



Climatix™

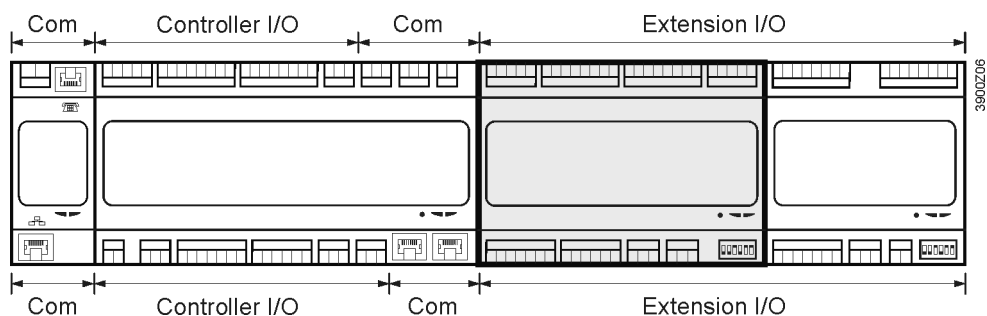
Climatix extension module 26 I/Os

POL985.00/XXX

The POL985.00/XXX extension module extends the I/O numbers of Climatix 600 controllers. It is part of the Climatix product range (refer to Data Sheet 3900 and Mounting Instructions M3910).

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 onboard power supply for active sensors
- 3 analog inputs NTC 10k and NTC 100k
- 3 digital inputs for potential-free contacts
- 2 digital inputs galvanically isolated for AC 115/230 V
- 8 relay outputs
- 2 triac outputs (AC 24...230 V)
- Peripheral bus interface for local/remote extension I/Os



Disposal



The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic waste.

- Dispose of the device via the channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Technical data

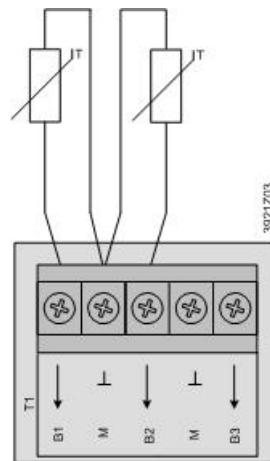
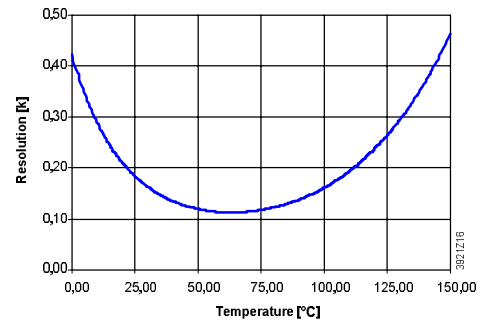
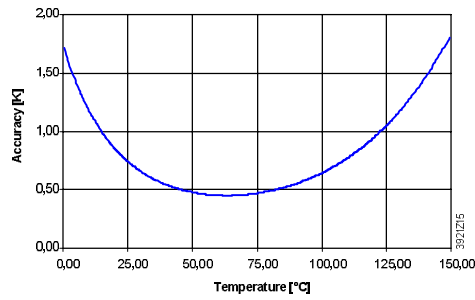
Power supply	Operating voltage	AC 24 V ± 20%; DC 24 V ± 10%
	Frequency	45...65 Hz
	Max. AC-Current consumption	850 mA
	Max. DC-Current consumption	460 mA
	Connection	Peripheral bus

Power distribution	Max. pass through current	3.15 A at AC 24V
		3.54 A at DC 24 V

Analog inputs B1...B3 (T1)	NTC 10k (B_{25/85} = 3977 K)		
	Sensor current	60 µA at 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 μA at 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 input

Universal I/Os X1...X8 (T2, T3)

Configurable	By software
Reference potential	Terminals \perp
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 ($B_{25/85} = 3977 \text{ K}$)

