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SIPROTEC Devices with PROFIBUS DP

FAQs on PROFIBUS DP

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Table of Contents

Table of Contents

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FAQs on PROFIBUS DP
References

Please also refer to the following manuals:

Siemens AG, PTD EA
Manual
SIPROTEC4 Communication module – PROFIBUS-DP Communication profile
C53000-L1840-B001-03
Revision from V4.0
www.siprotec.com → Prot. Devices → General information → Complete documentation to all communication modules and protocols → PROFIBUS DP

Siemens AG, PTD EA
Manual
SIPROTEC4 Communication module
Device specific PROFIBUS DP Bus mapping documentations
(one manual per device type, e.g. for 7SJ61/62/63/64, 7UM61, 7UM62, 7SA522/7SA6 etc.)
www.siprotec.com → Prot. Devices → General information → Complete documentation to all communication modules and protocols → PROFIBUS DP

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FAQs on PROFIBUS DP
General PROFIBUS DP and SIPROTEC PROFIBUS DP Modules

Question	Answer
Which max. data transfer rates (baud rates) are possible with PROFIBUS DP and SIPROTEC PROFIBUS DP modules?	• 6 MB/s with SIPROTEC RS485 PROFIBUS modules and • 3 MB/s with SIPROTEC fiber-optical PROFIBUS modules.
What is a GSD file used for and where to get it from?	A GSD file describes the technical data of the PROFIBUS DP device and it is required for the bus configuration. Every manufacturer has to deliver a GSD file for its PROFIBUS DP device. For the SIPROTEC devices there exist two GSD files, one for devices with RS485 PROFIBUS module and one for devices with fiber-optical PROFIBUS module. → You find these GSD files in the communication modules user manuals directory on www.siprotec.com.
Can I see the parameterized PROFIBUS DP address of the SIPROTEC device in one of the devices menus in the display?	Yes, this is possible with Communication module from HW revision 4 and a SIPROTEC device firmware 4.6 or higher (if such a firmware version is already available for the device type). Select: MENU → Test/Diagnosis 5 → Modulinfo 5 → Port B
Can I replace a SIPROTEC communication modules HW revision 2 with a communication module HW revision 4 and must I adapt the device parameterization?	SIPROTEC communication modules HW revision 2 can be replaced directly by the same type of a communication module HW revision 4 without any changes of the device parameterization. Please note, that communication modules from HW revision 4 need another firmware version but they are already delivered with the correct firmware version.

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FAQs on PROFIBUS DP
Electrical (RS485) Interfaces and Networks

Question	Answer
How many devices can be connected to a RS485 bus?	Electrical (RS485) topologies consist of so-called bus segments. At most 32 devices with a RS485 interface can be connected to one segment. Repeaters are used to expand the bus with additional segments (and additional devices). The max. number of PROFIBUS devices is 126 because of each device needs its unique address in the range 0...125.
Why there is a limitation of 32 devices in one segment?	This is because of the RS485 bus driver load (hardware requirement) and does not come from the PROFIBUS protocol.
What do I have to know about terminating resistors?	Terminating resistors have to be enabled at both ends of each RS485 segment. Use either the terminating resistors integrated in the plug or on the communication module. The terminating resistors need power supply from the device. If the device with the terminating resistors switched off, switch on the resistors on the device before in the line.

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FAQs on PROFIBUS DP
Fiber-Optical Interfaces and Networks

Question	Answer
How many devices can be connected to a fiber-optical ring?	Depending on the data transmission rate: 187.5 kB/s ➔ 55 500 kB/s and 1.5 MB/s ➔ 41
Why does an Optical Link Module OLM/G12 support up to 12 MB/s and the SIPROTEC fiber-optical modules only 3 MB/s?	The SIPROTEC fiber-optical PROFIBUS modules use different fiber-optical transmitter and receiver which only support 3 MB/s.
Is the max. baud rate of 3 MB/s of the SIPROTEC fiber-optical modules a disadvantage for the customer?	No, let's take an example: With about 40 PROFIBUS devices, 100 bytes to transfer in input and output direction (sum of both) and 1.5 MB/s, the bus cycle time of the PROFIBUS DP system is approx. 40 ms which is normally faster than the cycle time of the PLC.
Are there special configuration settings for fiber-optical ring topologies to observe in the PROFIBUS DP master?	Yes, set "Retry Limit" = 3 and the "Number of OLM" equal to the sum of Optical Link Modules (OLM) and SIPROTEC devices with fiber-optical module in the ring (every fiber-optical module contains an OLM). This must be observed because of transmission delays of the OLM. → A separate Service Info "SIPROTEC with fiber-optical PROFIBUS DP Modules" is available in the communication modules user manuals directory on www.siprotec.com.
What is the order number of the Optical Link Modules OLM/G12 (e.g. for connecting SIPROTEC devices with fiber-optical PROFIBUS DP interface to a PROFIBUS DP master with RS485 interface)?	PROFIBUS OLM/G12 V3.1 6GK1502-3CB10 (up to 09/2007) PROFIBUS OLM/G12 V4.0 6GK1503-3CB00 (from 10/2007)

