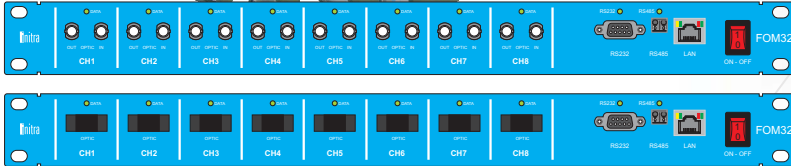


# Fiber optic modem **FOM32 SERIES**

SEE IT ALL



## PRODUCT DESCRIPTION

Description

FOM32 is a converter and/or data concentrator for serial communications, using different transmission media for communication transfer and exchange.

FOM32 supports the following transmission media: MM fiber, POF fiber and SM fiber; as well as the following standard communications protocols: RS232, RS485, RS422 and Ethernet.

FOM32 utilises automatic adjustment of optical wavelength and optical power, enabling a transparent transfer from one optic medium to another and, consequentially, removing the need for user intervention in adjusting the communication rate.

The device supports three most common types of optical media: multi mode (MM), single mode (SM) and plastic (POF) fiber. The multi-mode connection uses ST connectors, the single-mode fibers use SC-BIDI connectors and plastic POF fibers use POF connectors. It is also worth mentioning that the integrated SC-BIDI connector on a single-mode fiber also enables the connection of a multi-mode fiber.

The FOM32 model is manufactured in two versions. The first variant is modular (FOM32MU) and housed in a case ready for installation to a DIN rail. The second, multi-channel FOM32MR8 variant in a 19" case is ready for installation into standard 19" communication cabinets. Both variants are equipped with LED indication of status for each communication path and power supply to device.

(See page 2 for a detailed description.)

## APPLICATIONS

Applications

- Optical transponder
- Optical repeater
- Optical concentrator
- Concentrator of serial communication
- LAN transmission of serial communication

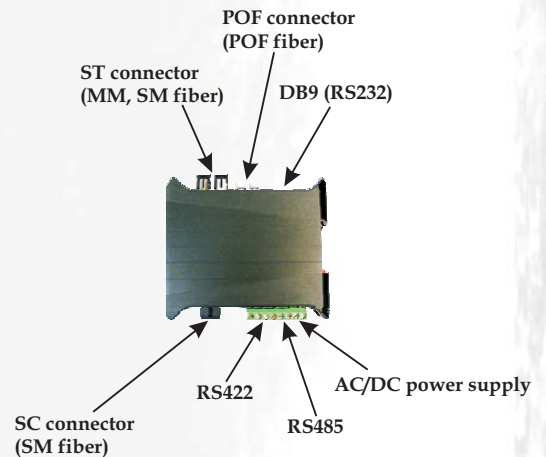
## FEATURES

Features

- ▶ RS232, RS485 AND RS422 TRANSM. OVER MM AND/OR SM AND/OR POF FIBER
- ▶ OPERATES AS A CONVERTER AND/OR DATA CONCENTRATOR
- ▶ ST, SC, POF AND SC-BIDI CONNECTORS
- ▶ OPERATES AT TRANSM. DISTANCES UP TO 20KM (WITH SM CONNECTION)
- ▶ LED INDICATORS PROVIDE FEEDBACK ABOUT TRANSM. AND DEVICE STATUS
- ▶ MAX 27 VAC / 40 VDC POWER SUPPLY THROUGH TERMINAL BLOCKS
- ▶ DIN AND FRAME CASE VERSIONS

## PICTORIAL DESCRIPTION

Pictorial desc.



## Part numbers

DIN		
FOM32-□□□		
(SM)SC-BIDI	MM(ST)	POF
0 - NO	0 - NO	0 - NO
1 - TRANSMITTER	1 - YES	1 - YES
2 - RECEIVER		

19" FRAME	
FOM32MR8A - 8CH, SM RECEIVER, RS232, RS485, ETHERNET, 12VDC	
FOM32MR8B - 8CH, MM RECEIVER, RS232, RS485, ETHERNET, 12VDC	

Ordering info



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## PRODUCT DESCRIPTION

Serial communications have become an indispensable part of almost any complex electronic device which requires control, monitoring or exchange of various types of data over different distances and using different transmission media. Serial communication can be transferred over different transmission media and over distances ranging from a few centimetres to a couple thousand kilometres.