Sensor current	Max. 140 μA	
Temperature range	Accuracy	Resolution
-50...-26 $^{\circ}\text{C}$	1 K	0.2 K
-25...74 $^{\circ}\text{C}$	0.5 K	0.1 K
75...99 $^{\circ}\text{C}$	1 K	0.3 K
100...124 $^{\circ}\text{C}$	3 K	1 K
125...150 $^{\circ}\text{C}$	6 K	2.5 K

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

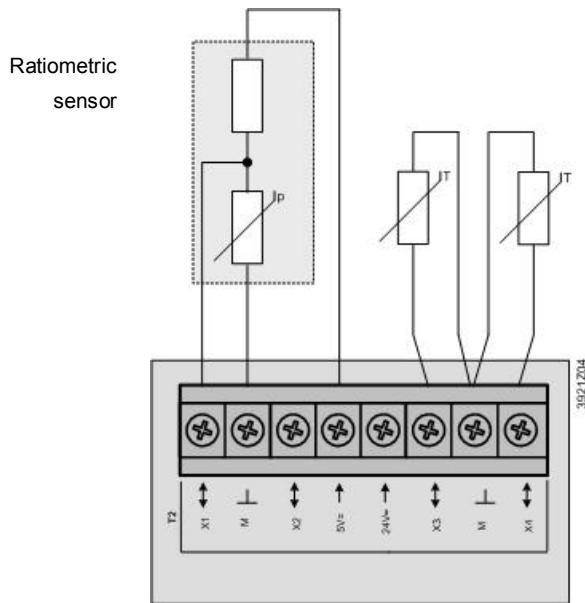
Sensor current	Max. 140 μA	
Temperature range	Accuracy	Resolution
-25...-11 $^{\circ}\text{C}$	3 K	0.2 K
-10...9 $^{\circ}\text{C}$	1 K	0.1 K
10...99 $^{\circ}\text{C}$	0.5 K	0.1 K
100...150 $^{\circ}\text{C}$	1 K	0.2 K

0...2.5 k Ω

Sensor current	Max. 1.8 mA
Resolution	1 Ω
Accuracy	4 Ω

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 Ω



Connecting a ratiometric sensor to universal I/O

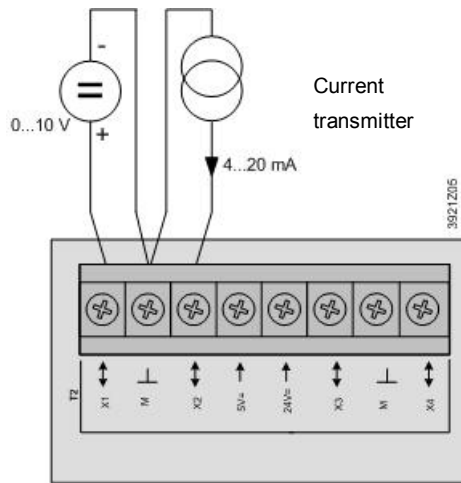
Connecting NTC to universal I/O

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 Ω

DC 0/4...20 mA input

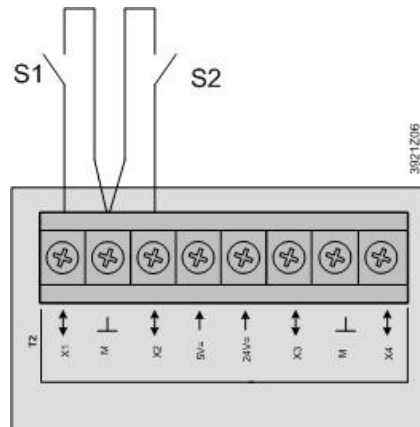
Resolution	1 μ A
Accuracy at 4 mA	25 μ A
Accuracy at 12 mA	70 μ A
Accuracy at 20 mA	120 μ A
Impedance of DC 0/4...20 mA input	Typ. 450 Ω



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

Digital inputs (X1...X8)

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 k Ω (open)
Delay	10 ms
Pulse frequency	Max. 20 Hz



