



SICLIMAT™ X

DP/P-bus link

DPP-Link

Connects the DESIGO I/O modules to the Profibus DP

The DP/P-bus link allows the operation of DESIGO I/O modules with a SIMATIC S7.

- Standard Profibus DP interface
- Max. 128 load units per link
- Maximum 50 DESIGO I/O modules per link
- AC 24 V operating voltage
- Project engineering using Profibus GSD file
- SIMATIC S7 or comparable project engineering tool
- Length of Profibus DP bus: 1000m
- Up to 32 links per SIMATIC S7 (depending on CPU size)

Use

The purpose of the link is to connect two media, the P-bus and the Profibus DP, thereby allowing access to the DESIGO I/O modules from a SIMATIC. In the SIMATIC, the DESIGO I/O modules are treated as standard Profibus DP data points. This enables them to be integrated into a building management system such as SICLIMAT X or into the DESIGO INSIGHT building automation and control system.

On the Profibus, the link operates as a Profibus DP slave, supporting datagram traffic in the direction of the Profibus DP master (SIMATIC S7). On the P-bus, the link operates as the P-bus master, and is responsible for the flow of data to and from the DESIGO I/O modules. All data transferred via the DP/P-bus link is converted into the datagram format used by the communications partner.

Compatibility

The DP/P-bus link can be combined with the following DESIGO I/O modules:

Digital In		Load units	Input bytes	Output bytes	Comments
PTM1.2D20	Digital input 2 x DI; volt-free contacts DC 22 V	2	1	0	
PTM1.4D20	Digital input 4 x DI; volt-free contacts DC 22 V	1	1	0	
PTM1.4D20R	Digital input 4 x DI; open contact	1	1	0	
PTM1.8D20E	Digital input 8 x DI; volt-free contacts	1	1	0	
PTM1.2D42	Digital input 2 x DI not electrically isolated; voltage signaling module	2	1	0	
PTM1.2D250	Digital input 2 x DI electrically isolated; voltage signaling module	2	1	0	

Digital Out		Load units	Input bytes	Output bytes	Comments
PTM1.2Q250	Digital output 2 x DO; AC 24..250V, 3A inductive	2	0	1	
PTM1.2Q250B	Digital output 2 x DO; single-stage, bistable	2	0	1	Not suitable for use in conjunction with SICLIMAT blocks
PTM1.2QD	Digital output 1 x DO; with feedback	2	1	1	
PTM1.4QD	Digital output 2 x DO; with feedback	4	1	1	
PTM1.2Q250-M	Digital output 2 x DO; with manual operation; AC 24..250V, 3A inductive	2	1	1	
PTM1.2QD-M	Digital output 1 x DO; with feedback and manual operation	2	1	1	
PTM1.4QD-M2	Digital output 2 x DO; with feedback and manual operation	2	1	1	
PTM1.3Q-M3	Digital output 3-stage; with manual operation	2	1	1	
PTM1.4Q250-P	Pulse switching command; 2 single-stage consumers	2	1	1	Not suitable for use in conjunction with SICLIMAT blocks
PTM1.4Q250-P3	Pulse switching command; one 2-stage or 3-stage consumer	1	1	1	Not suitable for use in conjunction with SICLIMAT blocks
PTM1.4Q250A P	Pulsed switching command 4 normally-open contacts	2	1	1	Not suitable for use in conjunction with SICLIMAT blocks

Counters		Load units	Input bytes	Output bytes	Comments
PTM1.2C	Digital input 2 x pulse inputs max. 25 Hz (7-bit counter)	2	2	0	Not suitable for use in conjunction with SICLIMAT blocks

Analog In		Load units	Input bytes	Output bytes	Comments
PTM1.2R1K	Analog input 2 x AI; Ni1000 -50..+150°C (2-wire)	1	4	0	
PTM1.4R1K	Analog input 4 x AI; Ni1000 -50..+150°C (2-wire)	1	8	0	
PTM1.2P100	Analog input 2 x AI; 0...250 ohm Pt100/Ni100 (4-wire)	2	4	0	
PTM1.2P1K	Resistance, passive Pt1000	2	4	0	
PTM1.2U10	Analog input 2 x AI; 0...10 V	1	4	0	
PTM1.2I420	Analog input 2 x AI; 4...20 mA	1	4	0	
PTM1.2I25/020	Analog input 2 x AI; 0(4)...20 mA	1	4	0	

