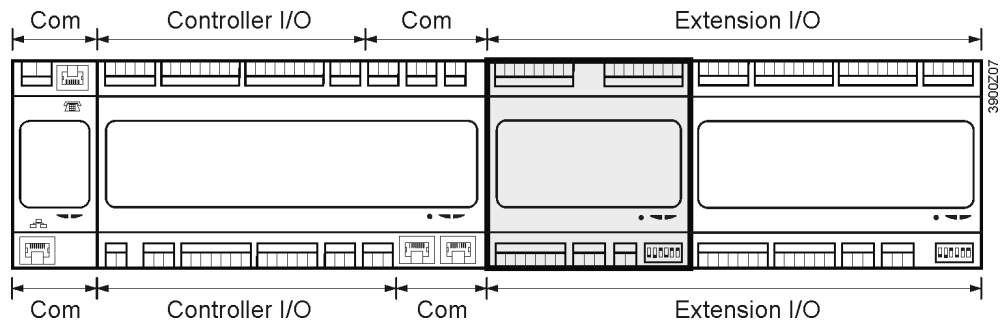
POL955.XX/XXX

POL955.XX/XXX is a versatile Climatix extension module that can be connected to any type of Climatix POL6xx controller. Its high level of flexibility of universal inputs meets the requirements of the compact air handling unit industry plus those of other air conditioning applications.

The extension module offers the following features:

- Power supply AC 24 V or DC 24 V via the controller
- 8 universal I/Os (configurable inputs / outputs, for analog or digital signals)
- 4 relay outputs (NO contacts)
- 2 analog outputs (DC 0...10 V)
- Peripheral bus interface for local / remote extension I/Os

The POL985.00/xxx extension module is part of the Climatix product range (also refer to Data Sheet 3900 and Mounting Instructions M3910).



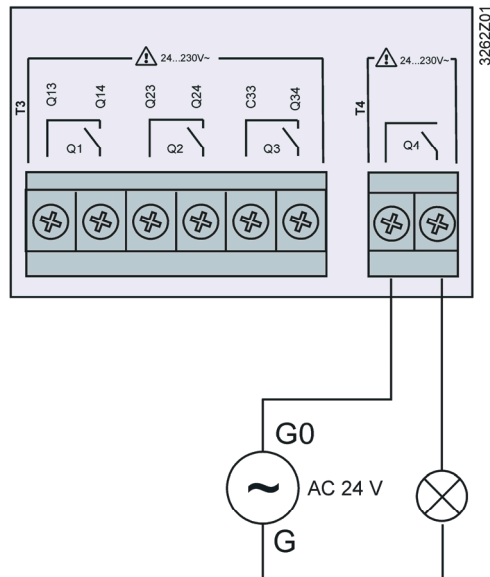
Technical data

Power supply

| | |
|-------------------|----------------------------|
| Operating voltage | AC 24 V ±20%; DC 24 V ±10% |
| Frequency | 45...65 Hz |
| Power consumption | (AC) 600 mA, (DC) 340 mA |
| Connection | Peripheral bus |

Relay outputs Q1...Q4

| | |
|-------------------------------|------------------------------|
| Relay: Type, contact | Monostable, NO contact |
| Contact rating | |
| Switching voltage | AC 24 V...230 V (-20%, +10%) |
| Nominal current (res. / ind.) | Max. AC 4 A / 3 A (cosφ 0.6) |
| Switching current at AC 19 V | Min. AC 30 mA |



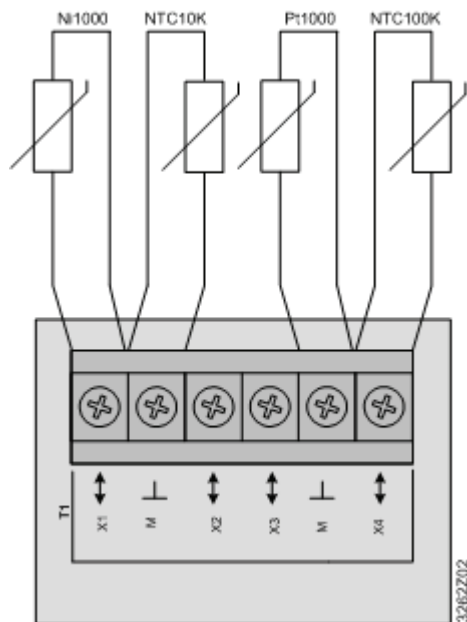
Connecting indicator lamps to relay output

