# **SIPROTEC 4 PROFIBUS DP Communication Modules with Fiber-optical Interface**

## Validity

This Service Information is valid for:

- PROFIBUS DP communication modules from HW revision 4 with fiber-optical interface
- Installations with fiber-optical ring topology where only PROFIBUS DP modules from HW revision 4 are interconnected

The hardware revision of the PROFIBUS DP communication modules is recognizable in build-in condition at the rear of the SIPROTEC device at the labeling of the communication module mounting bracket:

- up to HW revision 3: identification "P-Slave"
- from HW revision 4: identification "Profibus"

0	0 0
Ch1 P-Slave  P-Master Ch2	Ch1 Profibus Ch2
$  \longrightarrow \bullet  \bullet \longrightarrow  \bullet \longrightarrow  $	$  \longrightarrow \bullet  \bullet \longrightarrow  \longrightarrow  \bullet \longrightarrow$
Lun to HW/ rovision 3	from HVM rovision 4

up to HW revision 3

from HVV revision 4

## Preface

For all SIPROTEC4 fiber-optical PROFIBUS DP modules (independent of the HW revision), the default settings of the build-in Optical Link Module are:

- OLM V2 (SINEC L2) device compatible
- Redundancy function = enabled.

This ensures that modules of both HW revisions can be interconnected.

Fiber-optical communication modules from HW revision 4 offer in addition the OLM V3 settings of the SIMATIC NET devices OLM/G12 (6GK1502-3CB10 / 6GK1503-3CB00).



## Note:

If only fiber-optical PROFIBUS DP modules from HW revision 4 are used then we recommend operating all OLM/G12 devices and PROFIBUS DP communication modules of the SIPROTEC devices in the fiber-optical ring in OLM V3 mode.

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This Service information gives associated configuration hints.

Additional information of the properties and parameters of the PROFIBUS DP communication modules are described in the "SIPROTEC 4 - PROFIBUS-DP Communication profile" /1/.

				Date	2007-08-20				
				Name	Förster	Service Information SIPROTEC 4			
				Revised	Dr. Wache	Communication Modules			
				Norm.		PROFIBUS DP / Fiber-optical Ring			
				SIEM	ENS AG	Page			
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Open the SIPROTEC device in DIGSI, select Settings – Interfaces and Additional protocols at device (see Figure 2). Then select a Mapping file.

## Note:

- Please only use mapping files which numbering starts with a "3-", e.g. standard mapping 3-5 as shown in Figure 2. All other mapping files which do not start with "3-" are only offered for compatibility to existing installations that used these mappings and shall not be used for new configurations.
- Further information to the data size of the mapping files you find in the device-specific "Bus mapping" documentation /2/, /3/ in the Internet.

In the edit box *Module-specific settings* adapt the PROFIBUS DP slave address and set the PNO identification number to 0x80BC (which is the identification number of the fiber-optical module).

For 6MD66 devices with redundancy option only: Set the PNO identification number to 0x8138

// PN0 identification number // (0x80A1 = PROFIBUS module with isolated RS485 interface, // 0x80BC = PROFIBUS module with fibre-optical interface, // 0x8138 = Redundant PROFIBUS DP interface); GlobalSection.DP\_IdentNo = 0x8138;

#### 2. Fiber-optical Interface

Scroll down in the edit box *Module-specific settings* up to the settings for the fiber-optical interface as shown in the following figure:



Figure 3: SIPROTEC4 - Fiber-optical settings

Change the value of "Monitor Mode" to GlobalSection.DP\_OLM\_MonitorMode = 10. This enables the OLM/V3 mode.

#### Note:

The help texts shown in the mapping file during parameterization can be different and the parameter 10 for "Monitor Mode" partly is not explained there.

Detailed information to all parameters you find in the "PROFIBUS DP Communication profile" documentation /1/.

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Leave the both other parameter for the fiber-optical interface to their default setting (Redundancy = 1, Network Size = 0).

## 3. Checking Correct Settings at the Device

After downloading the parameter set, the correct settings of the PROFIBUS DP module can be checked using the *Modulinfo* menu at the device.



