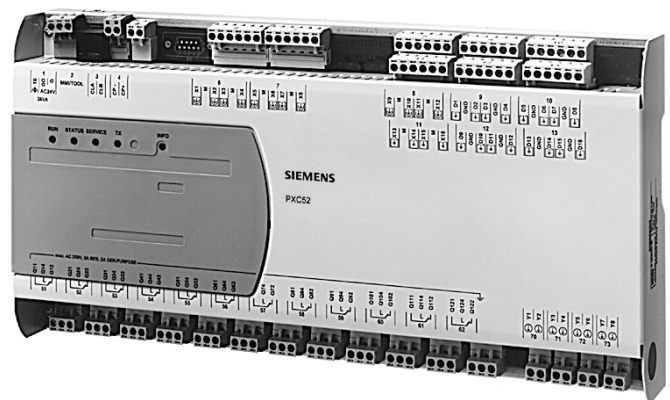


PXC36-S



PXC52

DESIGO™ PX

## Automation stations compact model

## PXC36-S PXC52

Freely programmable compact automation stations for HVAC and building services systems. The fixed data point mix ensures optimum efficiency for frequently used applications with standard signals.

- Fixed data point mix for 36 or 52 physical data points per station
- Direct connection of field devices
- Management functions (alarm management, time schedulers, trend functions, remote management, access protection, etc.)
- Stand-alone application or use as interconnected devices/systems
- Optional devices variants (automation station with modem interfaces, manual switches)
- Connection of PXM10 and PXM20 operator units
- Connection of QAX... room units
- Standard communication BACnet over LonTalk
- BTL label (BACnet communications passed the BTL test)

## Functions

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These freely programmable automation stations provide the infrastructure for the provision and processing of system-specific and application-specific functions. Apart from the freely programmable control functions these units comprise integrated convenient management functions such as:

- Alarm management with alarm routing throughout the whole network. Three level alarm management (simple, basic and enhanced) with safety control transmission and automatic transmission monitoring
- Time schedulers
- Trend functions
- Remote management functions
- Access protection for the whole network with individually defined user profiles and categories

### Programming language

Automation stations are freely programmable with the D-MAP programming language (follows closely CEN Standard 1131). All function blocks available in libraries are graphically linked with the plant operating programs.

### Communication

The devices communicate via an open bus system in accordance with the international standard BACnet protocol. Integrated peer-to-peer communication with other automation stations and also with PXM10 and PXM20 operator units.

## Types

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Device	Type	Data point mix			
		UI	DI	AO	DO
Automation station for 36 physical data points	PXC36-S	12	12	6	6
Automation station for 52 physical data points	PXC52	16	16	8	12

## Compatibility

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### Operator unit

The automation stations are operated with the convenient PXM10 and PXM20 operator units with control buttons as well as displays in graph form and clear text. The PXM20 unit can be used either locally or decentralized for all plant connected together in one network, the PXM10 only locally.

### Room units

A **maximum** of five room units QAX... (not QAX5...) can be operated via the PPS2 bus connection.

Details on the PPS2 communication are described in the DESIGO Technical principles manual (chapter "I/O blocks", section "PPS2 addressing").

### Web operation

The PXG80-W Web controller provides remotely monitoring and operating one or several DESIGO PX automation station(s) from a standard Internet browser.

The PXG80-WN Web controller is equipped with an additional Ethernet connection.

**Inputs**

The universal inputs (UI) accept passive and active sensor elements as well as volt-free contacts for signal functions.

- Passive                      LG-Ni 1000, Pt 1000, T1
- Active                        0 ... 10 V
- Binary                        Volt-free (DC 22 V)

The purely binary inputs (DI) enable signal and counter functions.

- Binary                        Volt-free (DC 24 V)
- Counters                    Volt-free up to 20 Hz (DC 24 V) → **only on D1 ... D4**

**Outputs**

On the one hand, universal outputs (AO) can control modulating actuators and, on the other hand, can be programmed via the program structure for binary switching functions.

- Analogue                    0 ... 10 V
- Binary                        0 or DC 0 ...24 V, max. 22 mA

The relay outputs (DO) are designed for max. AC 250 V, 2 A.

**Manual switches (PXC36-S)**

The automation station PXC36-S has four manual switches (S1 ... S4) whose function can be adapted to various plant-specific requirements.

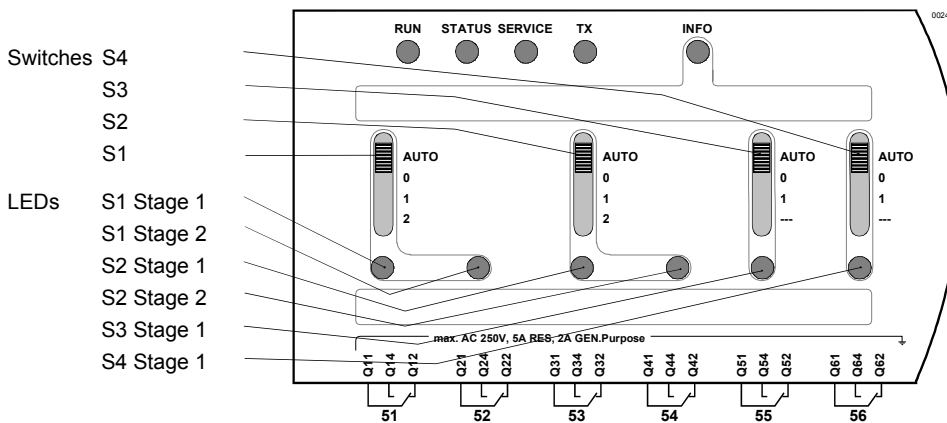
The manual switches S1 ... S4 can be operated either in the mode "Direct control" or "Software control".

