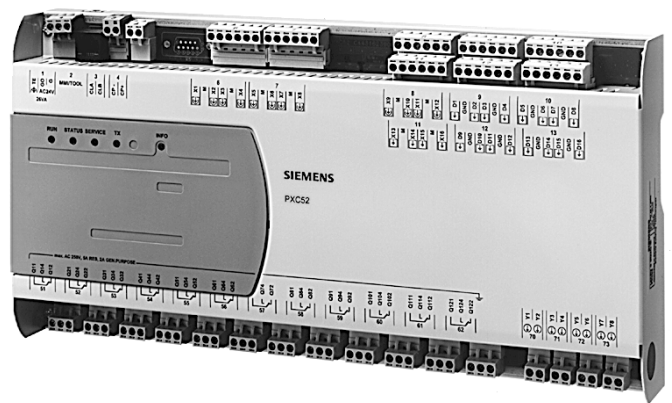# SIEMENS

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)**

Building Technologies

Functions

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

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

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 of 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:

Single stage	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
Two-stage	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).
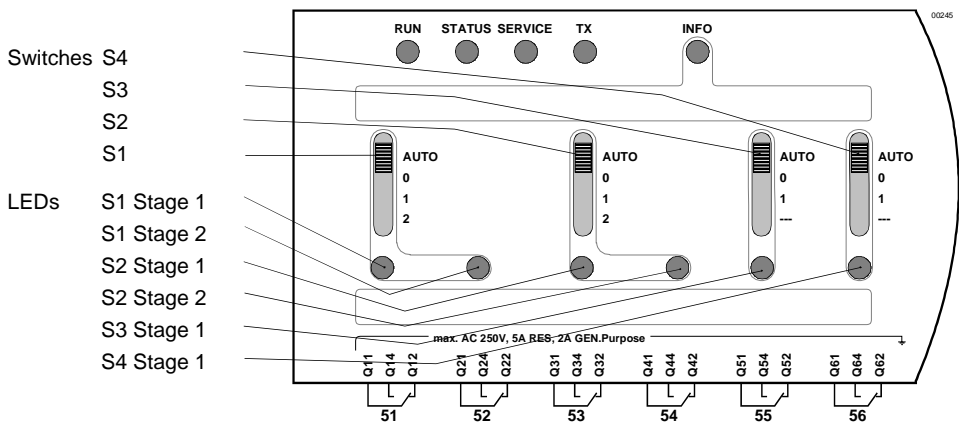
Manual switches from left to right:

- **S1**: Automatic/Off/Stage 1 and 2
- **S2**: Automatic/Off/Stage 1 and 2
- **S3**: Automatic/Off/On
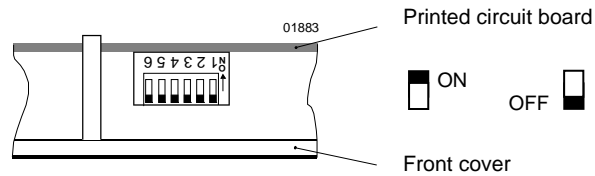- **S4**: Automatic/Off/On

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).

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DIL switches

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

Printed circuit board

01883

ON

OFF

Front cover

Mode: Direct control / Software control

	DIL 1 (S1)	DIL 2 (S2)	DIL 3 (S3)	DIL 4 (S4)
OFF	Direct control [1]			
ON	Software control [2]			

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

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

[1] *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.

[2] *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).
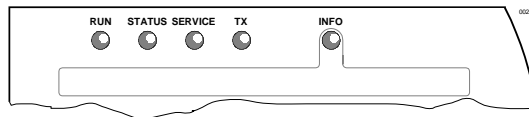
Note

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).

