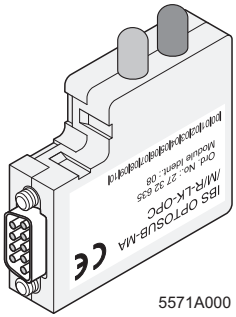
IBS OPTOSUB-MA/M/R-LK-OPC(-2MBD)

Optical Fiber Converter
With a Data Transmission Rate of
500 kbaud or 2 Mbaud



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Data Sheet 5571D 07/2001

Function

The IBS OPTOSUB-MA/M/R-LK-OPC(-2MBD) module converts the INTERBUS remote interface to polymer fibers.

An INTERBUS controller board can be equipped with an optical fiber interface using this converter. Unlike other converters, this interface can automatically control the optical transmission power and provides improved bus system diagnostics (optical path diagnostics).

The converter is a bus device, since it is equipped with an INTERBUS protocol chip (OPC).

Features

- 9-pos. D-SUB connector for plugging onto the controller board
- Optical fiber connection via F-SMA connectors
- 500 kbaud or 2 Mbaud data transmission rate
- Optical path diagnostics
- Extended diagnostic options
- Voltage supply through the INTERBUS interface
- Supports paths with optical transmission

Please observe the Optical Fiber Installation Guidelines (DB GB IBS SYS FOC ASSEMBLY).

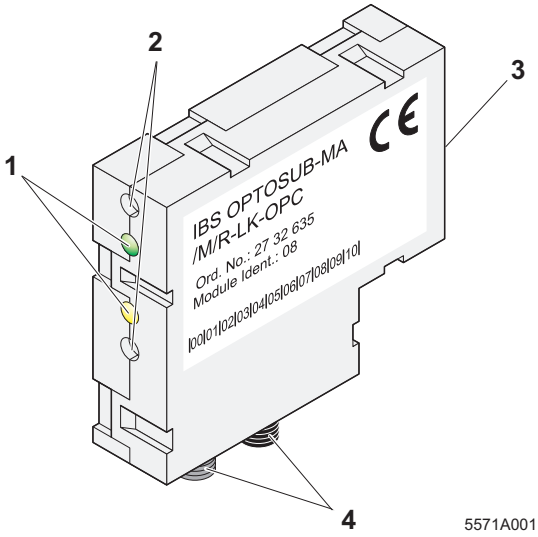

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Figure 1 IBS OPTOSUB-MA/M/R-LK-OPC

1 Diagnostic indicators
2 Threaded joint for the D-SUB connector
3 9-pos. D-SUB male connector
4 Connection for F-SMA connectors

Connector Pin Assignment

Incoming Remote Bus (9-pos. D-SUB))

Pin	Signal	Designation
1	DO	Data, sending direction
2	DI	Data, receiving direction
3	GND	GND (pin 3 and pin 4 internally jumpered)
4	GND	
5	VCCI	5V DC supply, electrically isolated (is only required for RBST connector detection)
6	/DO	Negated data, sending direction
7	/DI	Negated data, receiving direction
8	VCC	5 V DC supply
9	RBST	Connector detection (pin 5 and pin 9 are internally jumpered)

Outgoing Remote Bus (F-SMA Connectors))

