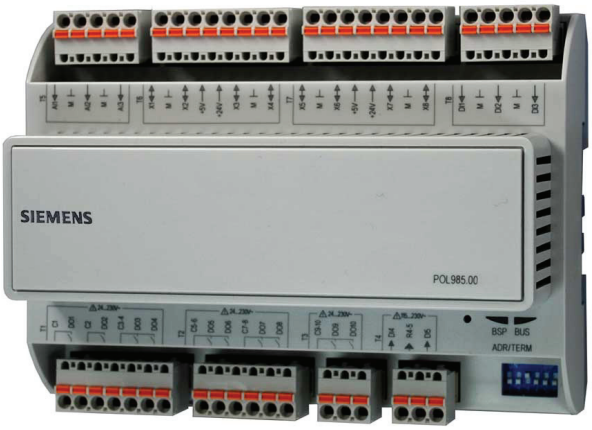
SIEMENS

3921



Climatix™

Climatix extension module 26 I/Os

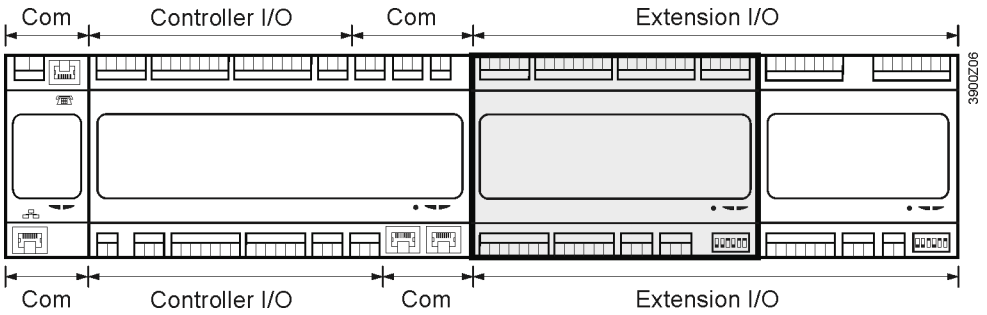
POL985.00/XXX

The POL985.00/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**
- **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 V…230 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).



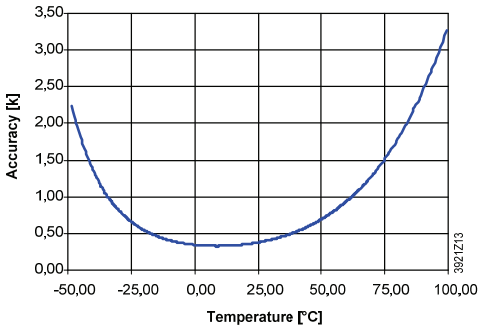
Technical data

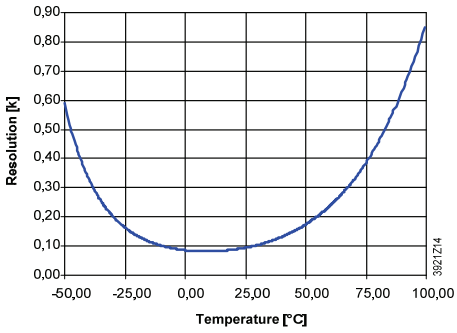
Power supply	Operating voltage	AC 24 V ± 20%; DC 24 V ± 10%
	Frequency	45…65 Hz
	Power consumption	850 mA, 11 W
	Pass through current	Max. 4 A
	Connection	Peripheral bus

Analog inputs
B1...B3 (T1)

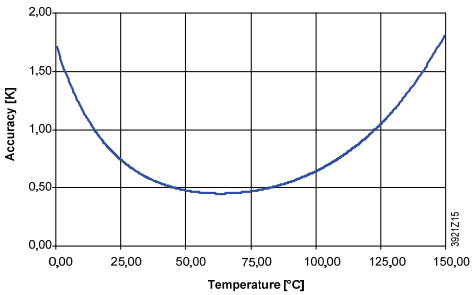
NTC 10k ($B_{25/85}$ = 3977 K)

