



Climatix™

## Climatix extension module 15 I/Os

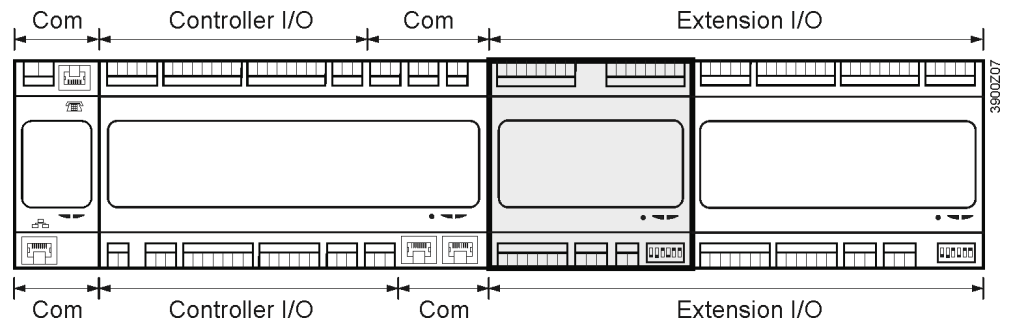
POL965.00/XXX

The POL965.00/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
- 8 universal I/Os
- AC 24 V and DC 5 V power supply for active sensors on board
- 4 relay outputs
- 2 triac outputs (AC 24 V...230 V)
- 1 digital input galvanically isolated for AC 115/230 V
- Peripheral bus interface for local / remote extension I/Os

The POL965.00/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	750 mA, 10 W
Pass through current	Max. 4 A
Connection	Peripheral bus

**Universal I/Os**

X1...X8 (T1, T2)

Configurable	By software
Reference potential	Terminals ⊥
Contact voltage	Max. DC 24 V (SELV)
Overvoltage protection	Up to 40 V

**Analog inputs (X1-X8)**

Ni1000

Sensor current	Max. 1.4 mA
Resolution	0.1 K
Accuracy in the range -50...150 °C	0.5 K

Pt1000

Sensor current	Max. 1.8 mA
Resolution	0.1 K
Accuracy in the range -40...120 °C	0.5 K

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

Sensor current	Max. 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 K
125...150 °C	6 K	2.5 K

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

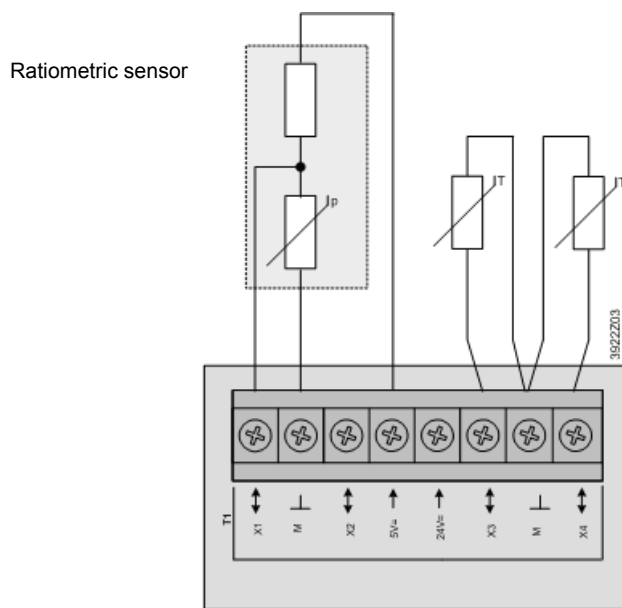
Sensor current	Max. 140 $\mu\text{A}$	
Temperature range	Accuracy	Resolution
-25...-11 $^{\circ}\text{C}$	3 K	0.2 K
-10...9 $^{\circ}\text{C}$	1 K	0.1 K
10...99 $^{\circ}\text{C}$	0.5 K	0.1 K
100...150 $^{\circ}\text{C}$	1 K	0.2 K

**0...2.5 k $\Omega$**

Sensor current	Max. 1.8 mA
Resolution	1 $\Omega$
Accuracy	4 $\Omega$

**DC 0...5 V input for ratiometric sensors**

Resolution	1 mV
Accuracy at 0 V	2 mV
Accuracy at 5 V	25 mV
Input resistance	100 k $\Omega$