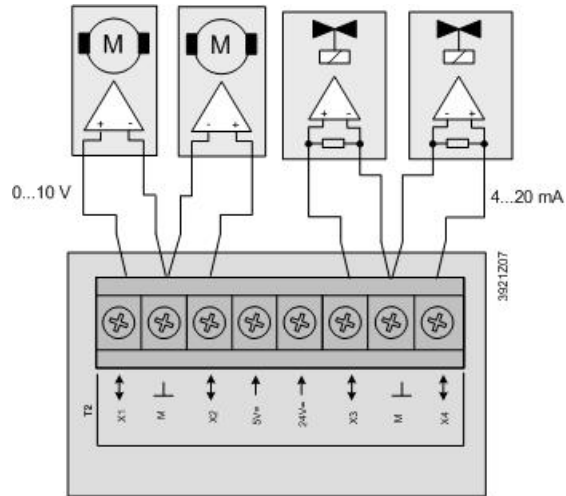
Connecting floating contacts to universal I/O

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 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/Os

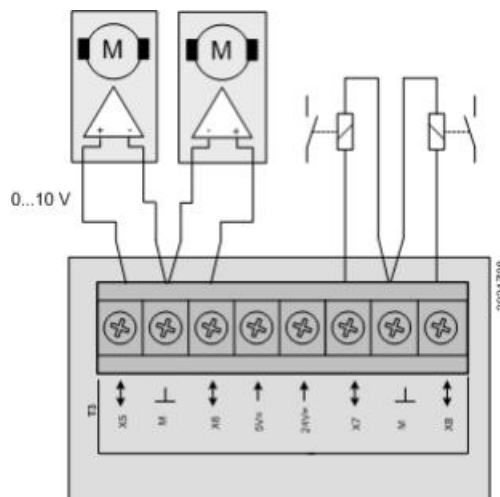
Analog/Digital outputs (X5...X8)

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 offboard loads

Switching voltage	DC 24 V
Switching capacity	Max. 25 mA



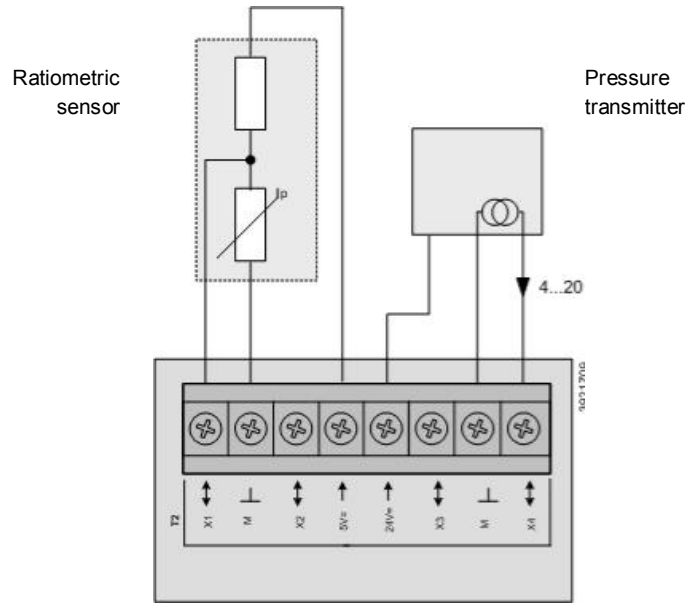
Connecting voltage output and offboard relays to universal I/Os

Powering sensors active / ratiometric
5 V, 24 V (T2, T3)

2 x 2 outputs

Voltage / current
Voltage / current
Reference potential
Connection

DC 5 V \pm 2.5% / 2 x 20 mA
DC 24 V (-25%, +10%) / 2 x 40 mA
Terminals \perp
Short-circuit-proof



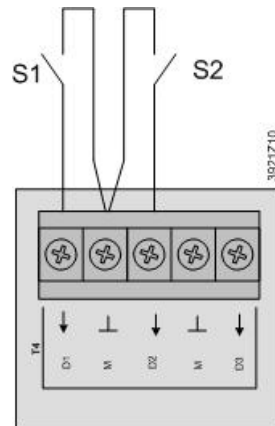
Connecting a ratiometric sensor
AC 24 V sensor supply voltage