Connector	Direction	Wire Color
IN	Receive data	Black
OUT	Send data	Orange

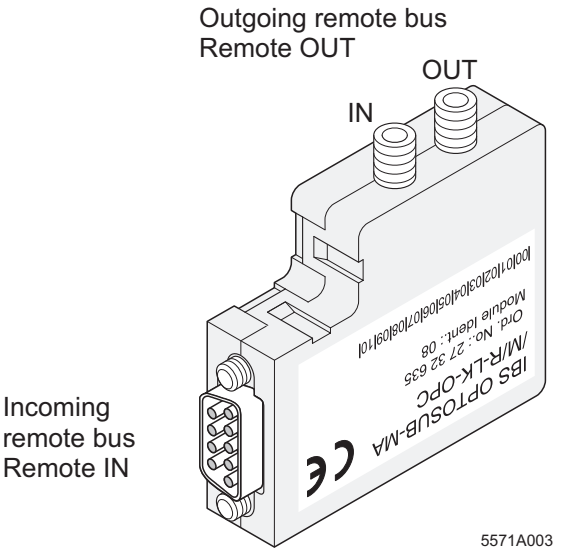

Figure 2 Position of the connectors

Local Diagnostic and Status Indicators

Des.	Color	Meaning
IB DIAG	Green	INTERBUS diagnostics
	ON:	Supply voltage present, bus active, no module error
	Flashing at 0.5 Hz:	Supply voltage present, bus not active
	Flashing at 2 Hz:	Supply voltage present, module error (bus can be active or not active)
	OFF:	Supply voltage not present
FO1	Yellow	Status of the incoming optical fiber path
	ON:	If the previous device has optical path diagnostics, the system reserve of the optical transmission has dropped.
	OFF:	Incoming optical fiber path is OK or the previous device does not have optical path diagnostics.

Special Features

Supports Paths with Optical Transmission

1 Adjustment of optical transmission power:

– Automatic recognition of the control function on other modules

– Additional diagnostics for optical transmission

2 Confirmation of optical system quality:

– No need for an optical cable measuring device

– Early error detection through I/O error message to the higher-level control or computer system and diagnostic display on the device

– Long-term monitoring of the transmission path is possible

3 Optical path diagnostics

Installation

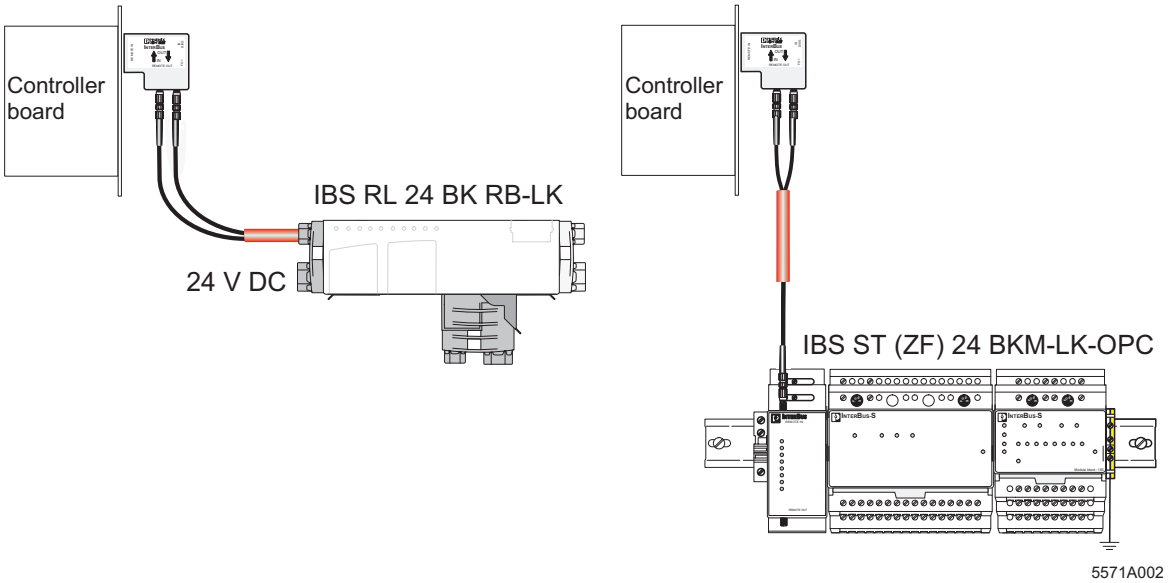

Figure 3 Connection examples

Connecting the Converter to the Controller Board

- Insert the converter into the INTERBUS interface of your controller board.
- Tighten the two screws manually with a bladed type screwdriver (e.g., SZF 1-0,6X3,5) through the openings above and below the diagnostics display.

An external voltage supply is not required for the converter. The converter is supplied via the INTERBUS interface.

Connecting Optical Fibers

Please refer to the Optical Fiber Installation Guidelines DB GB IBS SYS FOC ASSEMBLY when assembling polymer fiber cables.

Recommended F-SMA connector with bending protection: PSM-SET-FSMA/4-KT.

- Fit both wires of the polymer fiber cables with F-SMA connectors.
- Plug the F-SMA connectors into the connections provided and secure the connection with the cap nuts.