Design

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.
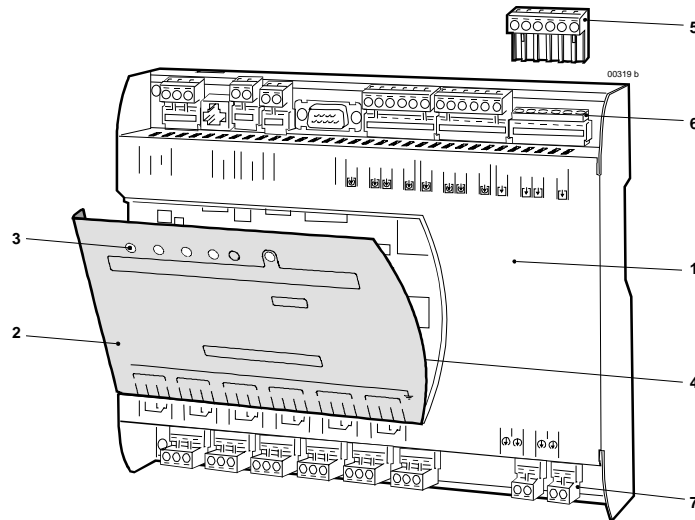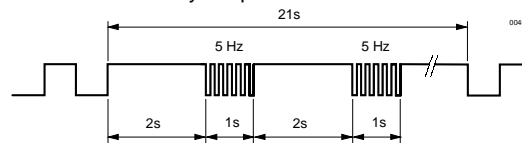

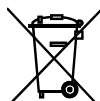| 1	Metal housing
2	Front cover (hinged)
3	LED indicators
4	Printed circuit board
5	Plug-in screw terminal block
6	Upper terminals for operating voltage, bus system and input peripherals
7	Lower terminals for output peripherals

LED indicators

LED	Color	Activity	Function
RUN	Green	• Continuously off	No supply
		• Continuously on	Supply OK
STATUS	Red	• Continuously off	Normal operation
		• Continuously on	Hardware fault detected during self-test or automation station in "coma" operating state
		• Quick flashes	No validly licensed firmware
SERVICE	Red	• Continuously off	LONWORKS node is configured
		• Flashing	LONWORKS node is not configured
		• Flashing acc. to wink command pattern *	Physical identification of automation station after receiving wink command
		• Continuously on	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.

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Mounting instructions

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

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, 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 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. 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)
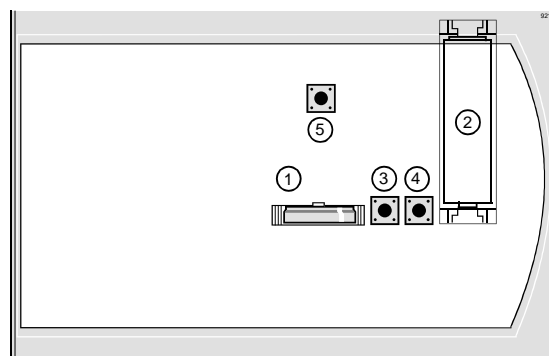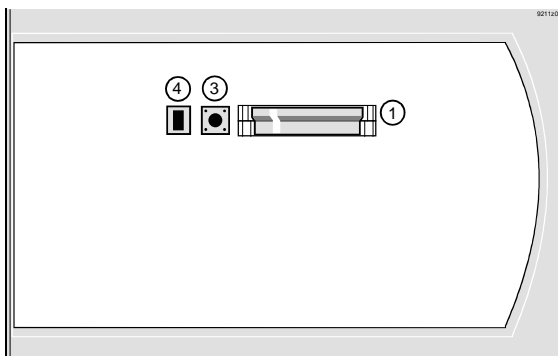
① Lithium battery

② AA alkaline battery

③ Service pin

④ Force Firmware Download key

⑤ Reset key

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

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 remove the front cover. As long as there is an external power supply, the battery may be removed for unlimited time.

(STOP) **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		PXC36-S max. 20 VA	
	(depending on device type):		PXC52 max. 26 VA	
	Internal fuse		Thermic, automatic reset	
Operating data			PXC36-S	PXC52
	Processor		68000	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
	Run-time data (battery)		> 10 years	> 10 years
	Run-time data (AA batt., PXC52 from 2007)			> 1 month typical
	Real Time Clock (battery)		> 10 years	> 10 years
	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 current)		Approx. 2.5 mA	
	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 Ω (closed)	
	Contact isolation resistance		Min. 50 kΩ (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	
	Binary outputs (for off-board relays)			
	Output voltage range		0/DC 0 24 V	
	Load		≥ 1000 Ω	