EIA has defined some standards for data exchange beginning with a prefix RS (now EIA). The architectures and protocols of data exchange methods RS232, RS485, RS422 and RS423 have been standardised. Each architecture has its advantages and disadvantages, as well as the intended use in specific systems.

There is often a desire, need and even a requirement for the interchange and conversion of different architectures. An important aspect in data conversion is to maintain the data rate and protocol, as well as to transfer the data to a peer destination intact. The basic converters that are quite common can be classified into following groups:

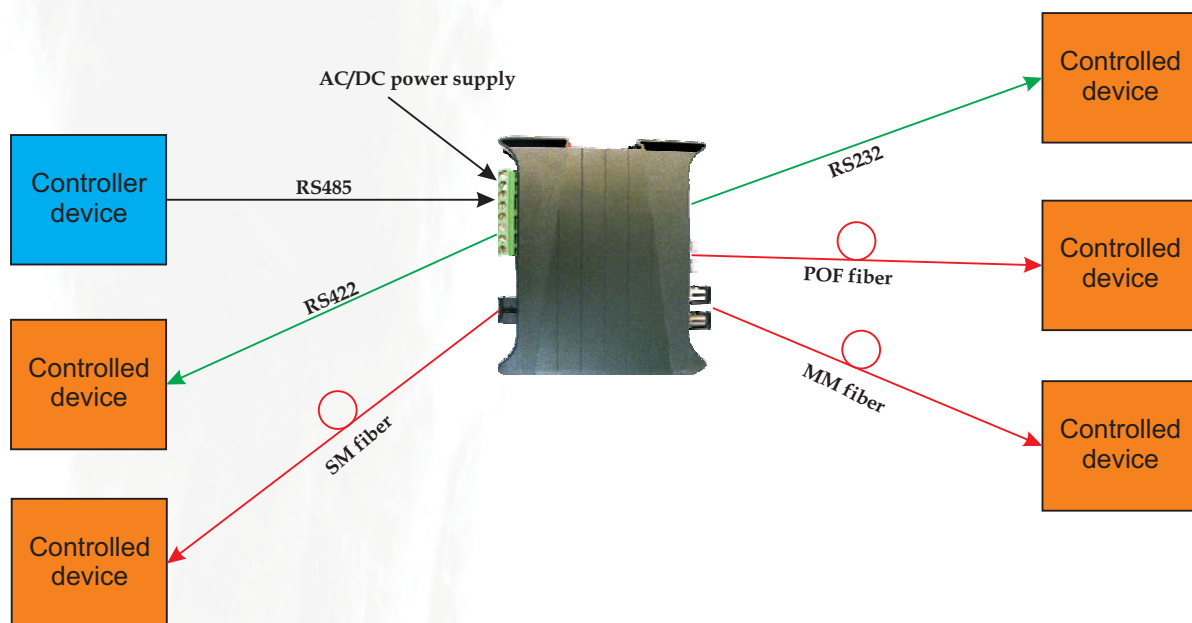
RS232 $\leftrightarrow$ RS485, RS232 $\leftrightarrow$ RS422, RS485 $\leftrightarrow$ RS422, coinciding with the group of data converters for the optical media RSXXX $\leftrightarrow$  2xMM or RXXX $\leftrightarrow$  SM or RSXXX $\leftrightarrow$  2xPOF. Initra d.o.o. has had all these converters in its product offer from the very beginning of our operations. With FOM32, we have decided to make a step further and merge all the mentioned serial architectures AND optical media to a SINGLE product.

FOM32 is equipped with 6 interfaces: MM, SM-BIDI, RS232, RS485, RS422 and ETHERNET\*.