Please note that you must always connect sender and receiver with one another.

The label for the optical fiber connection (black arrow/orange arrow) corresponds to the color of the optical fiber cables.
Connect the individual optical fiber cables between adjacent terminals according to their color (e.g., orange cable for orange connections).

Compatibility With Controller Boards

You can connect the converter to the following controller boards.

Order Designation	Order No.	Plug-in Converter	Remark
IBS 24 ETH DSC/I-T	27 22 92 0	yes	
IBS 24 RFC/486DX/ETH/-T	27 23 00 0	yes	
IBS ABB DSC/SL/MEMC/I-T	27 22 89 4	yes	
IBS BA DSC/I-T	27 23 04 2	yes	
IBS GE 90-70 SC/I-T	27 22 84 9	yes	
IBS ISA FC/486DX/I-T	27 22 08 5	no	
IBS ISA FC/DI/I-T	27 25 11 8	no	
IBS ISA FC/I-T	27 22 02 7	no	
IBS ISA SC/486DX/I-T	27 23 94 5	no	
IBS MEA SC/I-T	27 25 59 0	yes	
IBS PC 104 SC-T	27 21 70 1	–	Connection is not present.
IBS PC ISA SC/I-T	27 19 23 4	no	
IBS PLC5 DSC/I-T	27 19 02 7	yes	
IBS S5 DSC/I-T	27 52 00 0	yes	
IBS S7 300 DSC-T	27 19 97 5	no	
IBS ST 24 RFC-T	27 25 52 9	yes	Observe the maximum power of the power supply unit used.
IBS STME 24 RFC-T	27 25 51 6	yes	
IBS USC/4-EVA	27 46 25 2	–	Connection is not present.
IBS VME3H SC/I-T	27 22 86 5	yes	
IBS VME6H SC/I-T	27 22 85 2	yes	
IBS VME6H SC/RI/I-T	27 22 83 6	yes	
IBS S7 400 DSC/I-T	27 19 96 2	yes	
IBS S7 400 ETH DSC/I-T	27 31 10 2	yes	

Programming Data

ID code	08_{hex}
Length code	00_{hex}
Process data channel	0 bits
Input address area	0 bytes
Output address area	0 bytes
Parameter channel (PCP)	0 bytes
Register length (bus)	0 bytes

Housing Dimensions

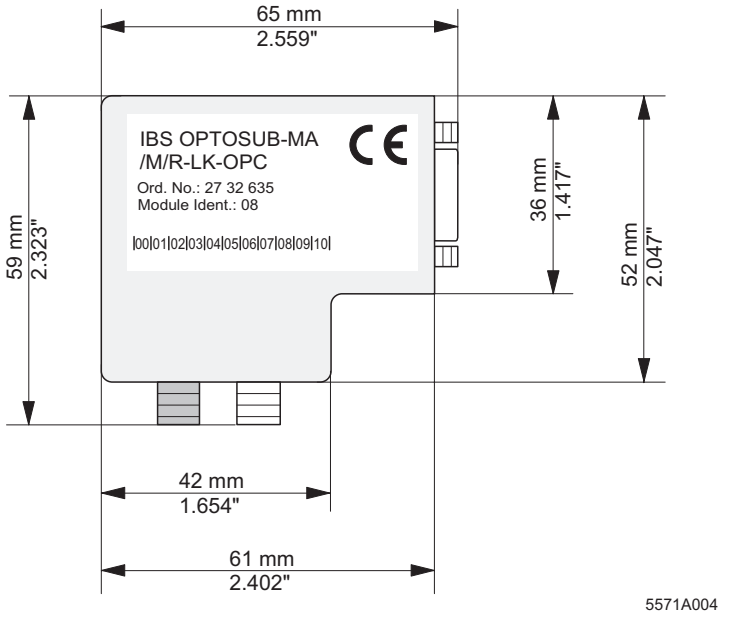

Figure 4 Dimensions

Technical Data

General Data	
Degree of protection	IP 20
Ambient temperature	Operation: 0°C to +55°C (32°F to +131°F) Storage: -20°C to +70°C (-4°F to +158°F)
Air and creepance distances	DIN VDE 0110-1:1989-01