⚠ Relay outputs Q… **	Relay type	single pole, change-over contact
	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
	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
	Switching load	Max. 20 W
Interface, room units	Interface type	PPS2
	Supply class	4
	PPS2 baud rate	4.8 kBit/s
LONWORKS bus interface	Network	TP/FT-10
	Transceiver	FTT
	Baud rate	78 kBit/s
Plug-in screw terminal	Power supply and signals	Stranded of solid conductors, 0.25 … 2.5 mm^2 or 2 x 1.5 mm^2
	LONWORKS bus	Stranded or solid conductors, 2 x 1.0 mm^2
Single cable lengths	Universal inputs X...	Max. 100m where A = 1 mm^2
	Binary inputs D...	Max. 100 m with diameters $\geq$ 0.6 mm
	Universal outputs Y…	Max. 100m where A $\geq$ 1.5 mm^2
	Relay outputs Q…	Depends on load and local regulations
	Interface, room unit	Max. 125 m where A = 1.0 mm^2
	Cable type	2-core, twisted pair, unscreened
	Capacitance per unit length	Max. 56 nF/km
	LONWORKS bus	
	Cable type	ConCab or CAT5
	Cable length	See installation guide, CA110396
	Connecting cable PXM10 or PXM20 / DESIGO TOOLSET	Max. 3 m
Housing protection standard	Protection standard to EN 60529	IP 20
Protection class	Isolation protection class	II
Ambient conditions	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
Industry standards	Product safety	
	Automatic electronic controls for household and similar use	EN 60730-1
	Special requirements for energy controllers	EN 60730-2-9
	Electromagnetic compatibility	
	Interference immunity	EN 61000-6-2
	Emitted interference	EN 61000-6-3
	Meets requirements for **CE** marking:	
	Electromagnetic compatibility	89/336/EEC
	Low Voltage Directive	2006/96/EEC
Dimensions	*See "Dimensions"*	

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

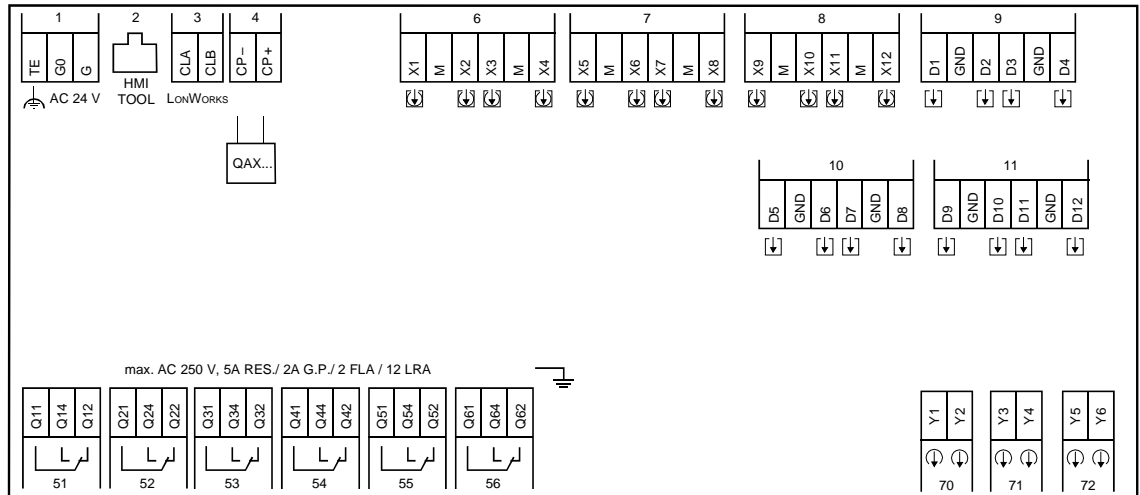*   The signal inputs D1, D2, D3, D4 are countable (max. 20 Hz)
** The relay outputs are **safely** isolated from each other, from earth/cover and the remaining electronics (AC 24 V) in accordance with SELV and PELV specifications. The relay outputs can be used in mixing applications with AC 250 V and SELV/PELV circuits!

