



Climatix™

## Climatix extension module 8 I/Os

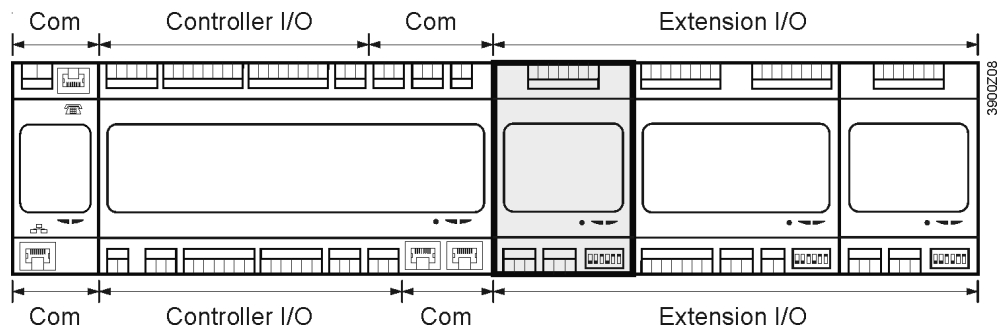
POL945.00/XXX

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The POL945.00/XXX extension module extends the number of I/Os of Climatix 600 controllers. It is a product of the Climatix range.

The extension module offers the following features:

- Power supply AC 24 V or DC 24 V
- 4 analog inputs (can be configured separately as digital inputs)
- 4 relay outputs
- Peripheral bus interface for local / remote extension I/Os



**Technical data**

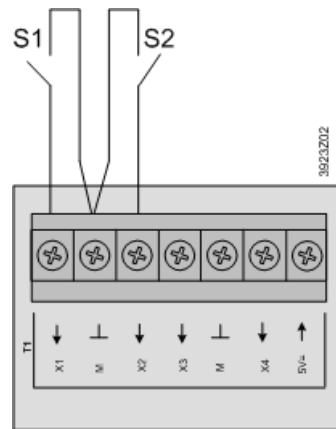
**Power supply**

Operating voltage	AC 24 V ± 20%; DC 24 V ± 10%
Frequency	45...65 Hz
Power consumption	260 mA, 3 W
Pass through current	Max. 4 A
Connection	Peripheral bus

**Analog inputs**

X1...X4 (T1)

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

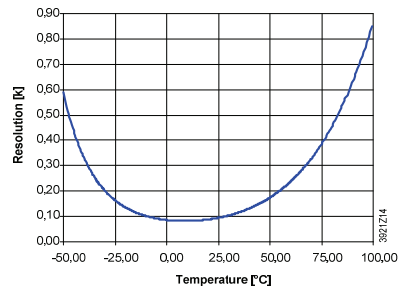
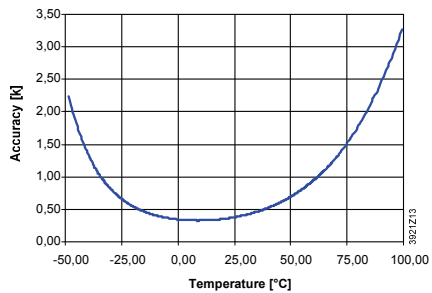


Connecting floating contacts

X1...X4 (T1)

**NTC 10k (B<sub>25/85</sub> = 3977 K)**

Sensor current	60 μA @ 25 °C	
Temperature	Accuracy	Resolution
-50 °C	2.5 K	0.6 K
-40 °C	1.4 K	0.4 K
-30 °C	0.9 K	0.2 K
-10 °C	0.5 K	0.1 K
50 °C	0.7 K	0.2 K
70 °C	1.3 K	0.4 K
90 °C	2.5 K	0.7 K
100 °C	3.4 K	0.9 K



**NTC 100k ( $B_{25/85} = 3977 \text{ K}$ )**

Sensor current

15  $\mu\text{A}$  @ 25 °C

Temperature

Accuracy

Resolution

0 °C

1.8 K

0.5 K

10 °C

1.2 K

0.3 K

30 °C

0.7 K

0.2 K

70 °C

0.5 K

0.2 K

110 °C

0.8 K

0.2 K

120 °C

1.0 K

0.3 K

140 °C

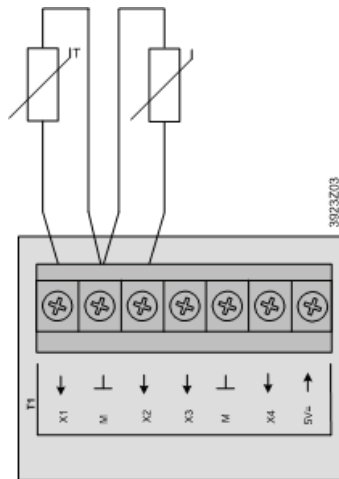
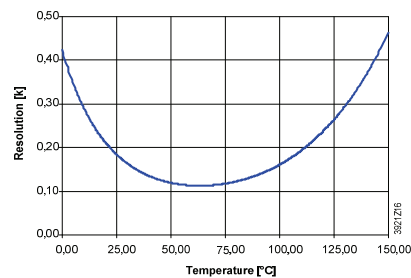
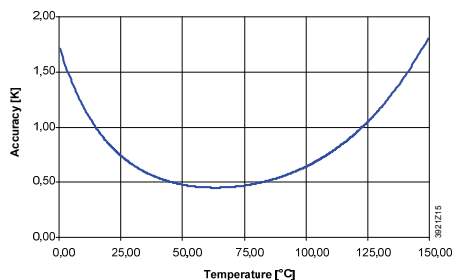
1.5 K