Digital inputs potential-free
D1...D3 (T4)

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 contact to digital input

Relay outputs
Q1...Q8 (T5, T6)

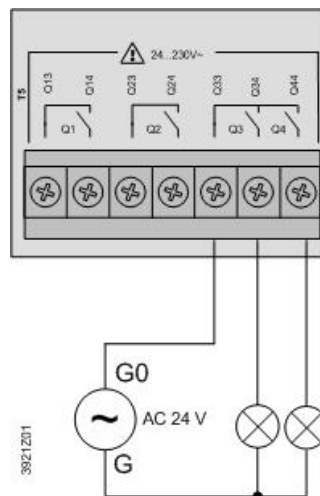
Relay: type, contact	Monostable, NO contact
Contact rating	
Switching voltage	AC 24...230 V
Nominal current (res. / ind.)	Max. AC 3 A / 2 A (cosφ 0.6)
Switching current at AC 19 V	Min. AC 30 mA



Warning

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

Use external protection for inductive load.



Connecting indicator lamps to relay output

Triac outputs
DO1, DO2 (T7)

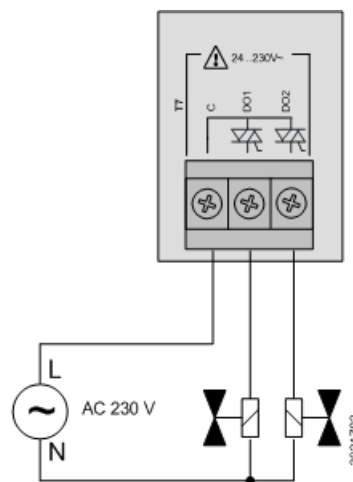
Triac output values	
Switching voltage	AC 24...230 V
Switching capacity	Max. 0.5 A
Min. current	10 mA
Max. external supply line fusing	2.0 A slow wire fuse or circuit breaker



Warning

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

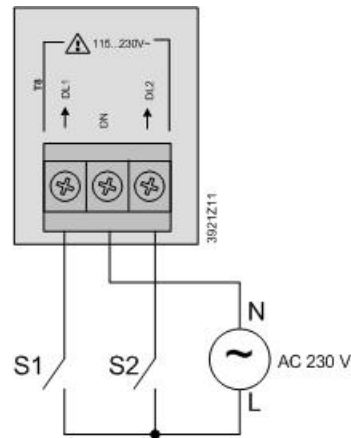
Use external protection for inductive load.



Connecting solenoid valves to triac output

Digital inputs
AC 230 V
DL1...DL2 (T8)

0/1 digital signal (binary)	Galvanically isolated contact
Nominal voltage	AC 115...230 V
Frequency range	45...65 Hz
Sample current	3 mA at AC 230 V
Delay	100 ms
Pulse frequency	Max. 5 Hz



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

Connection terminals

Optional plugs for I/O signals	Phoenix FKCVW 2,5 / x-ST Phoenix FKCT 2,5 / x-ST Phoenix MVSTBW 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)
Board-to-board (available on request)	ZEC 1,0 / 4-LPV-3,5 GY35AUC2C11
Board-to-wire (available on request)	ZEC 1,0 / 4-ST-3,5 GY35AUC1R1,4
Stranded wire (twisted and with ferrule)	0.2...1.0 mm ²
Cable lengths	Max. 30 m
Addressing	DIP Switch 1...5
Termination	DIP Switch 6

Environmental conditions

Operation	IEC 60721-3-3 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 60721-3-2 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 standard	EN 60730-1 Automatic electrical controls for household and similar use
	Electromagnetic compatibility (applications)	For use in residential, commerce, light-industrial and industrial environments.
	EU conformity (CE)	CB1T3920xx *)
	RCM conformity (EMC)	CB1T3909en_C1
	Listings	UL916, UL873 http://database.ul.com/ CSA Class 4812 http://www.csagroup.org

Environmental compatibility The product environmental declaration CB1E3920en contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

*) The document can be downloaded from <http://siemens.com/bt/download>.