PXC36-S

9211A03

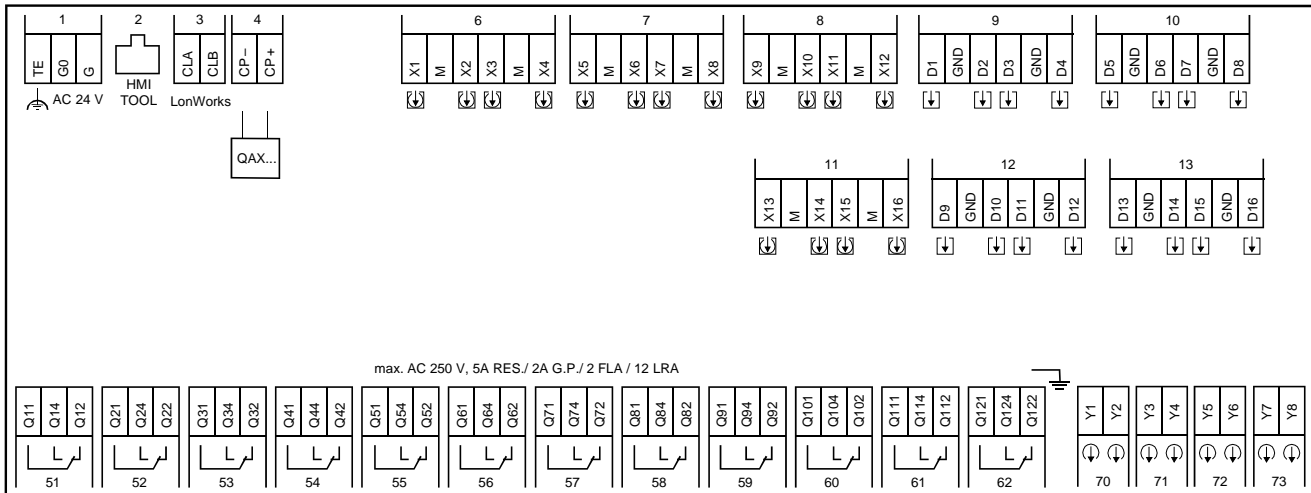|		
1	TE	Functional earth
	G/G0	Supply voltage AC 24 V
2	HMI / TOOL	RJ45 socket (for PXM10 or PXM20 operator unit or DESIGO TOOLSET)
3	CLA/CLB	LONWORKS bus
4	CP+/CP-	PPS2 bus (for QAX... room units)
6 ... 8	X1 ... X12	12 universal inputs
9	D1 ... D4	4 binary inputs (counters possible)
10 ... 11	D5 ...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

STOP **Caution!**

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

PXC52

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PXC36-S, PXC52 – Compact automation stations

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| **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)
3	CLA/CLB	LONWORKS bus
4	CP+/CP-	PPS2 bus (for QAX... room units)
6 ... 8 11	X1 ... X16	16 universal inputs
9	D1 ... D4	4 binary inputs (counters possible)
10/12/13	D5 ... D16	12 binary inputs
51 ... 62	Q11 ... Q122	12 relay outputs
70 ... 73	Y1 ... Y8	8 universal outputs

Caution!