**Universal I/Os
X1...X8**

| | |
|-------------------------|---------------------|
| Configurable | Via software |
| Reference potential | Terminals \perp |
| Contact voltage | Max. DC 24 V (SELV) |
| Over voltage protection | Up to 40 V |

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 (B_{25/85} = 3977K) | | |
| Sensor current | 140 µA | |
| Temperature range | Accuracy | Resolution |
| -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 | 1.0 K |
| 125...150 °C | 6 K | 2.5 K |
| NTC 100k (B_{25/85} = 3977K) | | |
| Sensor current | 140 µA | |
| Temperature range | Accuracy | Resolution |
| -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...2,500 Ω | | |
| Sensor current | 1.8 mA | |
| Resolution | 1 Ω | |
| Accuracy | 4 Ω | |



Connecting a ratiometric sensor to universal I/Os
Connecting NTC to universal I/Os

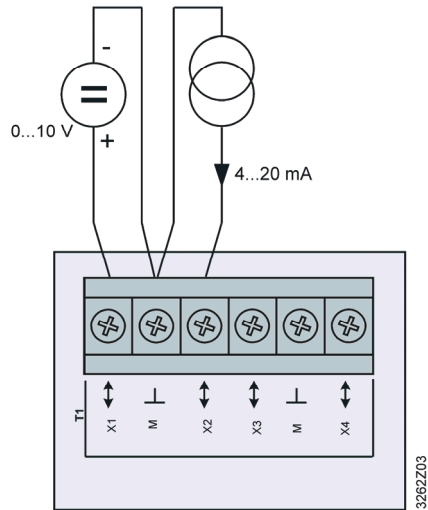
Analog inputs (X1...X8)

DC 0...10 V input

| | |
|------------------|----------------|
| Resolution | 1 mV |
| Accuracy at 0 V | 2 mV |
| Accuracy at 5 V | 25 mV |
| Accuracy at 10 V | 50 mV |
| Input resistance | 100 k Ω |

DC 0/4...20 mA input

| | |
|-------------------|-------------|
| Resolution | 1 μ A |
| Accuracy at 4 mA | 25 μ A |
| Accuracy at 12 mA | 70 μ A |
| Accuracy at 20 mA | 120 μ A |



Voltage input DC 0...10 V
Current input 4...20 mA

Digital inputs (X1...X8)

0/1 digital signal (binary)

Sampling voltage / current

Contact resistance

Delay

Pulse frequency

For potential-free contacts

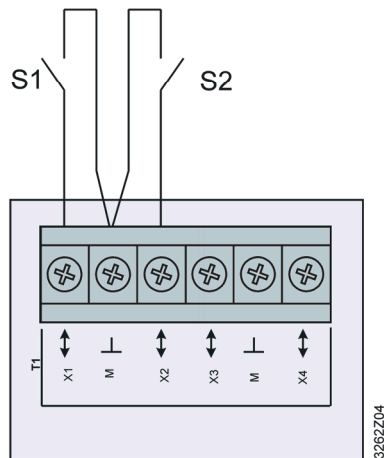
DC 24 V / 8 mA

Max. 200 Ω (closed)

Min. 50 k Ω (open)

10 ms

Max. 30 Hz



Connecting floating contacts to universal I/O

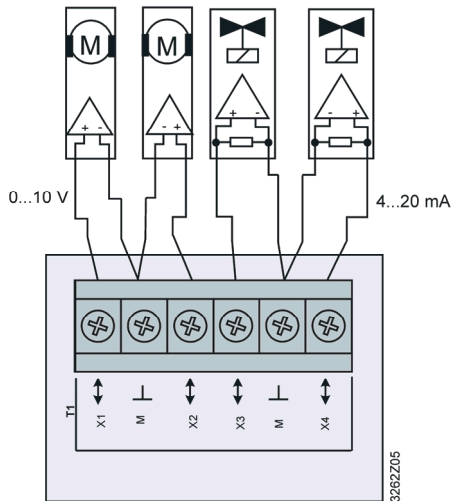
Analog outputs (X1-X8)