0.4 K

150 °C

1.9 K

0.5 K

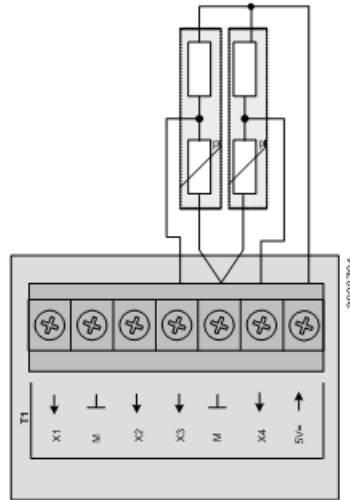


Connecting thermistor to analog inputs

X1...X4 (T1)

DC 0...5 V input for ratiometric sensors

Resolution	10 mV
Accuracy at 0 V	50 mV
Accuracy at 5 V	100 mV
Input resistance	100 kΩ



Connecting ratiometric sensor to analog inputs

**Relay outputs**  
Q1...Q4 (T2, T3)

Relay: Type, contact

Monostable, NO contact

Contact rating

Switching voltage

AC 24 V...230 V

Nominal current (res. / ind.)

Max. AC 3 A / 2 A (cosφ 0.6)

Switching current at AC 19 V

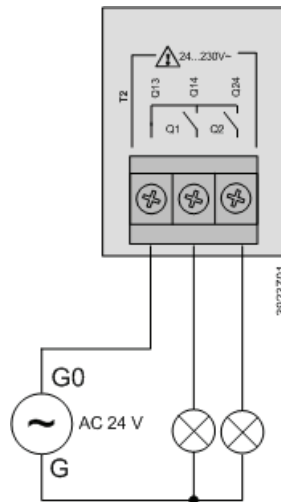
Min. AC 30 mA



**Warning**

Do not mix SELV / PELV and line voltage on the same terminal.

Use external protection for inductive load.



Connecting indicator lamps to relay outputs

<b>Powering sensors</b>	Output	
	Voltage / current	DC 5 V $\pm$ 2.5% / 20 mA
	Reference potential	Terminals $\perp$
	Connection	Short-circuit-proof
<b>Connection terminals</b>	Possible plugs for I/O 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 <sup>2</sup>
	Stranded wire (twisted and with ferrule)	0.5...1.5 mm <sup>2</sup>
	Cable lengths	In compliance with load, local regulations and installation documents
<b>Peripheral bus</b>	Power supply	U <sub>eff</sub> = AC 24 V $\pm$ 20%, f <sub>main</sub> = 45...65 Hz or U = DC 24 V $\pm$ 10%, no internal fuse
	Bus termination selectable	(680 $\Omega$ / 120 $\Omega$ +1 nF / 680 $\Omega$ )
	Solid wire	0.2...1.0 mm <sup>2</sup>
	Stranded wire (twisted and with ferrule)	0.2...1.0 mm <sup>2</sup>
	Cable lengths	Max. 30 m
	Addressing	DIP switches 1...5
	Termination	DIP switch 6
<b>Environmental conditions</b>	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	
<b>Protection</b>	Degree of protection	IP20 (EN 60529)
	Safety class	Suitable for use in plants with safety class II
<b>Standards</b>	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	72 x 110 x 75 mm
Weight excl. packaging	141 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:

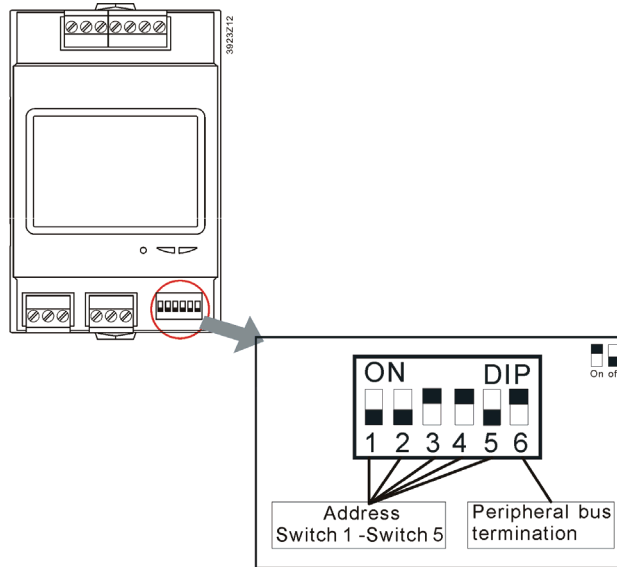
<i>Status</i>	<i>Meaning</i>
Red blinking at 2 Hz	BSP error or slave address error
Green on	BSP running

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 switches**

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.


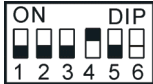
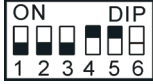

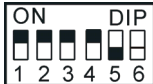
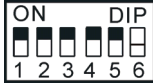


The bit order for the switches is from 5 to 1. The lowest bit is 5 while the highest bit is 1. The following table shows the logic of slave address:

<b>Switch 1</b>	$2^4$
<b>Switch 2</b>	$2^3$
<b>Switch 3</b>	$2^2$
<b>Switch 4</b>	$2^1$
<b>Switch 5</b>	$2^0$

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:

Slave address (controller)	DIP switch configuration of extension module					Schematics
	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	
1	Off	Off	Off	Off	On	
2	Off	Off	Off	On	Off	
3	Off	Off	Off	On	On	
4	Off	Off	On	Off	Off	
.....						
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**

Extension module 8 I/Os POL945.00/STD

**Accessories**

Connector set (spring cage, cable top entry) POL094.56/XXX  
 2 x Phoenix FKCT 2,5/3-ST KMGY  
 1 x Phoenix FKCT 2,5/7-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

**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 extension module 8 I/Os