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

Pin layout

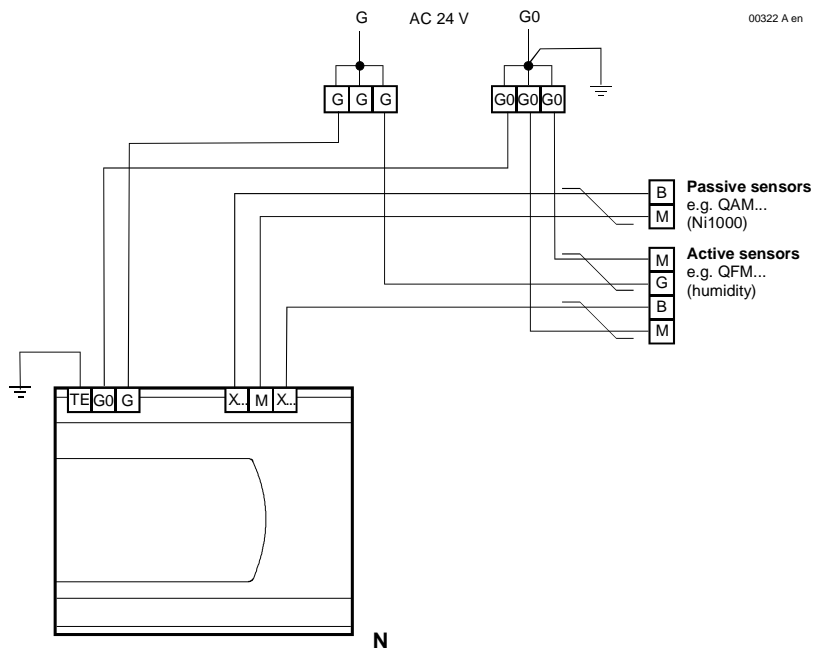| Pin	Code	Description

2 Tool socket
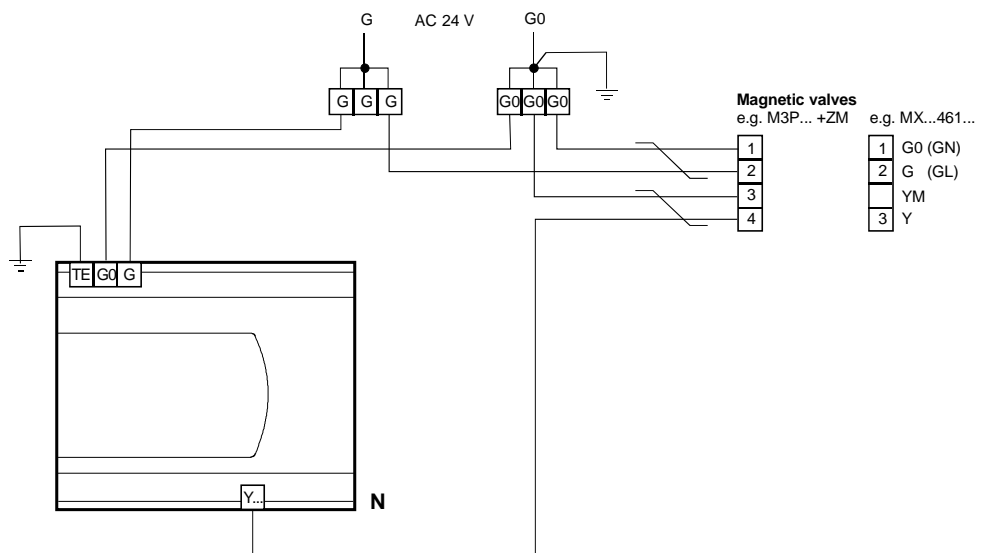
Standard RJ45 tool socket for LONMARK compatibledevices.
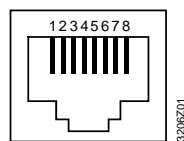
1	LONWORKS, Data A (CLA)	5 Unoccupied
2	LONWORKS, Data B (CLB)	6 Unoccupied
3	G0, GND	7 COM1/TxD
4	G/Plus	8 COM1/RxD

Peripheral supply from system transformer

Active and passive sensors

G   AC 24 V   G0   00322 A en

| G | G | G | | G0 | G0 | G0 |

B   **Passive sensors**
M   e.g. QAM...
    (Ni1000)

M   **Active sensors**
G   e.g. QFM...
B   (humidity)
M

| TE | G0 | G | | X.. | M | X.. |

N

Magnetic valves

00323E

G   AC 24 V   G0

| G | G | G | | G0 | G0 | G0 |

Magnetic valves
e.g. M3P... +ZM   e.g. MX...461...