S1 and S2 can be optionally used as single-stage or two-stage switches.

S1 controls relays 51 and 52; S2 controls relays 53 and 54:

- |                     |  |
|---------------------|--|
| <b>Single stage</b> | Stage 1 (relays 51 / 53) Direct control ON / OFF enabled         |
| (DIL 5 / 6 = ON)    | Stage 2 (relays 52 / 54) Direct control OFF enabled, ON disabled |
| <b>Two-stage</b>    | Stage 1 (relays 51 / 53) Direct control ON / OFF enabled         |
| (DIL 5 / 6 = OFF)   | Stage 2 (relays 52 / 54) Direct control ON / OFF enabled         |

S3 and S4 are one-stage switches. Direct control ON / OFF enabled (relays 55 and 56).



- Manual switches from left to right:
- **S1:** Automatic/Off/Stage 1 and 2
  - **S2:** Automatic/Off/Stage 1 and 2
  - **S3:** Automatic/Off/On
  - **S4:** Automatic/Off/On

Manual switch allocation to relays 51 ...56:

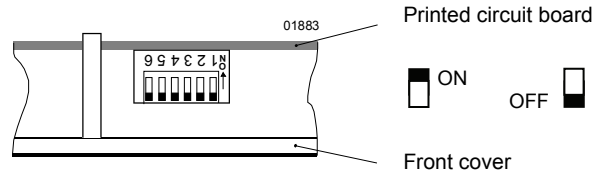
- **S1:** 51 / 52 (single-stage/two-stage)
- **S2:** 51 / 52 (single-stage/two-stage)
- **S3:** 55 (single stage)
- **S4:** 56 (single stage)

**LED display for relay function**

The relay function in the switch positions Automatic and Manual is indicated for each stage by a green LED. Software control enables each LED to be programmed via a fault input (binary input) so that the display color changes to red (independent of the relay switch status).

## DIL switches

DIL switches are mounted at the back of the front cover:



Mode: Direct control / Software control

	DIL 1 (S1)	DIL 2 (S2)	DIL 3 (S3)	DIL 4 (S4)
OFF	Direct control <sup>1)</sup>			
ON	Software control <sup>2)</sup>			

Single stage two-stage (manual switches S1 and S2):

	DIL 5 (S1)	DIL 6 (S2)
OFF	Two-stage	
ON	Single stage	

### <sup>1)</sup> Direct control

**Automatic:** The relevant relay outputs are controlled via the plant operating program.  
**0:** The relevant relay outputs are switched off independent of the plant operating program.  
**1 / 2:** The relevant relay outputs are switched on independent of the plant operating program.

### <sup>2)</sup> Software control

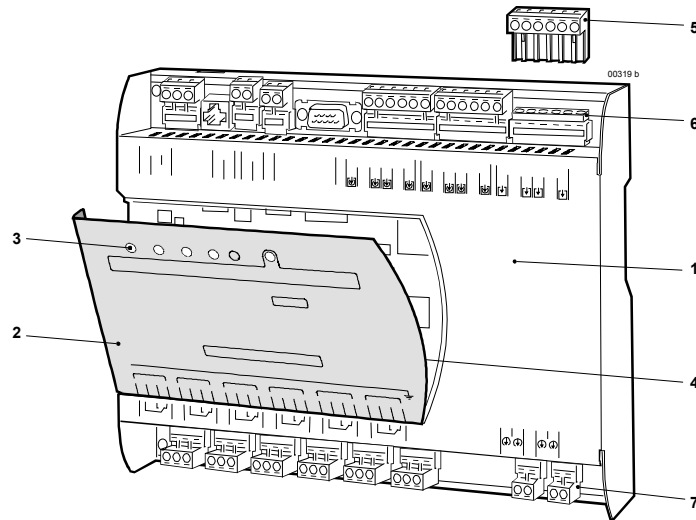
It is also possible to use the manual switches S1 ... S4 as pure software switches. Application specific functions can then be programmed.

In this configuration the relays are not controlled directly by the switches (Direct control is disabled).

### Note

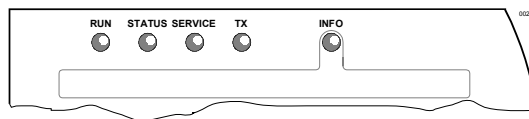
In software control mode the information on the positions of the manual switches S1 ... S4 is available on software level (but not the position of the DIL switches 1 ... 6). In direct control mode the attempt to read will result in an error message (reliability).

The compact construction enables the automation stations to be used in highly confined spaces and makes them especially suitable for compact control panels or buildings services systems with integrated control panels.