General data	Dimensions of controller	153 x 110 x 75 mm
	Weight excl. packaging	276 g
	Base	Plastic, pigeon-blue RAL 5014
	Housing	Plastic, light-grey RAL 7035

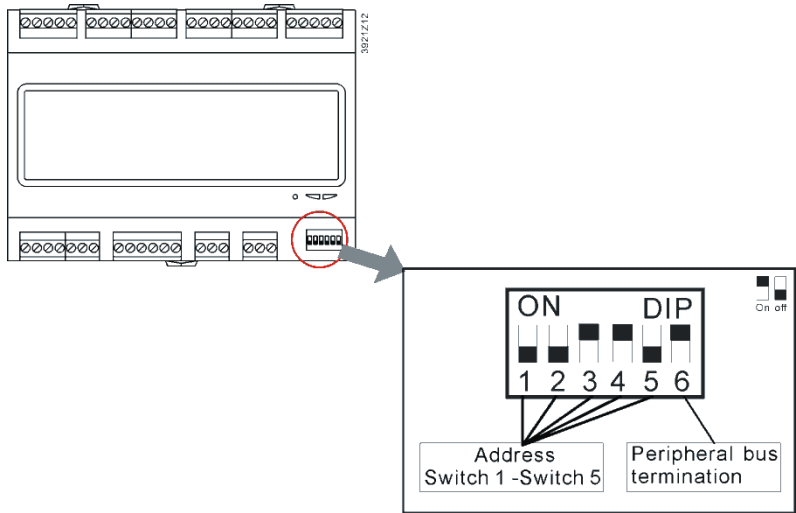
Status of LEDs The status of BSP LED is defined as follows:

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

The status of 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 <u>not</u> successfully configured

DIP Switch The extension module is equipped with DIP Switch to communicate with the controller. Switch 1, 2, 3, 4, and 5 are configurable to set the slave address, while switch 6 serves as peripheral bus termination. If the extension module works as the termination in the network, switch 6 must be set to ON.



The order of bit is from 5 to 1. The lowest bit is 5 while the highest bit is 1. Max. 31 slave addresses can be configured as follows:

DIP Switch configuration of Extension Module							
No.	Schematics	No.	Schematics	No.	Switch 5	No.	Schematics
1		9		17		25	
2		10		18		26	
3		11		19		27	
4		12		20		28	
5		13		21		29	
6		14		22		30	
7		15		23		31	
8		16		24			

Note



The same address of extension module must be set respectively in the application program of the controller. 0 cannot be set as the slave address.

Ordering data	Extension module 26 I/Os	POL985.00/STD
Accessories (available for request)	Connector set (spring cage, cable top entry)	POL098.56/STD
	2 x Phoenix FKCT 2,5/3-ST GY7035	
	2 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	
	1 x Phoenix ZEC 1,0 / 4-LPV-3,5 GY35AUC2C11	
	Connector set (spring cage, cable side entry)	
	2 x Phoenix FKCVW 2,5/3-ST GY7035	
	2 x Phoenix FKCVW 2,5/5-ST GY7035	
	1 x Phoenix FKCVW 2,5/6-ST GY7035	
	1 x Phoenix FKCVW 2,5/7-ST GY7035	
	2 x Phoenix FKCVW 2,5/8-ST GY7035	
	1 x Phoenix ZEC 1,0 / 4-LPV-3,5 GY35AUC2C11	
	Connector set (screw, cable side entry)	POL098.55/STD
	2 x Phoenix MVSTBW 2,5/3-ST GY7035	
	2 x Phoenix MVSTBW 2,5/5-ST GY7035	
	1 x Phoenix MVSTBW 2,5/6-ST GY7035	
	1 x Phoenix MVSTBW 2,5/7-ST GY7035	
	2 x Phoenix MVSTBW 2,5/8-ST GY7035	
	1 x Phoenix ZEC 1,0 / 4-LPV-3,5 GY35AUC2C11	
	Board-to-wire connector	POL002.43/STD
	2 x Phoenix ZEC 1,0 / 4-ST-3,5 GY35AUC1R1,4	50 pcs