1		1	G0 (GN)
2		2	G (GL)
3			YM
4		3	Y

| TE | G0 | G |

| Y... | **N**

Motorized valves

G   AC 24 V   G0   00334E

| G | G | G | | G0 | G0 | G0 |

Motorised valves

| G0 |
| G |
| Y |

| TE | G0 | G |

| Y... | **N**

Damper actuators

G AC 24 V G0

00335E
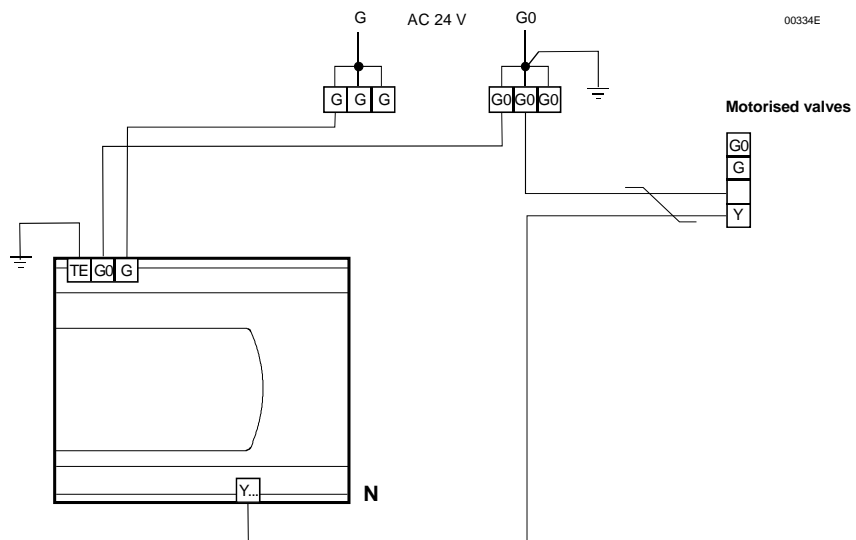
Damper actuators
GBB161.1E
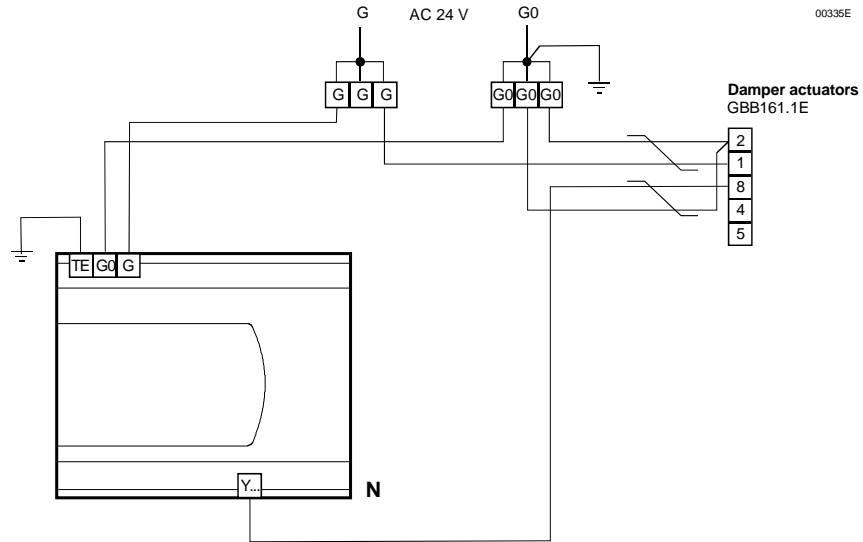
Peripheral supply from separate transformer