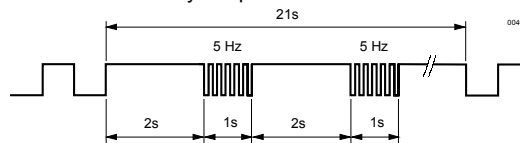
1	Metal housing
2	Front cover (hinged)
3	LED indicators
4	Printed circuit board
5	Plug-in screw terminal block
6	Upper terminals for operating voltage, bus system and input peripherals
7	Lower terminals for output peripherals

LED indicators

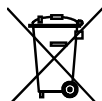


LED	Color	Activity	Function
RUN	Green	<ul style="list-style-type: none"> <li>Continuously off</li> <li>Continuously on</li> </ul>	No supply Supply OK
STATUS	Red	<ul style="list-style-type: none"> <li>Continuously off</li> <li>Continuously on</li> <li>Quick flashes</li> </ul>	Normal operation Hardware fault detected during self-test or automation station in "coma" operating state No validly licensed firmware
SERVICE	Red	<ul style="list-style-type: none"> <li>Continuously off</li> <li>Flashing</li> <li>Flashing acc. to wink command pattern *</li> <li>Continuously on</li> </ul>	LONWORKS node is configured LONWORKS node is not configured Physical identification of automation station after receiving wink command Neuron chip defect or service key was pressed again
TX	Yellow	Flashing	Data traffic on LONWORKS bus
INFO	Red		Freely programmable

\* Wink command rhythm pattern:



Disposal



The unit contains electric and electronic components and must not be disposed of with domestic waste. Lithium battery, printed circuit board and housing must be disposed of separately.

The local and actual regulations must be observed.

## Mounting instructions

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The automation stations can be snap-mounted on DIN rails or directly screwed to a mounting plate.  
The connections for field devices, power supply and bus wiring are via plug-in screw terminals.

## Commissioning

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In order to prevent equipment damage and/or personal injuries always follow local safety regulations and the required safety standards.

### Loading plant operating program

Download the plant operating program to the automation station with the PX Design tool in the DESIGO TOOLSET / XWORKS plus, direct via the RJ45 connector or the LON bus.

### Setting parameters and configurations

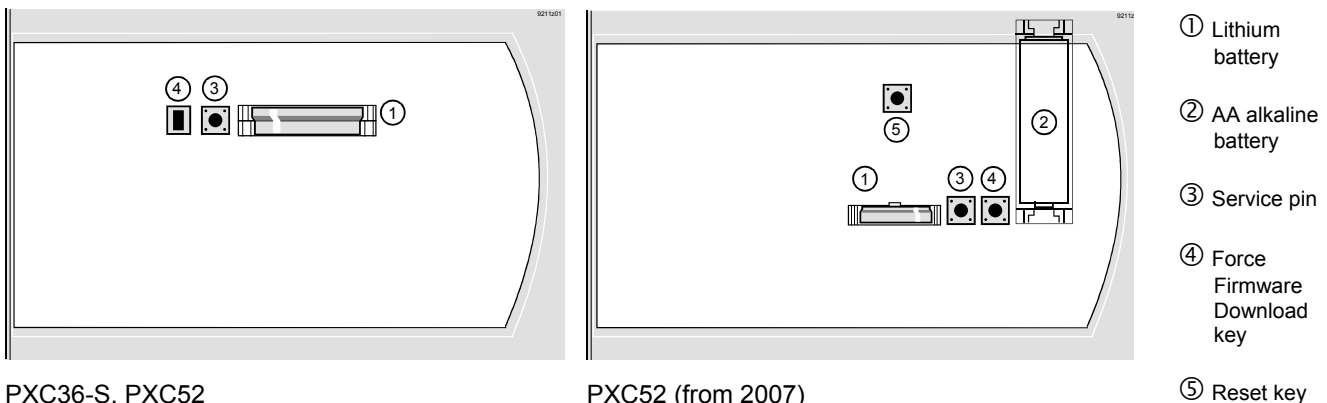
Convenient tools are available for commissioning. Use the PX Design tool in the DESIGO TOOLSET/ XWORKS plus for setting the control parameters and the configuration data.  
Data visible in the network can also be changed with a PXM10 or PXM20 operator unit.

### Wiring test

It is possible to test field devices and the wiring as soon as the power supply is connected, without first downloading the plant operating program. The test is carried out with a PXM20 operator unit.

### Network connection

The network addresses are configured with the DESIGO TOOLSET / XWORKS plus. In order to provide a unique identification in the LONWORKS network press the service pin on the printed circuit board or send a wink command to the relevant automation station (service LED flashes).



PXC36-S, PXC52

PXC52 (from 2007)

### Force Firmware Download key:

If this key is pressed during a restart (Power fail) the current D-MAP program is deleted from the FLASH. The automation station waits a short while for the signal to activate the FWLoader and then starts the automation station.

## Maintenance

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### Battery life

Lithium batteries usually have a life span of at least four years. The automation station automatically sends a system event in order to indicate a low charge.  
After the "Battery low" event there are several months of remaining life span.