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

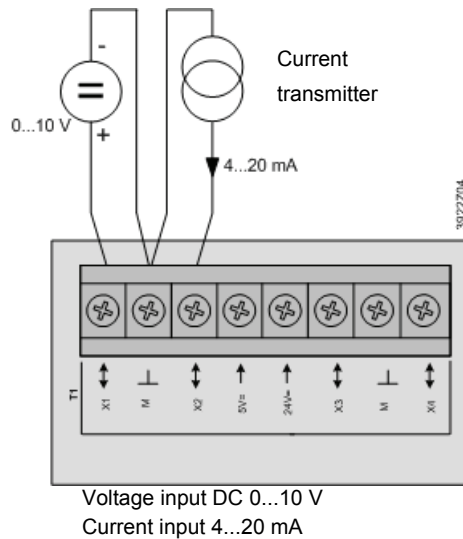
### Analog inputs (X1...X8)

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 $\Omega$

DC 0/4...20 mA input

Resolution	1 $\mu$ A
Accuracy at 4 mA	25 $\mu$ A
Accuracy at 12 mA	70 $\mu$ A
Accuracy at 20 mA	120 $\mu$ A



### Digital inputs (X1...X8)

0/1 digital signal (binary)

Sampling voltage / current

Contact resistance

Delay

Pulse frequency

For potential-free contacts

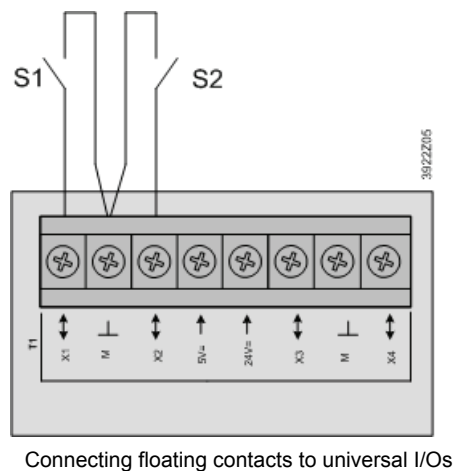
DC 24 V / 8 mA

Max. 200  $\Omega$  (closed)

Min. 50 k $\Omega$  (open)

10 ms

Max. 30 Hz



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**Analog output (X1-X4)**

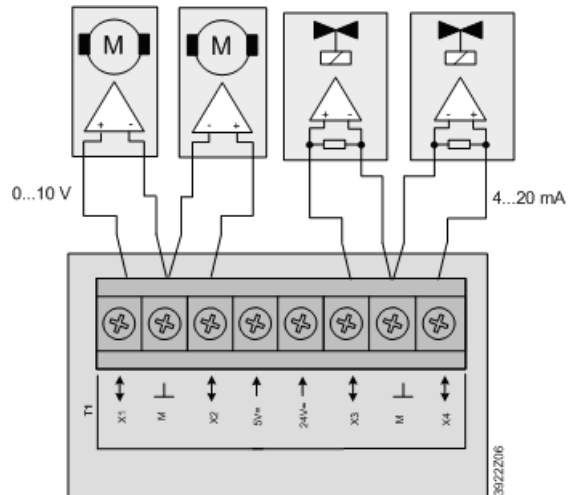
DC 0...10 V output

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)

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DC 4...20 mA output

Resolution	22 $\mu$ A
Accuracy at 4 mA	150 $\mu$ A
Accuracy at 12 mA	196 $\mu$ A
Accuracy at 20 mA	243 $\mu$ A



Connecting voltage output and current output to universal I/Os

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**Analog / digital outputs (X5-X8)**

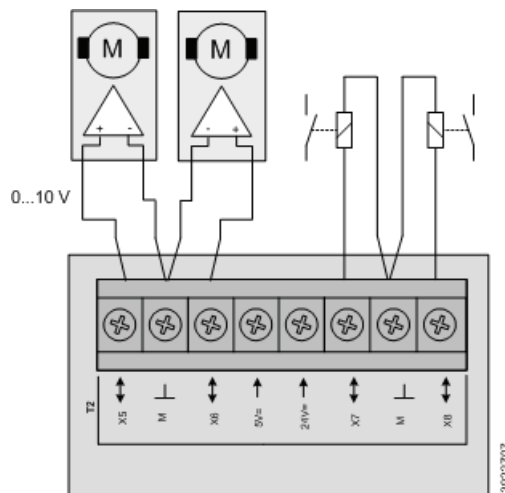
DC 0...10 V output

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)