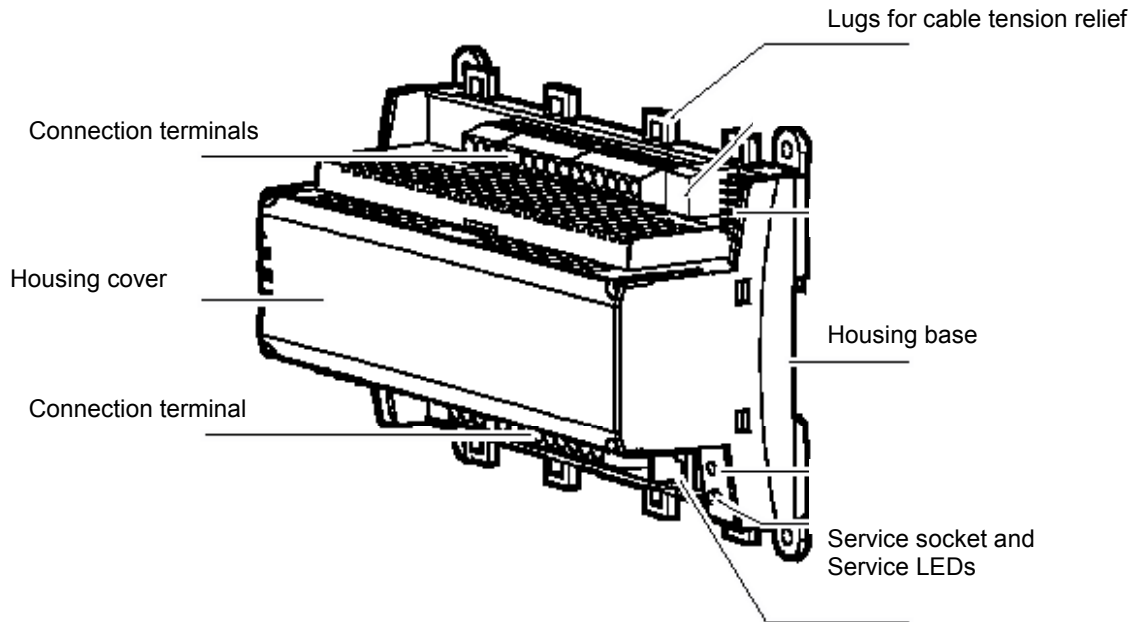
Analog Out		Load units	Input bytes	Output bytes	Comments
PTM1.2Y10S	Analog output 2 x AO 0...10V	1	0	4	
PTM1.4Y10S	Analog output 4 x AO 0...10V	1	0	8	
PTM1.2Y10S-M	Analog output 2 x AO with manual operation; 0...10V	1	1	4	
PTM1.2Y420	Analog output 2 x AO 4...20mA	1	0	4	
PTM1.2Y250T	Digital output 1 x DO; positioning modules, 3-position output	2	1	3	
PTM1.2Y250T-M	Digital output 1 x DO; with manual operation; positioning modules with 3-position output	2	1	3	
PTM6.1PSI20-M	Pneumatic	2	1	2	

Compact		Load units	Input bytes	Output bytes	Comments
PTK1.30V01	P-bus compact module, 30 I/O points	13	14	10	
PTK1.23V02	P-bus compact module, 23 I/O points	17	24	2	

Special modules		Load units	Input bytes	Output bytes	Comments
PHM1.36TL	Status display unit, 24 messages / 12 operating points	4	2	4	
PTM50.16V01	WILO pumps 2 single/1 twin pump	8	24	8	
PTM52.16V01	GRUNDFOS pumps - 2 pumps	8	24	8	

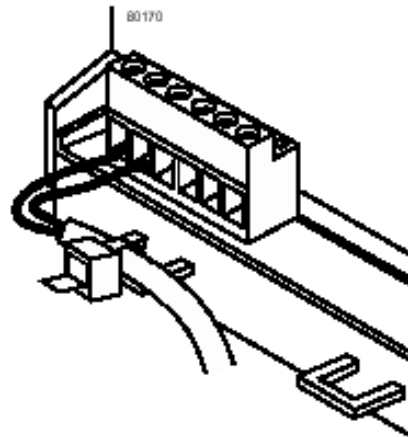
Design

The DP/P-bus link consists of a housing base, a housing cover and the printed circuit board with connection terminals. The unit also has a service socket and service LEDs.



Note

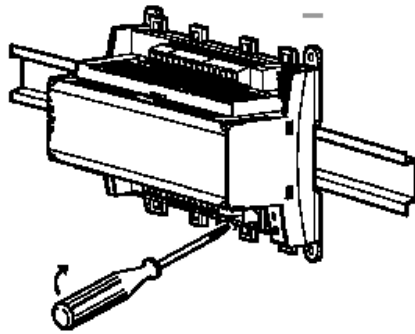
Cable restraints are essential for the wires to the AC 24 V terminals. The conductors must be secured with cable ties (see diagram) to the lugs provided for this purpose on the base unit.