In the PXC52 from 2007, the **database** information stored in the **SDRAM memory** is battery-backed (**Alkaline AA Type**). This eliminates the need for time-consuming program and database re-entry in the event of an extended power failure (up to 1 month).

After the "Battery low" event there are several days of remaining life span under load. Alkaline batteries have a typical life span of 4 years without load. When one of the batteries needs to be replaced, the automation station automatically sends a system event. an alarm message can also be sent to selected terminals.

### Battery change

To change the battery swing the front cover open. As long as the device is supplied with AC 24 V, the battery may be removed for unlimited time.



**Caution!**

**To prevent hardware damage by electrostatic discharge (ESD), a wrist strap with earth cable must be used during the battery change.**

### Technical data

General device data	Operating voltage	AC 24 V ± 20 %		
	Protective extra-low voltage SELV / PELV	HD 384		
	Frequency	50/60 Hz		
	Power consumption (depending on device type):	PXC36-S	max. 20 VA	
		PXC52	max. 26 VA	
Operating data	Internal fuse	Thermic, automatic reset		
		PXC36-S	PXC52	
	Processor	68000	Motorola PPC (MPC 885)	
	Memory space	FLASH	Up to 3 MBytes	16 MB
		RAM	Up to 1.5 MBytes	64 MB
	Data backup in case of power failure			
	Applications, parameter (FLASH)	> 10 years	> 10 years	
	Realtime clock (buffered by <b>Lithium</b> battery, can be replaced on the plant)	> 4 years	> 10 years	
	Run-time data (buffered by <b>Lithium</b> battery, can be replaced on the plant)	> 4 years	PXC52, up to 2006: > 10 years	
	Runtime data (buffered by <b>AA alkaline</b> , can be replaced on the plant)	--	PXC52 from 2007: Unused: 4 years. Typically 1 month in case of supply failure (grid or AC 24 V)	
Accuracy class	0,5			
Scan cycle	max. 1 s			
Universal inputs X...	Configurable by software			
	Measured value inputs			
	Range	0 ... 11.0 V		
	Input resistance	100 kΩ against M		
	Sensor inputs			
	Temperature sensors			
	LG-Ni 1000, Pt 1000, T1	Scaling range – 50 ... 150 °C		
	Sensor current (continuous / pulsed)	Approx. 2.5 mA / 1.5 mA peak		
	Resolution	0.2 K		
	Measuring error at 25 °C (Ni 1000, PT 1000)	max. 0.2 K (without cable and sensor)		
	Measuring error at 25 °C (T1)	max. 1.0 K (without cable and sensor)		
	Signal inputs			
	Contact voltage	DC 20 ... 25 V		
Contact current	7 mA			
Contact transfer resistance	Max. 200 Ω (closed)			
Contact isolation resistance	Min. 50 kΩ (open)			

Binary inputs D... *	Contact voltage	DC 20 ... 25 V
	Contact current	7 mA
	Contact transfer resistance	Max. 200 $\Omega$ (closed)
	Contact isolation resistance	Min. 50 k $\Omega$ (open)
Universal outputs Y...	Configurable by software	
	Proportional outputs	
	Output voltage range	0 ... 11.0 V
	Output current	Max. 4 mA source, max. 1.5 mA sink
$\Delta$ Relay outputs Q... **	Binary outputs (for off-board relays)	
	Output voltage range	0/DC 0 24 V
	Load	$\geq 1000 \Omega$
	Relay type	single pole, change-over contact
Interface, room units	Contact details for AC voltage	
	Voltage range	Min. AC 10 V, max. AC 250 V
	Current, resistive load	Max. AC 5 A
	Current, inductive load	2 A
LONWORKS bus interface	Switching current	Min. 10 mA, max. 20 A
	Contact details for DC voltage	
	Voltage range	Min. DC 5 V, max. DC 250 V
	Switching current	Min. 100 mA at DC 5 V
Plug-in screw terminal	Switching load	Max. 20 W
	Interface type	PPS2
	Supply class	4
Single cable lengths	PPS2 baud rate	4.8 kBit/s
	Network	TP/FT-10
	Transceiver	FTT
Housing protection standard	Baud rate	78 kBit/s
	Power supply and signals	Stranded or solid conductors, 0.25 ... 2.5 mm <sup>2</sup> or 2 x 1.5 mm <sup>2</sup>
	LONWORKS bus	Stranded or solid conductors, 2 x 1.0 mm <sup>2</sup>
	Universal inputs X...	Max. 100m where A = 1 mm <sup>2</sup>
Protection class	Binary inputs D...	Max. 100 m with diameters $\geq 0.6$ mm
	Universal outputs Y...	Max. 100m where A $\geq 1.5$ mm <sup>2</sup>
	Relay outputs Q...	Depends on load and local regulations
	Interface, room unit	Max. 125 m where A = 1.0 mm <sup>2</sup>
Ambient conditions	Cable type	2-core, twisted pair, unscreened
	Capacitance per unit length	Max. 56 nF/km
	LONWORKS bus	
	Cable type	ConCab or CAT5
Operation	Cable length	See installation guide, CA110396
	Connecting cable PXM10 or PXM20 / DESIGO TOOLSET / XWORKS plus	Max. 3 m
	Protection standard to EN 60529	IP 20
	Isolation protection class	II
Transport	Operation	Class 3K5 to IEC 60721
	Temperature	0 ... 50 °C
	Humidity	< 85 % rh
	Transport	Class 2K3 to IEC 60721
Temperature	- 25 ... 65 °C	
Humidity	< 95 % rh	

\* The signal inputs D1, D2, D3, D4 are countable (max. 20 Hz)

\*\* The relay outputs are **safely** isolated from each other, from earth/cover and the remaining electronics (AC 24 V) in accordance with SELV and PELV specifications. The relay outputs can be used in mixing applications with AC 250 V and SELV/PELV circuits!