#### Note:

Only SIPROTEC devices with firmware V4.50 or higher support the function of displaying module-specific information at the device display.

The display of module-specific information is accessible with the following menu items or buttons:

- MENU
- Test/Diagnosis  $\rightarrow 5$
- Modulinfo  $\rightarrow$  5
- Port  $B \rightarrow 1$

Please refer to the "PROFIBUS DP Communication profile" documentation /1/ for a detailed explanation of the menu entries. As an example, the following entries show the correct fiber-optical settings for OLM V3 mode:

```
OLMCmp: V3, OLM/G12
OLMMod: Redundancy
OLMNWS: -
```

## 4. OLM Status Indications

In a redundant fiber-optical ring topology, a (single) fiber-optical line-break does not lead to a communication interruption between the PROFIBUS DP master and the PROFIBUS-DP slave. This line-break however must be recognized and repaired because with this line-break the redundancy is not present any more.

OLM status indications are available which can be routed to SIPROTEC objects and then evaluated in the SIPROTEC device or transmitted to the PROFIBUS DP master.

- "Li ne-break Channel A" Byte offset = 65535, Bit mask = 01(hex)
- "Li ne-break Channel B" Byte offset = 65535, Bit mask = 02(hex)

For 6MD66 devices with redundancy option only:

- "Li ne-break Channel A", second modul e Byte offset = 65535, Bit mask = 03(hex)
- "Li ne-break Channel B", second module Byte offset = 65535, Bit mask = 04(hex)

Please refer to the "PROFIBUS DP Communication profile" documentation /1/ for a detailed explanation and a routing example for these OLM status indications.

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# DIL Switch Settings of the OLM/G12

Set the DIL switches of the OLM/G12 for OLM V3 mode as follows:

S7 = 0

- S6 = 1
- S5 = 1
- S4 = 1
- S3 = 1
- S2 = 1
- S1 = 1
- S0 = 0

For further information about the OLM/G12 devices please refer to the Operating Instruction /4/.



Note:

OLM/G12 devices need a power supply voltage of 24 VDC.

We recommend using the wide-range power supply unit 7XV5810-0BA00 when 24 VDC is not available for the OLM/G12 device at the mounting location.

## **Configuration Notes for the PROFIBUS DP Master**

## 1. GSD Files

Use the following GSD file for PROFIBUS DP modules with fiber-optical interface File name: "SI1\_80BC.GSD"

Model name: SIPROTEC4 DP-Fibre\_HWRev4

For 6MD66 devices with redundancy option only File name: "SIEM8138.GSD"

Model name: SIPROTEC4 DP Redundant

The GSD files are available at the same Internet location than the "PROFIBUS DP Communication profile" documentation /1/.

## 2. Retry Limit and Slot Time

Every fiber-optical SIPROTEC communication module contains an Optical Link Module.

An OLM (the build-in OLM on the SIPROTEC communication module or the OLM/G12 device) causes a message transmission delay on the bus. Therefore, the parameter "Slot time ( $t_{slot}$ )" has to be set to correct values in order to adapt supervision times in the PROFIBUS DP master.

For a SIMATIC S7 used as PROFIBUS DP master you get the correct value for "Slot time" when you enter the "Number of OLM" in the *Network settings* dialog of the parameterization system STEP7.