Mounting instructions

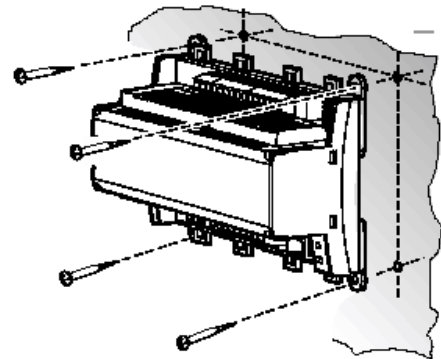


The DP/P-bus link must be installed horizontally as shown in the diagram, to ensure that heat is dissipated.



Rail mounting

The housing base is designed for snap-mounting on a DIN rail, type EN50022-35x7.5 (access with a screwdriver)



Surface mounting

There are four drill holes for screw mounting (see "Dimensions" for drilling diagram). The housing base is fitted with raised supports.

Screws: max. 3.5 mm

When mounting note the following:

- There must be a means of dissipating the heat generated during operation.
- Easy access is required for service personnel
- Local installation regulations must be observed.

The mounting instructions are printed on the packaging.

Engineering notes

The master device file (GSD file), which defines the technical characteristic of a Profibus DP link, is used as the basis for project engineering.

As part of the engineering process, the engineering tool (SIMATIC Manager) needs information about which GSD file to use for the DP/P-bus link. This is normally achieved by copying the GSD files to the hard disk of the PC. (For the exact path details refer to the description of the engineering tool.) When engineering a plant, the project engineering tool interprets the data in the GSD file for the DP/P-bus link.

It also runs plausibility checks to ensure that the engineering data is correctly structured in terms of logic. At the end of the engineering process, the user can transfer the collated engineering data to the master (SIMATIC S7). At system start-up, the master transmits this engineering data to the DP/P-bus link. Apart from addressing, no other settings are required for the DP/P-bus link.



There are no specific rules related to the positioning of the DESIGO I/O modules or their addresses. There is no requirement to allocate addresses contiguously and in ascending order. However, when using the SIMATIC Manager for engineering, it is important to engineer the I/O modules in ascending order of their P-bus addresses.

A maximum of 50 modules can be positioned in this way. Above this number, the engineering tool rejects any further inputs.

If the overall system includes several DP slaves and additional S7 modules, the positioning of the modules with the engineering tool can result in gaps in the address space of a given DP/P-bus link. This depends on the order in which the individual DP slaves are configured with modules, for example.

In such cases, the engineering tool ensures that consistent data structures are transmitted when data is exchanged.



The option of modifying the allocated addresses manually must not be used. This makes the data structures inconsistent at transmission time, which can lead to unpredictable signal states at the outputs. It can also mean that the input signals are wrongly assigned. Similarly, modules must not be moved after they have been positioned in the list of module slots, as the engineering tool does not automatically re-sort the address sequence.

Code-based diagnostics are used for trouble-shooting in the DP/P-bus link. The LED display also indicates the overall operational status. Diagnostic options are available both for individual modules and for the modules as a whole, for evaluation purposes.

Hardware list

The number of DESIGO I/O modules per DP/P-bus link depends on the following conditions:

- Maximum 50 DESIGO I/O modules are supported
- Up to 128 load units
- Max. 216 input bytes
- Max. 216 output bytes
- The maximum total must not exceed 216 bytes

Refer to the section on *Compatibility* to determine the number of load units and bytes.

Ordering/scope of delivery

When ordering, please specify the quantity, product name and type code.