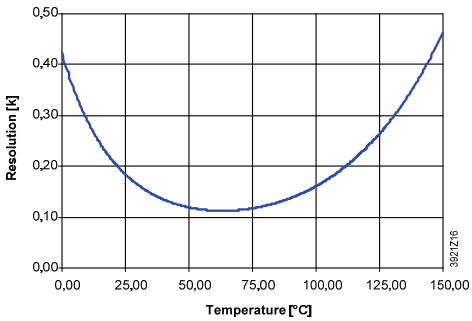
Sensor current	60 µA @ 25 °C	
Temperature	Accuracy	Resolution
-50 °C	2.5 K	0.6 K
-40 °C	1.4 K	0.4 K
-30 °C	0.9 K	0.2 K
-10 °C	0.5 K	0.1 K
50 °C	0.7 K	0.2 K
70 °C	1.3 K	0.4 K
90 °C	2.5 K	0.7 K
100 °C	3.4 K	0.9 K

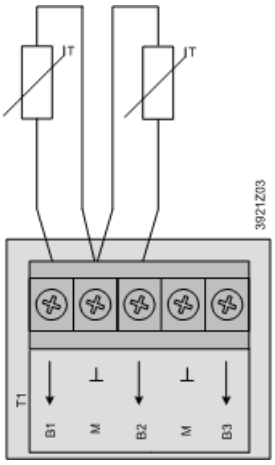




NTC 100k ($B_{25/85}$ = 3977 K)		
Sensor current	15 µA @ 25 °C	
Temperature	Accuracy	Resolution
0 °C	1.8 K	0.5 K
10 °C	1.2 K	0.3 K
30 °C	0.7 K	0.2 K
70 °C	0.5 K	0.2 K
110 °C	0.8 K	0.2 K
120 °C	1.0 K	0.3 K
140 °C	1.5 K	0.4 K
150 °C	1.9 K	0.5 K







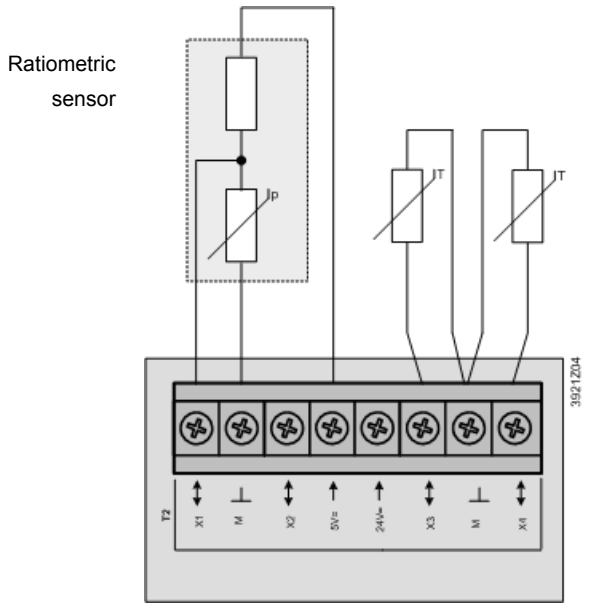
Connecting thermistor to analog input

Universal I/Os
X1…X8 (T2, T3)

Configurable	By software
Reference potential	Terminals ⊥
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 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 K**)		
Sensor current	Max. 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...2.5 kΩ		
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 kΩ	

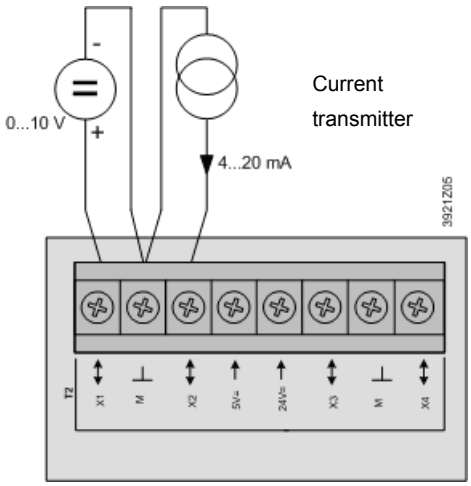


Connecting a ratiometric sensor to universal I/O

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 kΩ	

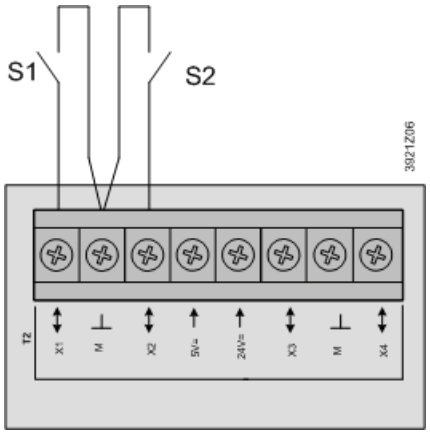
DC 0/4…20 mA input	
Resolution	1 µA
Accuracy at 4 mA	25 uA
Accuracy at 12 mA	70 uA
Accuracy at 20 mA	120 uA