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				Revised	Dr. Wache	Communication Modules			
				Norm.		PROFIBUS DP / Fiber-optical Ring			
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		<u> </u>					-	
	Properties - General	PROFIBUS Network Setting	s		×			
	Highest Address	PROFIBUS	126	▼ □ Change	Options			
	Transmi	ssion Rate:	45 45 (31 25	Khns	Network Stations Cables			
			93.75 Kbps 187.5 Kbps 500 Kbps 1.5 Mbps		Copper Cable	cable configuration		
	Profile:		3 Mbne		Number of Repeaters: 0	Cable Length: 0.000	km	
			Universal (Di User-Definer	P/FMS)	Number of OLM, OBT: 10	Cable Length: 0.000	km	
Figure 4: Numb	er of OLM							
Sat the "Rat	rv limit" at lea	et ogu	al to 3					
For this, the	profile "User-	define	d" has t	o be selecte	d.			
	Droportion - DD	mastoreu	stom		Y	Devices		
	General Group Pr	roperties Gro	oup assignment		×	6		
	Properties - P General Netw	ROFIBUS vork Settings		PROFIBUS	_CPU		X	
	Highest PR0	FIBUS		Bus Param	on cyclic distribution of the hus	parameters		
	Address:		125		: 300 t_bit	Tslot: 315	I t_bit	
	Transmission	Rate:	45.45 (31.2	5) Kbps Min Tedr	с <u>150</u> ÷ t_bit	Tid2: 150	t_bit	
			93.75 Kbps 187.5 Kbps 500 Kbps	Tset:	. International Contraction	Tid1: 37	' t_bit	
	Destiles		1.5 Mbps 3 Mbps	Tgui:	0 🛨 t_bit	Ttg: 26100 = 17.4	t_bit 4 ms	
	Profile:		DP Standard Universal ([	DP/FMS) Gap Fact	tor: 10 🛨	Ttr typically: 2004	t_bit	
			User-Define	ed Retry limit	t 3 ÷	= 1. Watchdog	3 ms	
						= 39.	t_bit 4 ms	
	- OK I							
Figure 5: Retry	limit							
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Figure 5: Retry	limit		Date	2007-08-20				
Figure 5: Retry	limit		Date Name	2007-08-20 Förster	Service	nformation SI	PROTEC 4	ŀ
Figure 5: Retry			Date Name Revised	2007-08-20 Förster Dr. Wache	Service Commun	nformation SI	PROTEC 4	4
Figure 5: Retry			Date Name Revised Norm.	2007-08-20 Förster Dr. Wache	Service Commur PROFIBI	nformation SI nication Modul JS DP / Fiber-o	PROTEC 4 les optical Rin	l Ig
Figure 5: Retry	limit		Date Name Revised Norm.	2007-08-20 Förster Dr. Wache	Service Commur PROFIBI	nformation SI hication Modul JS DP / Fiber-o	PROTEC 4 les optical Rin	k Ng Page
Figure 5: Retry			Date Name Revised Norm.	2007-08-20 Förster Dr. Wache ENSAG D E A	Service Commur PROFIBI	nformation SI nication Modul JS DP / Fiber-o	PROTEC 4 les optical Rin	N Ng Page
Figure 5: Retry	limit	Fö	Date Name Revised Norm. SIEM PT Power	2007-08-20 Förster Dr. Wache ENSAG D E A Transmission	Service Commur PROFIBI	nformation SI hication Modul JS DP / Fiber-o	PROTEC 4 les optical Rin	k Ig Page 6 / 7

# **Related Documents**

/	/1/ Siemens AG, PTD EA Manual SIPROTEC4 Communication module – PROFIBUS-DP Communication profile C53000-L1840-B001-03 Revision from V4.0 <u>www.siprotec.com</u> → Prot.Devices → General information → Communication protocol descriptions									
/	<ul> <li>/2/ 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 → Communication → Communication protocol descriptions</li> </ul>									
/	<ul> <li>/3/ Siemens AG, PTD EA Manual SIPROTEC4 Communication modules PROFIBUS DP Bus mapping (with redundancy option) Bay control unit 6MD663/6MD664 C53000-L1840-B011-03 Revision form V2.00 www.siprotec.com</li> <li>&gt; Descriptions &gt; Communication &gt; Communication protocol descriptions</li> </ul>									
/	<ul> <li>/4/ Siemens AG, A&amp;D</li> <li>Description and Operating Instruction</li> <li>SIMATIC NET PROFIBUS</li> <li>Optical Link Modules</li> <li>(including OLM/G12)</li> </ul>									
	5/ Siemens A Wide-range 7XV5810-0 <u>www.siprot</u>	G, PTD EA Power St BA00 <u>ec.com</u> →	A upply l Acces	Jnit ssories						
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