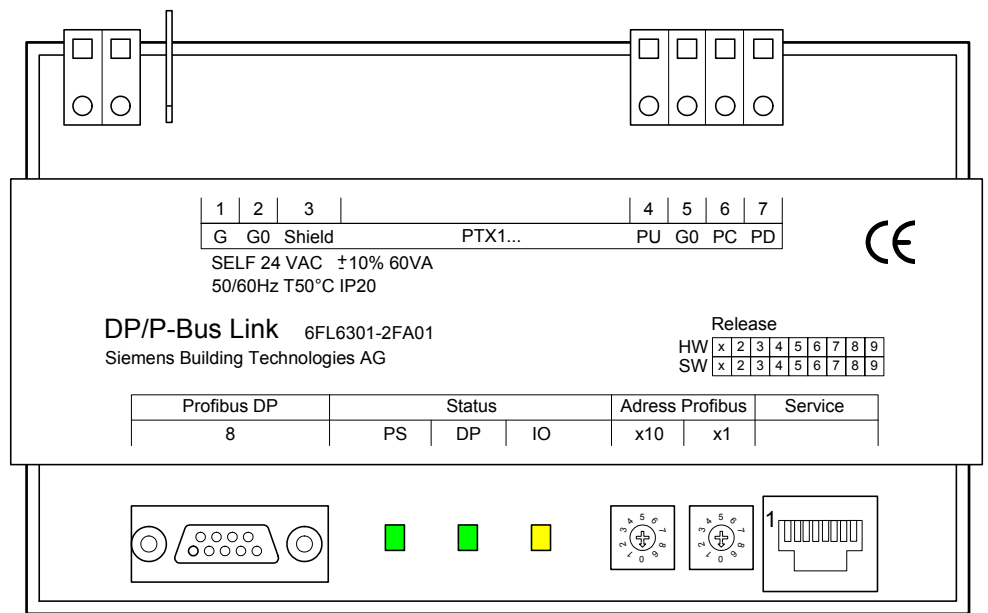
<i>Type</i>	<i>Order No.</i>	<i>Specification No.</i>
DP/P-bus link	6FL6301-2FA01	28/400333

When ordering DESIGO I/O modules, please remember to include accessories such as the transformer, supply terminal block, mains terminal block, address plug and I/O strips of the appropriate length.

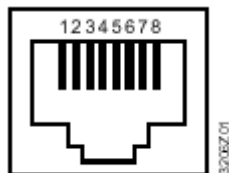
Technical data

	Type	DP/P-bus link
⚠ Power supply	Operating voltage	AC 24 V ± 10%
	Frequency	50/60 Hz
	Power consumption of DP/P-bus link including DESIGO I/O modules (128 load units)	60 VA
	Internal fuse protection	None
Ports/interfaces	Protection standard to EN 60529	IP20
⚠ P bus	See data sheets	Max. 128 load units
	CM2N8022 (process bus) and CM2M8102 (I/O modules and P-bus)	
	Permissible cable length subject to data in the above data sheets	50m, local bus Remote bus not yet released
Profibus DP	9-pin female sub-D connector	RS 485
	Baud rate	2.4 kbits/s ... 12 Mbit/s
Service (Not used at present)	RJ45	RS 232 version
Accessories	Plug	For connection of supply voltage and P-bus
Ambient conditions	Operation: Temperature	0 ... 50 °C
	Operation: Humidity	< 85 % rh
	Transport: Temperature	-25 ... 65 °C
	Transport: Humidity	< 95 % rh
Industry standards	Automatic electronic controls for household and similar use	IEC / EN 60 730-1
	Electromagnetic compatibility	
	Interference immunity	IEC / EN 61 000-6-2
	Interference emission	IEC / EN 61 000-6-3
Dimensions	See dimension diagrams	
	Width in DIN modular spacing units	8.5
Weight	Including packaging	0.25 kg
Product safety	CE conformity as per	EMC directive 89/336/EEC, and low voltage directive 73/23/EEC

Connections



Power supply	G	1	AC 24 V
	G0	2	Ground
	Shield	3	The earthing connection for the Profibus cable shield is not physically connected to ground (G0).
P bus connections	PU	4	P-bus signal PU
	G0	5	P bus ground
	PC	6	P-bus signal PC
	PD	7	P-bus signal PD
Profibus DP connection	PROFIBUS DP	9	9-pin sub-D, RS485
Status LEDs	PS		Power supply status LED
	DP		DP status LED
	IO		I/O module status LED
Address settings	Address	x10	“Tens” position of the Profibus DP address
	Address	x1	“Units” position of the Profibus DP address
Service interface	Service		RJ45 for firmware update if required



1	GND	5	VPP
2	RxD	6	CHM
3	Not used	7	BTL
4	TxD	8	GND

Interconnection

The P-bus connection of the link incorporates an internal DC power supply for 128 load units, to supply the power for the DESIGO I/O modules. The DESIGO I/O modules are connected via the P-bus connection using the P-bus coupling module (I/O bar type PTX 1.01). The main supply voltage is derived from a separate AC 24 V transformer.



The PTX1.01 module can supply up to 18 I/O modules. If there are more than 18 I/O modules, additional supply modules are required.



As described in data sheets CM2M8102 and CM2N8022 a double-insulated safety transformer to EN 61 558, designed for continuous operation, must be used. At least conductor G must be protected with a fuse. The transformer must be sized for the effective load of the equipment in the control panel including the connected field devices.