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DC output for off board loads

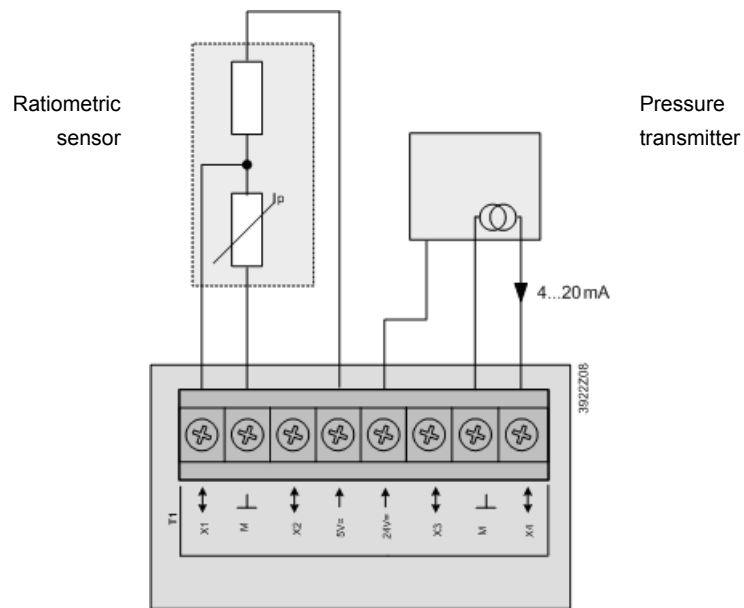
Switching voltage	DC 24 V
Switching capacity	Max. 25 mA



Connecting voltage output and offboard relays to universal I/Os

**Powering sensors active / ratiometric**  
5 V, 24 V (T1, T2)

2 x 2 outputs  
Voltage / current DC 5 V  $\pm$  2,5% / 2 x 20 mA  
Voltage / current DC 24 V 10%, -25% / 2 x 40 mA  
Reference potential Terminals  $\perp$   
Connection Short-circuit-proof



Connecting a ratiometric sensor  
AC 24 V sensor supply voltage

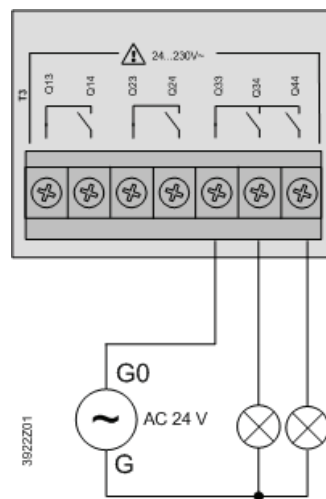
**Relay outputs**  
Q1...Q4 (T3)

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 (cos $\phi$  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

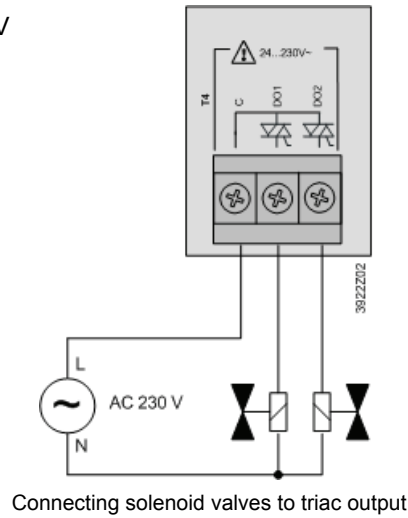
**Triac outputs**  
DO1, DO2 (T4)

Triac output values	
Switching voltage	AC 24 V...230 V
Switching capacity	Max. 0.5 A
Min. current	10 mA