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FAQs on PROFIBUS DP
Redundant PROFIBUS DP Networks

Question	Answer
We want to connect SIPROTEC devices to a redundant PROFIBUS DP master system (S7-400 H). Is this possible?	SIPROTEC devices have a single (non-redundant) PROFIBUS DP interface. In order to connect them to a redundant PROFIBUS DP system with a S7-400 H, so called Y-Links are necessary. These Y-Links are devices from Siemens A&D which are used for connecting non-redundant PROFIBUS DP slave devices to a redundant S7-400 H PROFIBUS DP master system. Order no. for Y-Links e.g. 6ES7197-1LA11-0XA0.
Is there an example for network configuration with Y-Links available or do driver blocks for PCS7 exist?	Please refer to our Application Web Page www.siprotec.de → Applications → Communication. There you find a description of a PCS7 driver block from IT plant solutions I&S for connecting a 7UM62 via Y-Link to a S7-400 H.
How many SIPROTEC devices can be connected to a Y-Link (How many Y-Links do I need)?	It depends on the number of input and output bytes which are transferred (this is fixed by the selected Standard mappings). A Y-Link supports at most 244 bytes in the input direction and 244 bytes in the output direction. Please, add the input and output bytes of the SIPROTEC devices (independently) and if one sum exceeds 244 bytes, then the device must be connected to the next Y-Link.

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FAQs on PROFIBUS DP
Time Synchronization of SIPROTEC Devices via PROFIBUS DP

Question	Answer
Can the SIPROTEC devices be time-synchronized via PROFIBUS DP?	Yes, but the master must support this (this is not a standard function of PROFIBUS DP-V0). All S7 400 CPU with PROFIBUS DP master and firmware from V3 and all S7 CP443-5 extended PROFIBUS DP modules as well as the CP 5613 PC card support this. → For SIPROTEC devices connected via Y-Link to a redundant system please observe the next question/answer.
Can the SIPROTEC devices also be time-synchronized via PROFIBUS DP if they are connected with a Y-Link to a redundant PROFIBUS DP system?	Time synchronization via PROFIBUS DP for devices connected via Y-Links to a redundant system is only possible with Y-Links 6ES7197-1LA11-0XA0 using the IM 157-2 High Feature modules (situation in Nov. 2007). Other Y-Links do not relay the time synchronization messages and therefore time synchronization of SIPROTEC devices then will not be possible!
What accuracy can be reached with time synchronization via PROFIBUS DP?	Absolute difference of ≤ 10 ms between the devices. For time synchronization of devices connected to a Y-Link the absolute difference is ≤ 20 ms between the devices.

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FAQs on PROFIBUS DP
Transmission of Indications with Time Stamp

Question	Answer
Can time-stamped indications be transferred via PROFIBUS DP from the SIPROTEC device to the PROFIBUS DP master and what prerequisites are to observe?	Yes, with the following preconditions: • Select a PROFIBUS DP mapping file for the SIPROTEC device that supports the event list mechanism via PROFIBUS DP (available for all SIPROTEC devices except 7VK6 and 7SJ602). • The PROFIBUS DP master (PLC) must be programmed to read the time stamped information according to the handshake mechanism described in our "PROFIBUS DP – Communication profile" user manual! → You find the manual in the communication modules user manuals directory on www.siprotec.com. • The SIPROTEC device should be time synchronized (via PROFIBUS or another method, like e.g. IRIG-B). This is not necessary but recommended for evaluation of time stamps.
Is the restriction for time synchronization via Y-Link also valid for transmission of indication with time stamps?	No. Indications with time stamp can also be transmitted to the PROFIBUS DP master if the SIPROTEC device is connected to a Y-Link which do not support time synchronization via bus. Use then e.g. IRIG-B or DCF for external time synchronization of the devices over port A.