Industry standards

Product safety

Automatic electronic controls for household and similar use	EN 60730-1
Special requirements for temperature dependent control devices	EN 60730-2-9

Electromagnetic compatibility

Interference immunity	EN 61000-6-2 (industry)
Emitted interference	EN 61000-6-3 (residential)

Meets requirements for CE marking:

Electromagnetic compatibility	2004/108/EC
Low Voltage Directive	2006/96/EC
UL approbation	UL 916: PAZX, PAZX7

Dimensions

See "Dimensions"

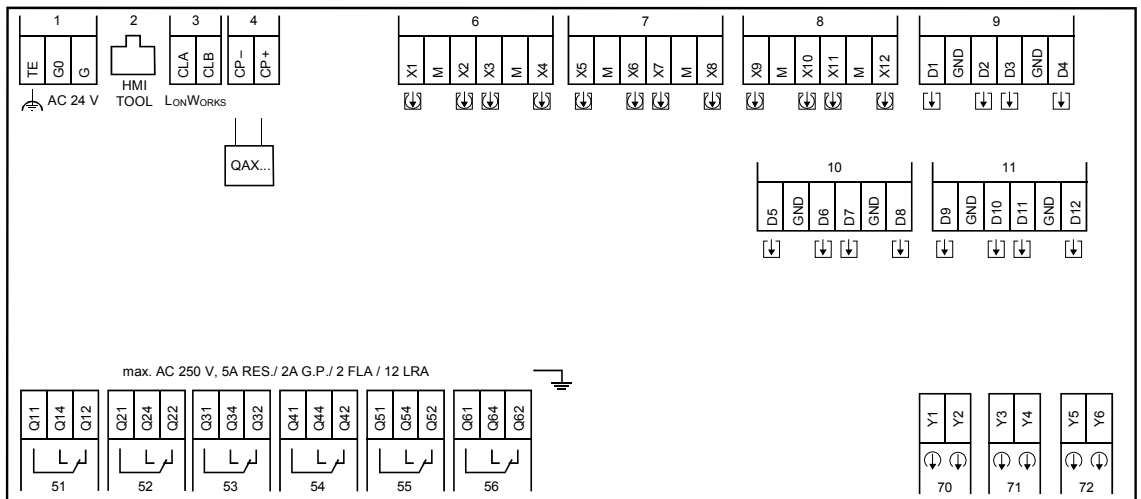
Weight

Type	without packaging	with packaging
PXC36-S	1.480 kg	1.560 kg
PXC52	1.820 kg	1.920 kg