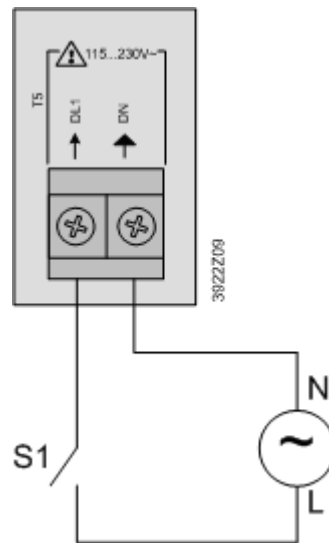
**Warning**

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



**Digital input DL1 (T5)**  
AV 230 V

0/1 digital signal (binary)	Galvanically isolated contact
Nominal voltage	AC 115 V...AC 230 V
Frequency range	45...65 Hz
Sample 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

<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 ± 20%, f <sub>main</sub> = 45...65 Hz or U = DC 24 V ± 10%, no internal fuse
	Bus termination selectable	(680 Ω / 120 Ω +1 nF / 680 Ω )
	Board-to-board (not included)	ZEC 1,0 / 4-LPV-3,5 GY35AUC2CI1
	Board-to-wire (not included)	ZEC 1,0 / 4-ST-3,5 GY35AUC1R1,4
	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)
<b>General data</b>	Dimensions of controller	108 x 110 x 75 mm
	Weight excl. packaging	203 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:

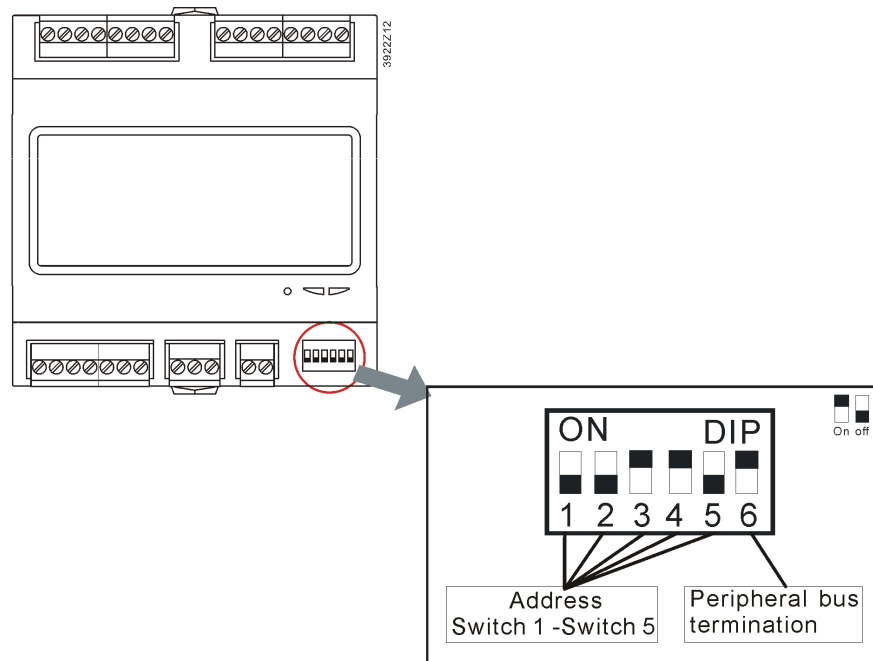
Status	Meaning
Red blinking at 2 Hz	BSP error or slave address error
Green on	BSP running

The status of the BUS LED is defined as follows:

Status	Meaning
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.


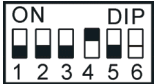
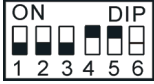

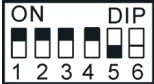
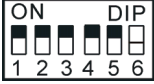


The bit order for the switches is from 5 to 1. The lowest bit is 5 while the highest bit is 1. The following table shows the logic of slave address:

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**

Extension module 15 I/Os

POL965.00/STD

**Accessories**

Connector set (spring cage, cable top entry)

POL096.56/XXX

1 x Phoenix FKCT 2,5/2-ST GY7035

1 x Phoenix FKCT 2,5/3-ST KMGY

1 x Phoenix FKCT 2,5/7-ST GY7035

2 x Phoenix FKCT 2,5/8-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****Warning**

To ensure protection against accidental contact with relay connections carrying voltages above  $42 V_{\text{eff}}$ , 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 15 I/Os