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

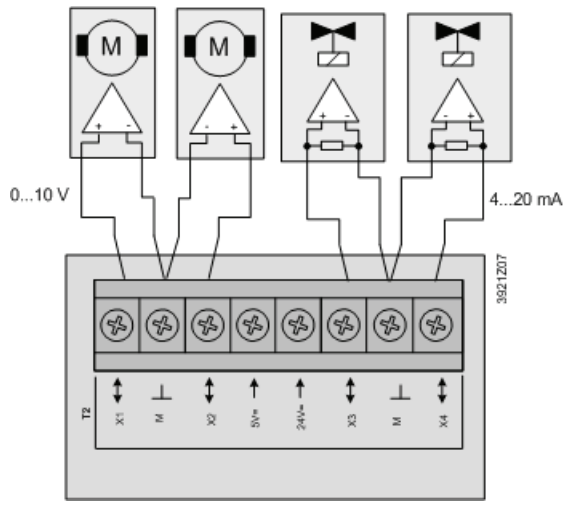


Connecting floating contacts to universal I/O

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)

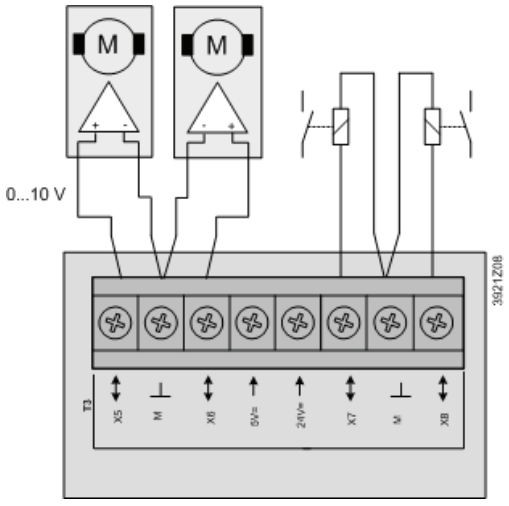
DC 4…20 mA output	
Resolution	22 µA
Accuracy at 4 mA	150 µA
Accuracy at 12 mA	196 µA
Accuracy at 20 mA	243 µA



Connecting voltage output and current output to universal I/Os

Analog / digital outputs (X5…X8)

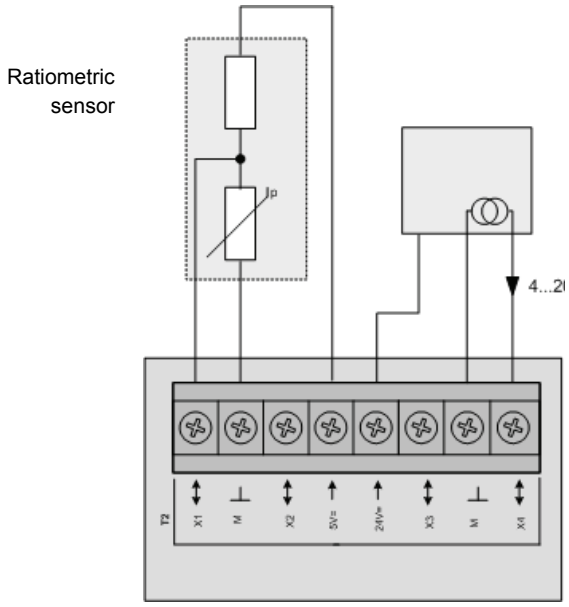
DC 0…10 V output	
Resolution	11 mV
Accuracy at 0 V	66 mV
Accuracy at 5 V	95 mV
Accuracy at 10 V	124 mV
Output current	1 mA (short-circuit-proof)
DC output for off board loads	
Switching voltage	DC 24 V
Switching capacity	Max. 25 mA



Connecting voltage output and offboard relays to universal I/Os

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

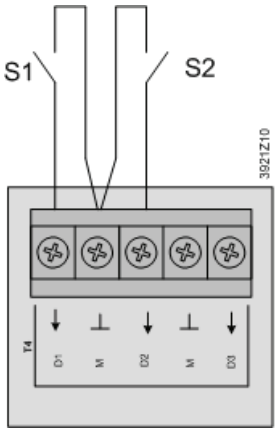
2 x 2 outputs	
Voltage / current	DC 5 V ± 2.5% / 2 x 20 mA
Voltage / current	DC 24 V 10%, -25% / 2 x 40 mA
Reference potential	Terminals ⊥
Connection	Short-circuit-proof