Connection terminals

PXC36-S

9211A03

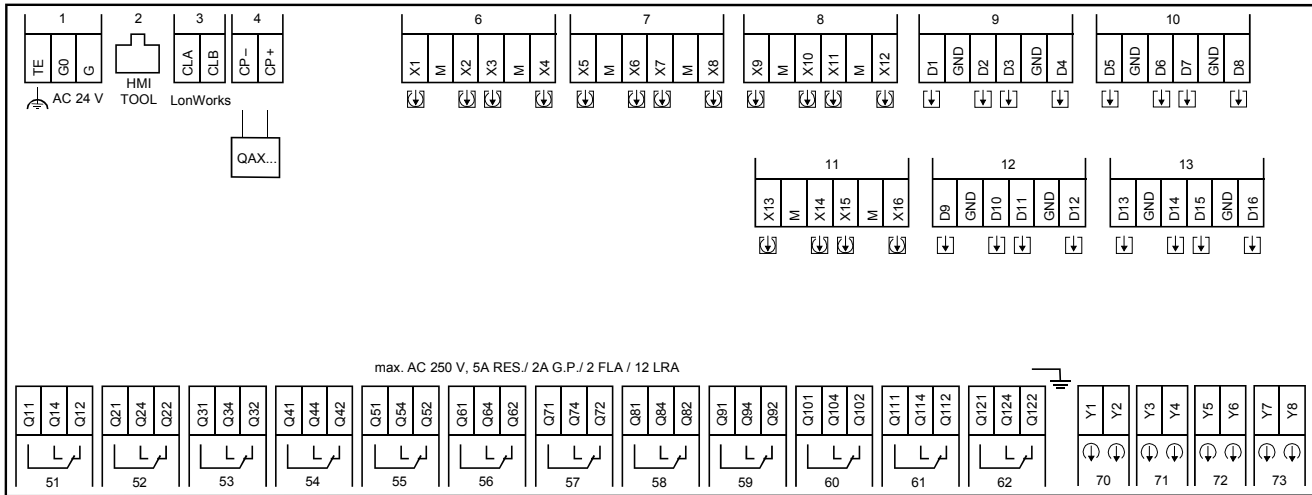


1	TE	Functional earth
	G/G0	Supply voltage AC 24 V
2	HMI / TOOL	RJ45 socket (for PXM10 or PXM20 operator unit or DESIGO TOOLSET / XWORKS plus)
3	CLA/CLB	LONWORKS bus
4	CP+/CP-	PPS2 bus (for QAX... room units)
6 ... 8	X1 ... X12	12 universal inputs
9	D1 ... D4	4 binary inputs (counters possible)
10 ... 11	D5 ... D12	8 binary inputs
51 ... 56	Q11 ... Q62	6 relay outputs
70 ... 72	Y1 ... Y6	6 universal outputs



Caution!

- Observe the technical data for the relay outputs.
- Local installation regulations must be observed.



<b>1</b>	TE	Functional earth
	G/G0	Supply voltage AC 24 V
<b>2</b>	HMI / TOOL	RJ45 socket (for PXM10 or PXM20 operator unit or DESIGO TOOLSET / XWORKS plus)
<b>3</b>	CLA/CLB	LONWORKS bus
<b>4</b>	CP+/CP-	PPS2 bus (for QAX... room units)
<b>6 ... 8 11</b>	X1 ... X16	16 universal inputs
<b>9</b>	D1 ... D4	4 binary inputs (counters possible)
<b>10/12/13</b>	D5 ... D16	12 binary inputs
<b>51 ... 62</b>	Q11 ... Q122	12 relay outputs
<b>70 ... 73</b>	Y1 ... Y8	8 universal outputs



**Caution!**

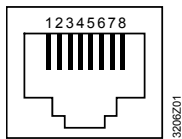
- Observe the technical data for the relay outputs.
- Local installation regulations must be observed.

**Pin layout**

Pin	Code	Description
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**2 Tool socket**

Standard RJ45 tool socket for LONMARK compatible devices.