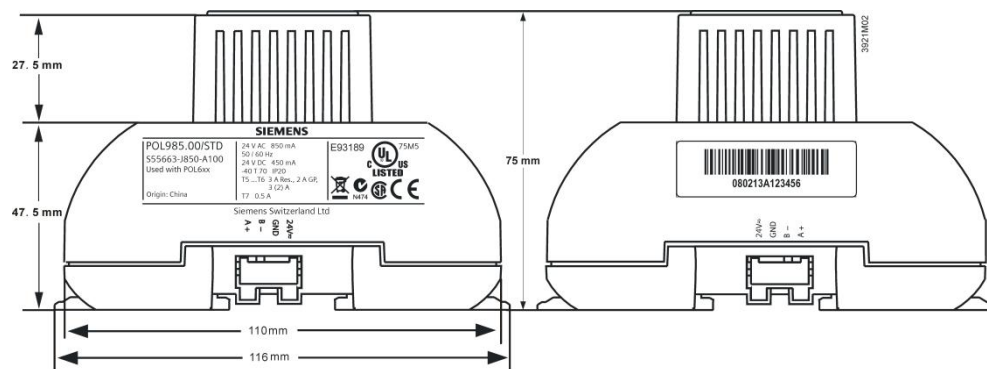
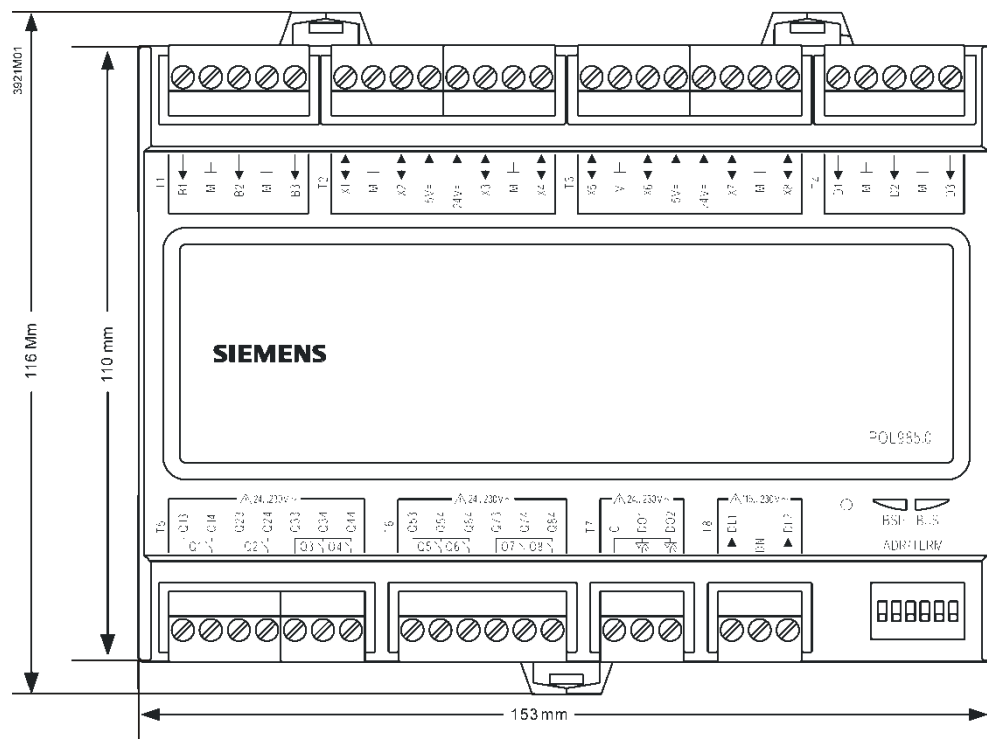
Engineering notes



To ensure protection against accidental contact with relay connections carrying voltages above $42 V_{\text{eff}}$, the extension 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.

Dimensions



Right side

Left side

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