Supply Voltage	
Nominal voltage	5 V DC
Permissible range	4.75 V DC to 5.25 V DC
Current consumption	
IBS OPTOSUB-MA/M/R-LK-OPC	200 mA, maximum
IBS OPTOSUB-MA/M/R-LK-OPC-2MBD	220 mA, maximum
Permissible line length	The module should only be connected directly to the controller board.
Surge protection	No
Protection against polarity reversal	No

INTERBUS Interface	
Incoming remote bus	9-pos. D-SUB male connector Differential voltage interface according to RS-485
Outgoing remote bus	F-SMA connector Optical fiber (polymer fiber 980/1000 µm)
Data transmission rate	
IBS OPTOSUB-MA/M/R-LK-OPC	500 kbaud
IBS OPTOSUB-MA/M/R-LK-OPC-2MBD	2 Mbaud
Wavelength	650 nm, typical
Optical output power for operation at 0°C to +55°C (32°F to 131°F)	-2.0 dBm ≥ P_{opt} ≥ -6.2 dBm
Optical output power after voltage reset at 0°C to +55°C (32°F to +131°F)	-3.5 dBm ≥ P_{opt} ≥ -7.7 dBm
Optical receiver responsivity at 0°C to +55°C (32°F to 131°F)	≤ -20 dBm

INTERBUS Interface	
Optical overrange at 0°C to +55°C (32°F to 131°F)	> -2.0 dBm
Power reduction resulting from the wavelength drift	Taken into consideration
System reserve	> 3 dBm
Bit error rate	10^{-9}

Optical Fiber Cable	
Cable type	Step index
Fiber (core/cladding diameter)	980/1000 µm
Numerical aperture	0.47
Attenuation (50 m [164.042 ft.] fiber measured with 660 nm LED source)	≤ 230 dB/km
Transmission length between IBS OPTOSUB-MA/M/R-LK-OPC(-2MBD) and INTERBUS devices with 50 m (164.042 ft.) system without optical path diagnostics	1 m, minimum, to 35 m (3.281 ft. to 114.829 ft.)
Transmission length between IBS OPTOSUB-MA/M/R-LK-OPC(-2MBD) and INTERBUS devices with 70 m (229.659 ft.) system or all INTERBUS devices with optical path diagnostics	1 m, minimum, to 50 m (3.281 ft. to 164.042 ft.)
Connector type	F-SMA standard (type 905 acc. to IEC 60874-2)

I/O Error Message	
MAU error	Yes

Ordering Data

Description	Order Designation	Order No.
Optical fiber converter with a transmission speed of 500 kbaud	IBS OPTOSUB-MA/M/R-LK-OPC	27 32 63 5
Optical fiber converter with a transmission speed of 2 Mbaud	IBS OPTOSUB-MA/M/R-LK-OPC 2MBD	27 31 45 8
F-SMA connector set for polymer fiber cables with bending protection (4 pieces)	PSM-SET-FSMA/4-KT.	27 99 72 0
Polymer fiber cables for use in humid climates, duplex, 980/100 µm, installation	PSM-LWL-KDHEAVY-980/1000	27 44 31 9
Polymer fiber cable with increased alternating bending ability (flexible cable tracks, industrial robots) for indoor use	PSM-LWL/KDFLEX-980/1000	27 99 74 6
Optical fiber data line: Polymer fiber cable, duplex, 980/1000 µm, red, welding-splash-resistant in standard applications; sold by the meter, cable is not pre-assembled	PSM-LWL-RUGGED-980/1000	27 44 32 2
Optical fiber data line (flexible): Polymer fiber cable, duplex, 980/1000 µm, dark red, welding-splash-resistant in standard applications; tested for flexible cable tracks, sold by the meter cable is not pre-assembled	PSM-LWL-RUGGED-FLEX-980/1000	27 44 33 5
Optical Fiber Installation Guidelines	DB GB IBS SYS FOC ASSEMBLY	94 23 43 9
Bladed type screwdriver	SZF 1-0,6X3,5	12 04 51 7

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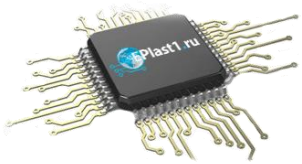

Как с нами связаться

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