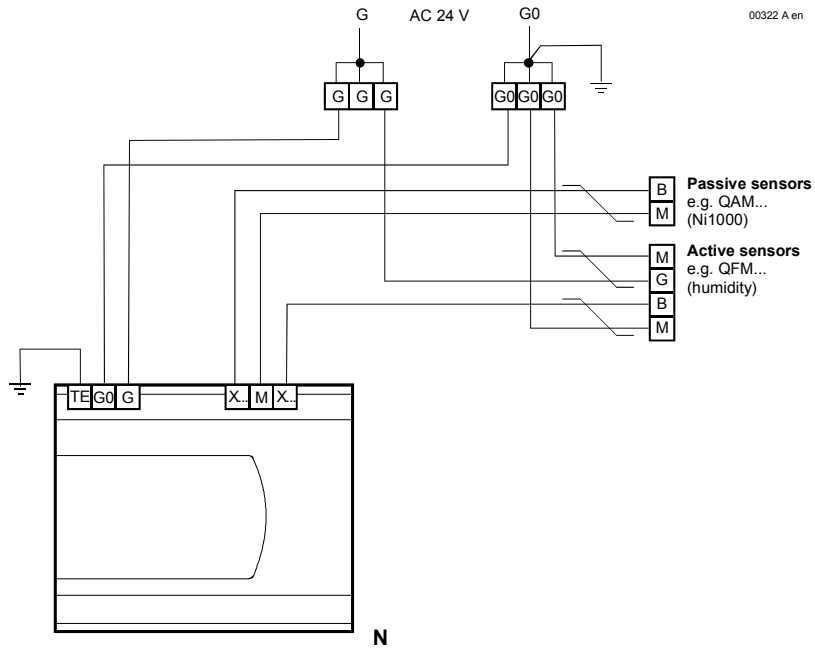


1	LONWORKS, Data A (CLA)	5 Unoccupied
2	LONWORKS, Data B (CLB)	6 Unoccupied
3	G0, GND	7 COM1/TxD
4	G/Plus	8 COM1/RxD

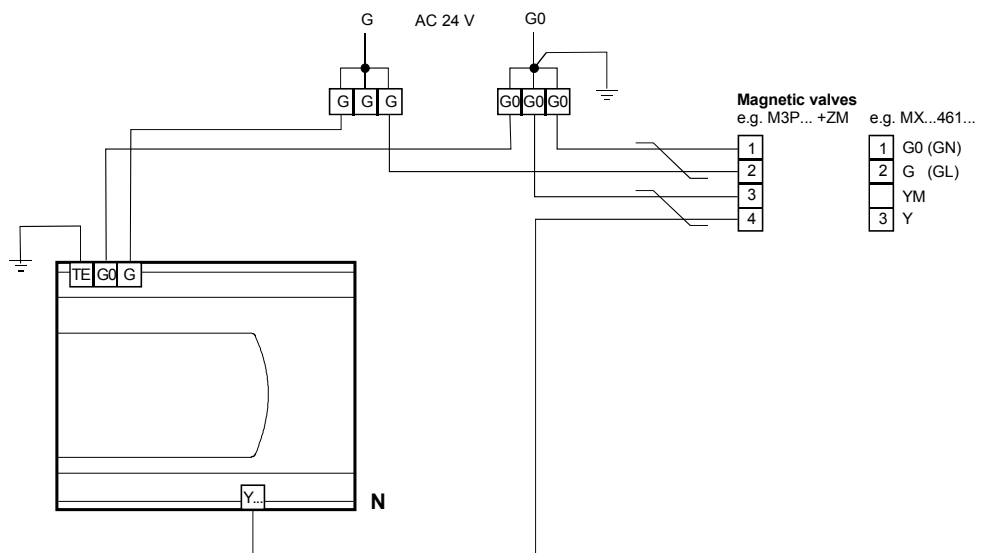
# Connection diagrams

## A) Peripheral supply from system transformer

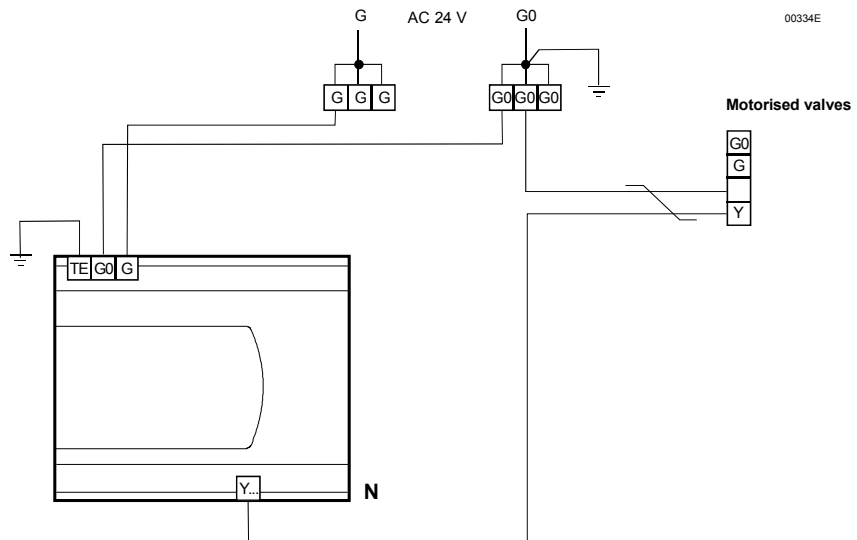
Active and passive sensors



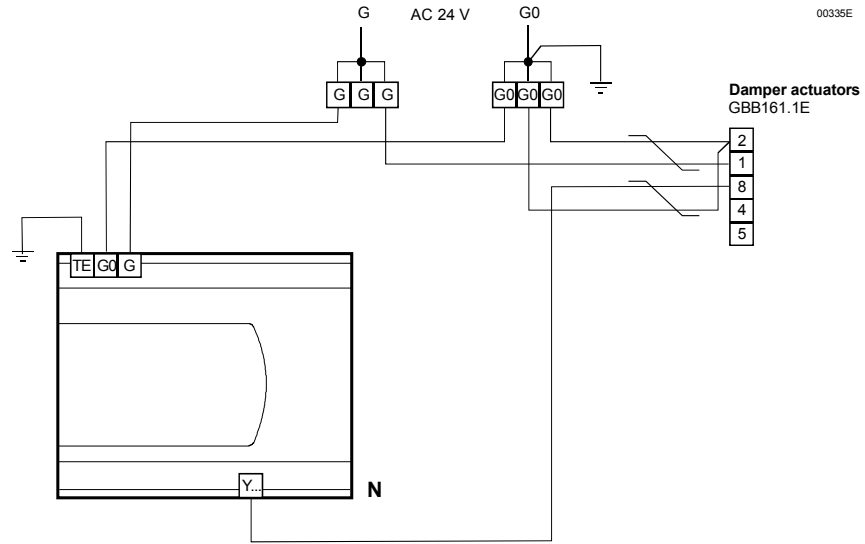
Magnetic valves



Motorized valves



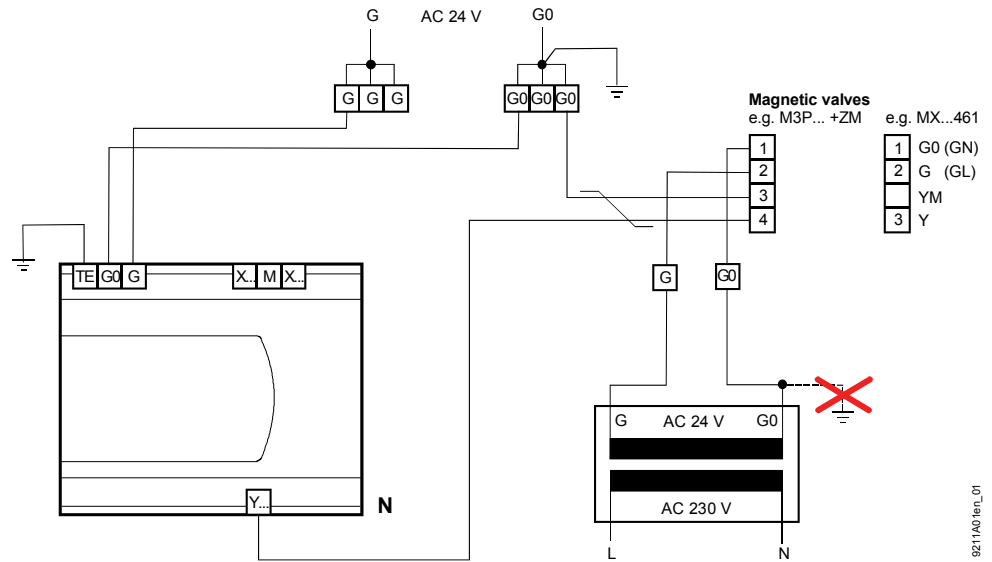
Damper actuators



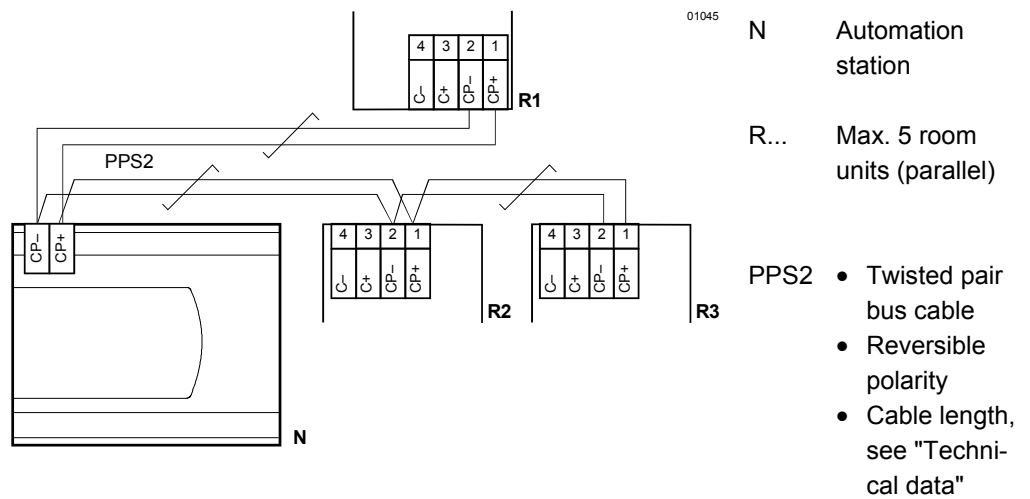