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 4...20 mA output

| | |
|-------------------|-------------|
| Resolution | 22 μ A |
| Accuracy at 4 mA | 150 μ A |
| Accuracy at 12 mA | 196 μ A |
| Accuracy at 20 mA | 243 μ A |



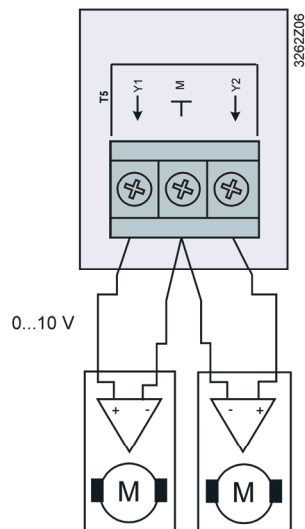
Connecting Voltage output and current output to universal I/O

Analog outputs

Y1...Y2

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 | 2 mA (short-circuit-proof) |



Connecting voltage output and offboard relays to analog output

Connection terminals

| | |
|---|---|
| Possible plugs for IO signals (not included) | Phoenix FKCVW 2,5 / x-ST Phoenix FKCT 2,5 / x-ST Phoenix MVSTBW 2,5 / x-ST Phoenix FRONT-MSTB 2,5 / x-ST |
| Solid wire | 0.5...2.5 mm ² |
| Stranded wire (twisted and with ferrule) | 0.5...1.5 mm ² |
| Cable lengths | In compliance with load, local regulations and installation documents |

Peripheral bus

| | |
|--|--|
| Power supply | U _{eff} = AC 24 V ± 20%, f _{main} = 45...65 Hz or U = DC 24 V ± 10%, no internal fuse |
| Bus termination selectable | (680 Ω / 120 Ω +1 nF / 680 Ω) |
| Solid wire | 0.2...1.0 mm ² |
| Stranded wire (twisted and with ferrule) | 0.2...1.0 mm ² |
| Cable lengths | Max. 30 m |
| Addressing | DIP switches 1...5 |
| Termination | DIP switch 6 |

Environmental conditions

| | |
|----------------------|---|
| Operation | IEC 721-3-3 class 3K5 |
| Temperature | -40...70 °C |
| Humidity | <90% r.h. (non-condensing) |
| Atmospheric pressure | Min. 700 hPa, corresponding to max. 3,000 m above sea level |
| Transport | IEC 721-3-2 class 2K3/2K4 |
| Temperature | -40...70 °C |
| Humidity | <95% r.h. (non-condensing) |
| Atmospheric pressure | Min. 260 hPa, corresponding to max. 10,000 m above sea level |

Protection

| | |
|----------------------|---|
| Degree of protection | IP20 (EN 60529) |
| Safety class | Suitable for use in plants with safety class II |

Standards

| | |
|-----------------------------------|---------------------------------------|
| Product safety | |
| Automatic electrical controls | EN 60730-1 |
| Electromagnetic compatibility | |
| Immunity in the industrial sector | EN 61000-6-2 |
| Emissions in the domestic sector | EN 61000-6-3 |
| CE conformity | |
| EMC directive | 2004/108/EC |
| Low-voltage directive | 2006/95/EC |
| Listings | UL916, UL873 CSA C22.2M205 |
| RoHS directive | 2002/95/EC (Europe) ACPEIP (China) |

General data

| | |
|--------------------------|-------------------------------|
| Dimensions of controller | 108 x 110 x 75 mm |
| Weight excl. packaging | 183.5 g |
| Base | Plastic, pigeon-blue RAL 5014 |
| Housing | Plastic, light-grey RAL 7035 |

Status of LEDs

The status of the BSP LED is defined as follows:

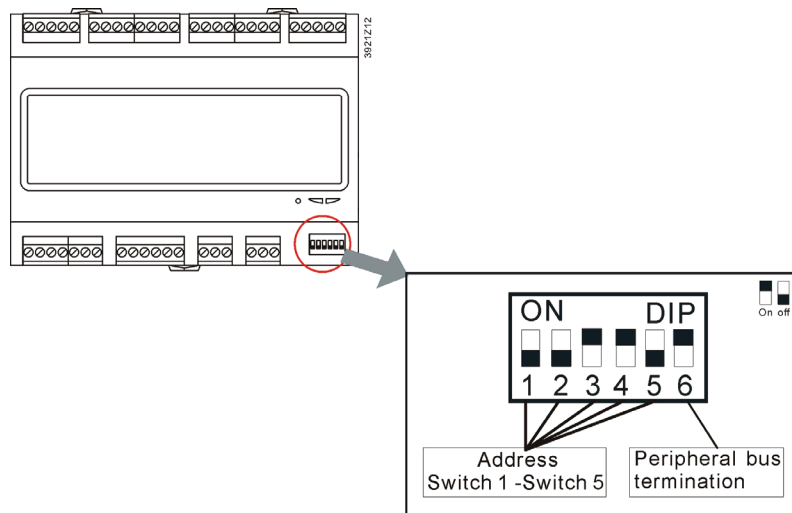
| <i>Status</i> | <i>Meaning</i> |
|----------------------|----------------------------------|
| Red blinking at 2 Hz | BSP error or slave address error |
| Green on | BSP running |

The status of the BUS LED is defined as follows:

| <i>Status</i> | <i>Meaning</i> |
|------------------------------|---|
| Red on | Communication error |
| Green on | Communication running |
| Green on and red on (yellow) | Communication running but parameter not successfully configured |

DIP switch

The extension module is equipped with DIP switches for communication with the controller. Switches 1, 2, 3, 4, and 5 are configurable to set the slave address, while switch 6 acts as peripheral bus termination. When the extension module operates as the termination in the network, switch 6 must be set to ON.


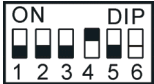
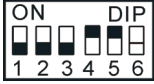

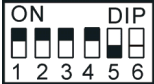
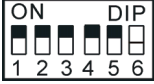


The bit order for the switches is from 5 to 1. The lowest bit is 5 while the highest bit is 1. The following table shows the logic of slave address:

| | |
|-----------------|-------|
| Switch 1 | 2^4 |
| Switch 2 | 2^3 |
| Switch 3 | 2^2 |
| Switch 4 | 2^1 |
| Switch 5 | 2^0 |

By combining switches 1, 2, 3, 4 or 5, a maximum of 31 slave addresses can be configured. The configuration formula is as follows: $2^4+2^3+2^2+2^1+2^0=31$.

Below are some configuration examples:

| DIP switch configuration of extension module | | | | | | |
|--|----------|----------|----------|----------|----------|--|
| Slave address (controller) | Switch 1 | Switch 2 | Switch 3 | Switch 4 | Switch 5 | Schematics |
| 1 | Off | Off | Off | Off | On |  |
| 2 | Off | Off | Off | On | Off |  |
| 3 | Off | Off | Off | On | On |  |
| 4 | Off | Off | On | Off | Off |  |
| 5...29 | | | | | | |
| 30 | On | On | On | On | Off |  |
| 31 | On | On | On | On | On |  |

Note



The same address of extension module must be set in the application program of the controller. Zero cannot be set as the slave address.

Ordering data

| | |
|--|---------------|
| AHU extension 14 I/O module (with connector set included) | POL955.55/STD |
|--|---------------|

Accessories

| | |
|--|---------------|
| Connector set (spring cage, cable top entry) 1 x Phoenix FKCT 2,5/2-ST GY7035 1 x Phoenix FKCT 2,5/3-ST KMGY 3 x Phoenix FKCT 2,5/6-ST GY7035 1 x Phoenix ZEC 1,0 / 4-LPV-3,5 GY35AUC2CI1 2 x Phoenix ZEC 1,0 / 4-ST-3,5 GY35AUC1R1,4 | POL095.55/XXX |
|--|---------------|

Engineering notes



To ensure protection against accidental contact with relay connections carrying voltages above $42 V_{eff}$, the module 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 module 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 AHU 14 I/O extension module