Connecting a ratiometric sensor
AC 24 V sensor supply voltage

Digital inputs potential-free
D1...D3 (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



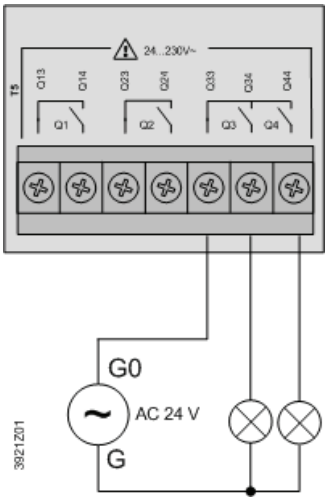
Connecting floating contact to digital input

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

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.



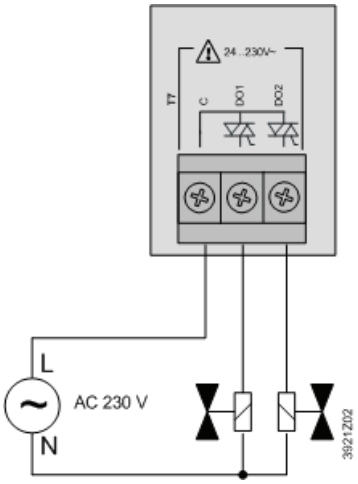
Connecting indicator lamps to relay output

Triac outputs
DO1, DO2 (T7)

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

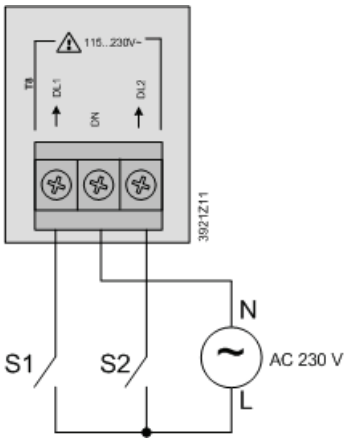
Warning

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



Connecting solenoid valves to triac output

Digital inputs	0/1 digital signal (binary)	Galvanically isolated contact
AC 230 V	Nominal voltage	AC 115 V…230 V
DL1…DL2 (T8)	Frequency range	45…65 Hz
	Sample current	3 mA @ 230 V AC
	Delay	100 ms
	Pulse frequency	Max. 5 Hz



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

Connection terminals	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 mm²
	Stranded wire (twisted and with ferrule)	0.5…1.5 mm²
	Cable lengths	In compliance with load, local regulations and installation documents
Peripheral bus	Power supply	Ueff = AC 24 V ± 20%, fmain = 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
	Stranded wire (twisted and with ferrule)	0.2…1.0 mm²
	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	153 x 110 x 75 mm
Weight excl. packaging	273 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:

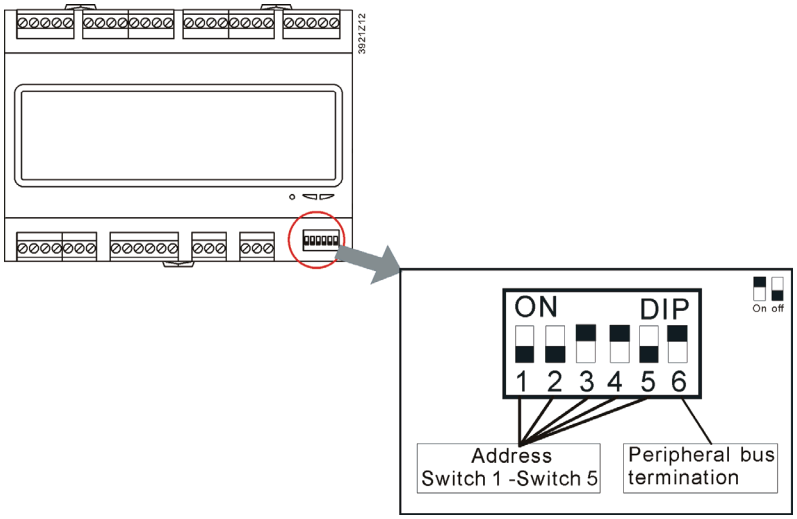
Status	*Meaning*
Red blinking at 2 Hz	BSP error or slave address error
Green on	BSP running

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.