B) Peripheral supply from separate transformer

Magnetic valves (example)

**STOP Note!**  
Do NOT earth the separate transformer



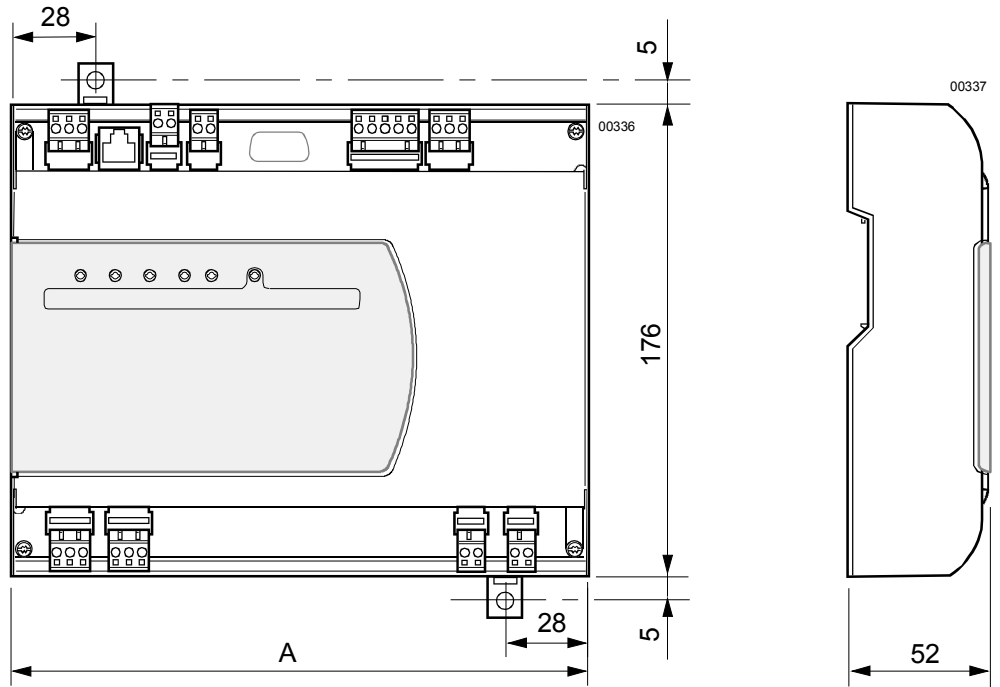
C) Connecting the room units



- Notes
- The room units are connected in parallel (max. five devices).
  - To distinguish between them, they can be addressed by use of jumpers (address plug on the printed circuit board). The factory-setting is Address 1.

## Dimensions

All dimensions in mm



A = PXC36-S: 270  
PXC52: 343