**Magnetic valves
(example)**

G AC 24 V G0

00324E

Magnetic valves
e.g. M3P... +ZM   e.g. MX...461

1 G0 (GN)
2 G (GL)
  YM
3 Y

G AC 24 V G0

AC 230 V
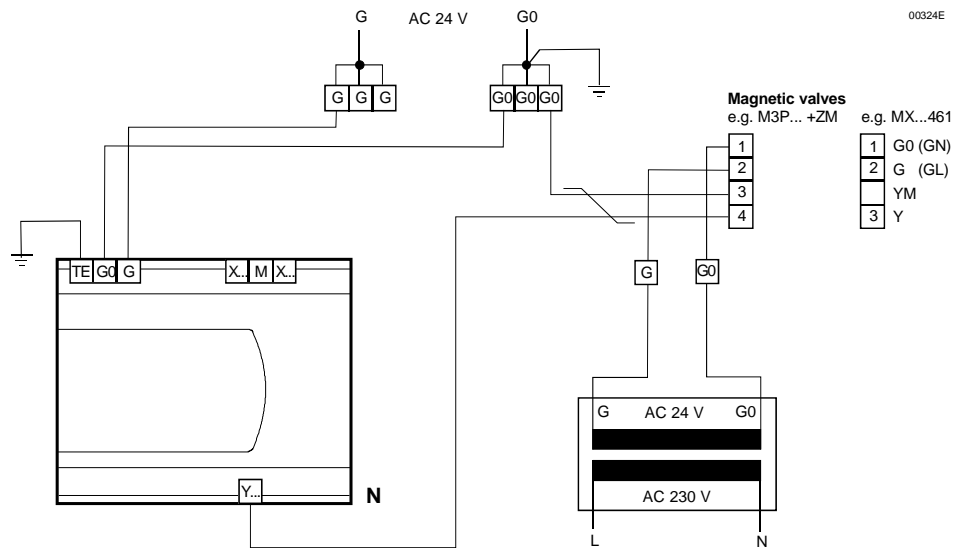
Connecting the room units

01045

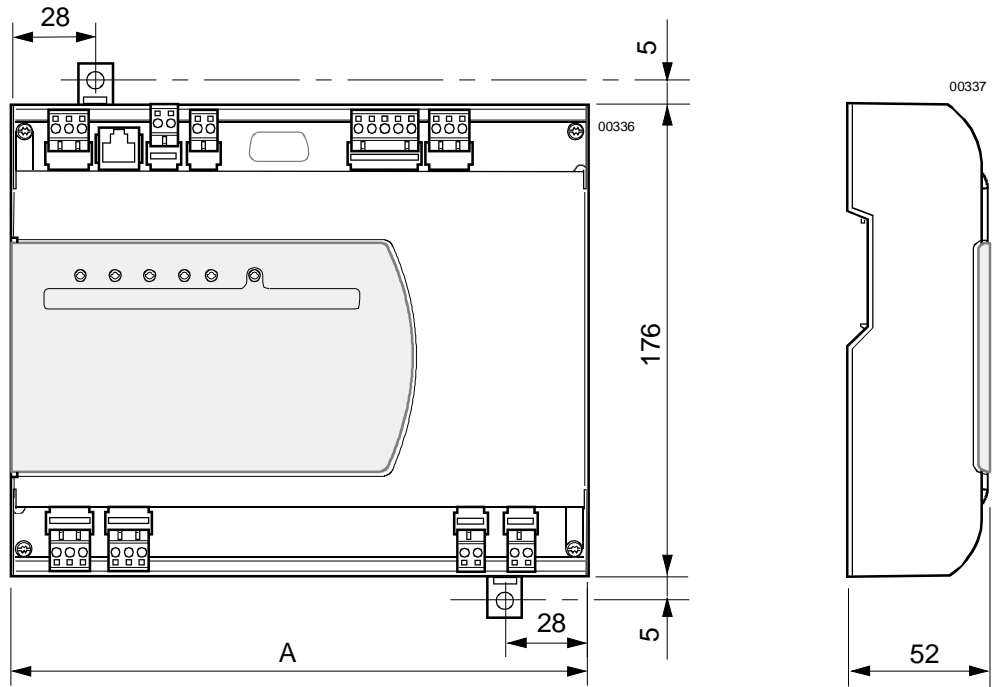| N	Automation station
R...	Max. 5 room units (parallel)
PPS2	• Twisted pair bus cable • Reversible polarity • Cable length, see "Technical data"
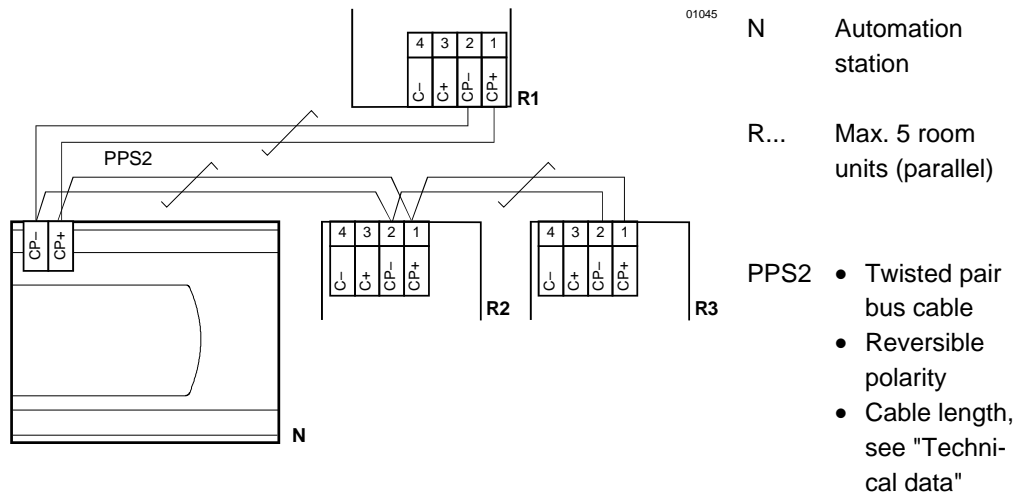
Notes • The room units are connected in parallel (max. five devices).
• To distinguish between them, they can be addressed by use of jumpers (address plug on the printed circuit board). The factory-setting is Address 1.

Dimensions

All dimensions in mm

28

5

00336

176

28

5

A

52

00337

A = PXC36-S: 270
    PXC52:   343

Subject to changes

PXC36-S, PXC52 – Compact automation stations