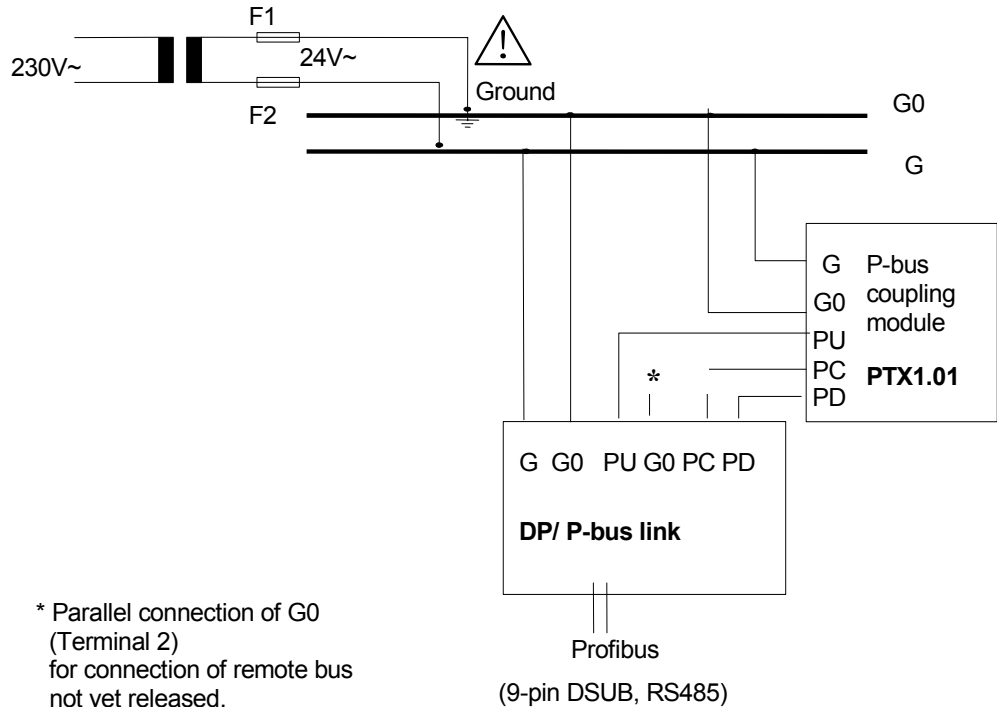
For separate control panel construction, please observe grounding precautions (as described in CM2M8102).



To avoid earth loops, only G0 must be earthed to a central point. The earthing precautions for the P-bus must be observed (see data sheets CM2M8102 and CM2N8022).

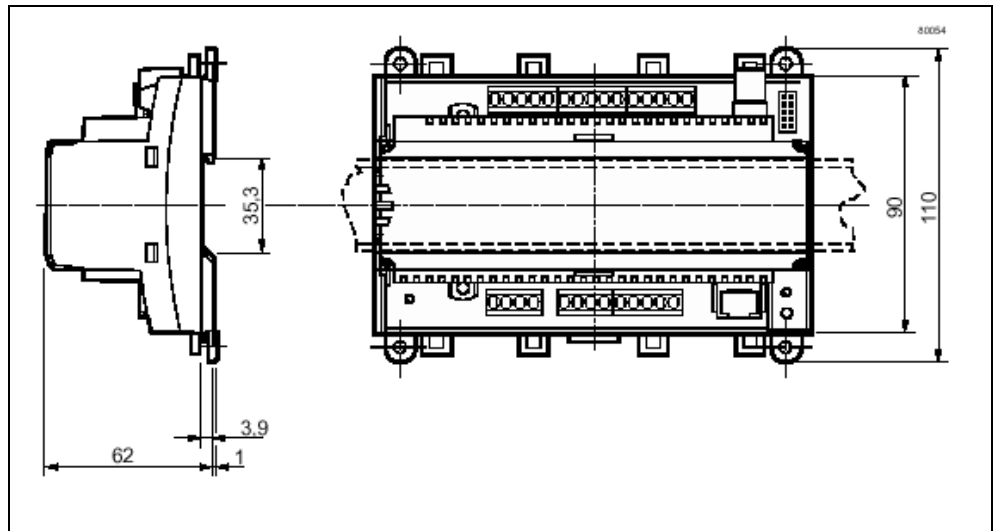
Note

For load distribution purposes, the G0 connection of the P-bus coupling module (I/O bar, type PTX1.01) **must** be connected to G0 of the transformer. The G0 connection (between PU and PC) of the DP/P-bus link is designed for connection of the P-bus/remote bus. The remote bus has not yet been released.



Dimension diagrams

All dimensions in mm



Drilling diagram