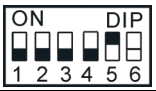
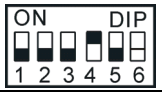
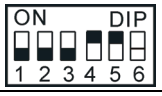
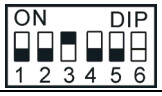
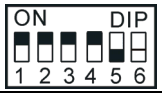
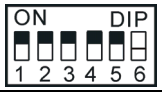


The bit order for the switches is from 5 to 1. The lowest bit is 5 while the highest bit is 1. The following table shows the logic of slave address:

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 26 I/Os	POL985.00/STD

Accessories	Connector set (spring cage, cable top entry) 2 x Phoenix FKCT 2,5/3-ST KMGY 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 GY35AUC2CI1 2 x Phoenix ZEC 1,0 / 4-ST-3,5 GY35AUC1R1,4	POL098.56/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.

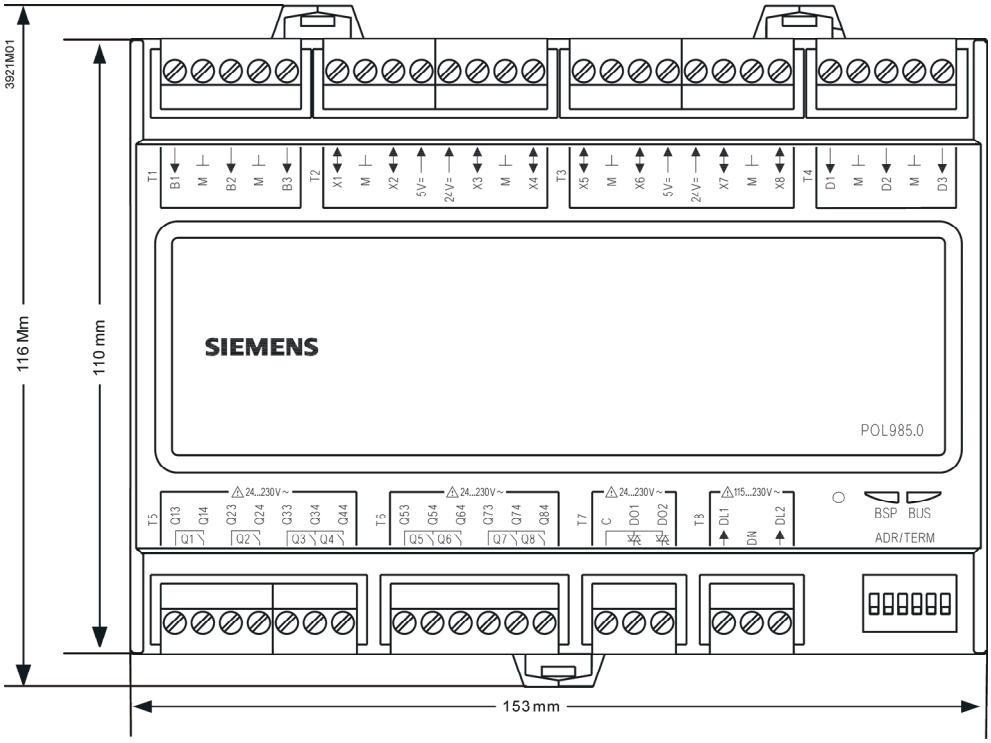
AC 230 V cables must be double-insulated against safety extra low-voltage (SELV) cables.

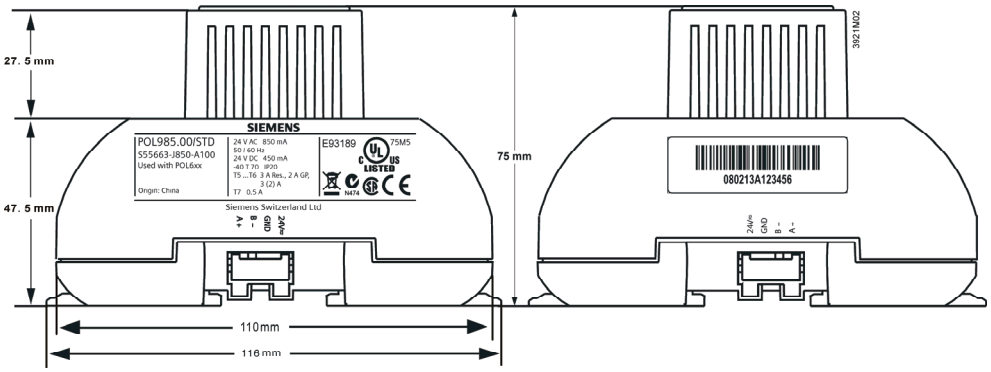
Disposal notes

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 extension module 26 I/Os





Right side **Left side**