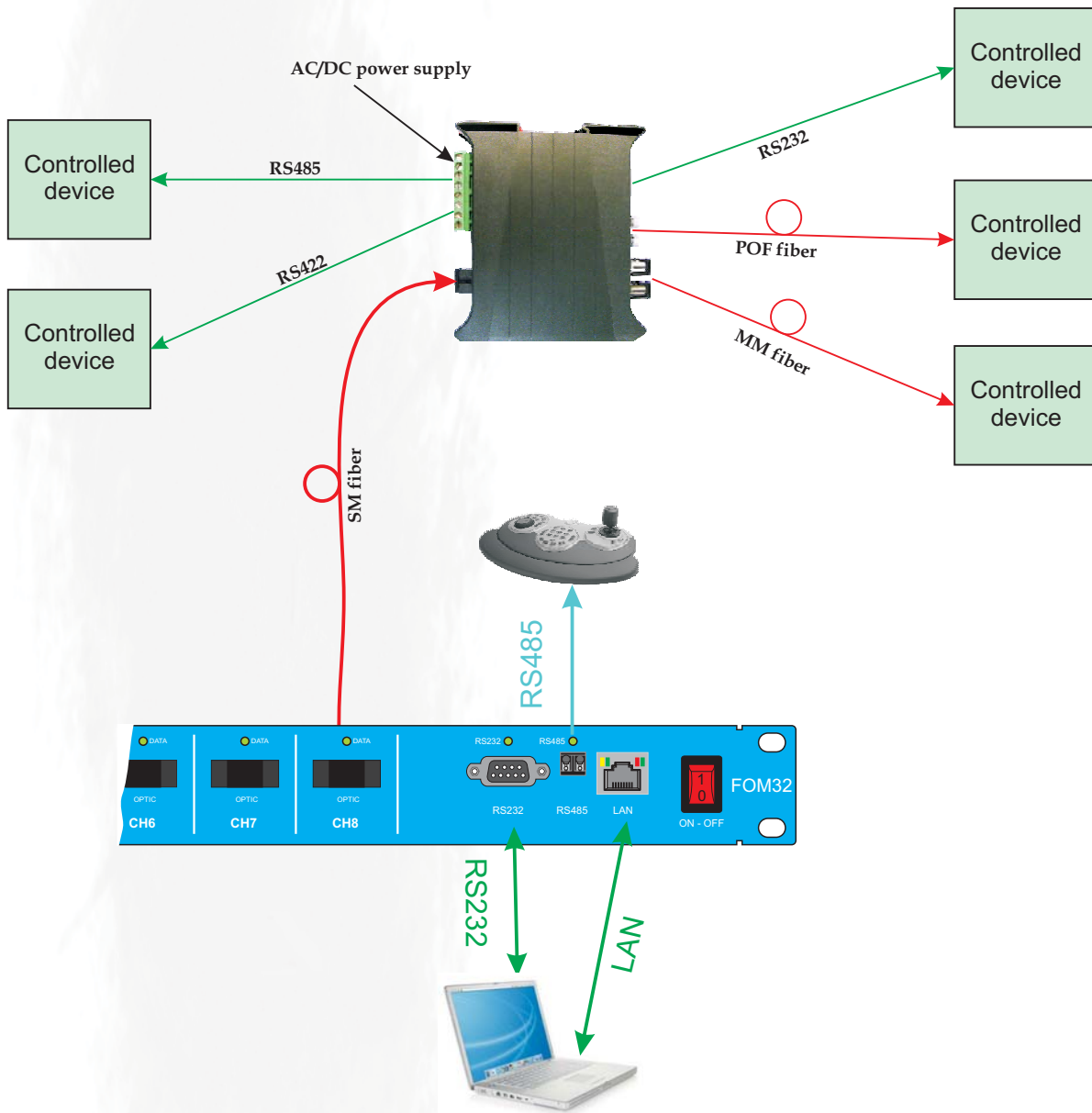
One of the available interfaces operates as the master interface, while the others are operating in the slave mode. This means the communication entering the interface is converted and sent to ALL other interfaces.

For example: the data packed to RS485 standard is input to FOM32 over a copper wire. The data is converted and distributed to all the other available/installed interfaces, meaning the data arriving over the RS485 communication architecture is converted to RS422 and RS232 architectures and sent to MM fiber, SM fiber and POF fiber SIMULTANEOUSLY. The same data is available on every other interface, but packed to different architectures.

\*Only available with FOM32MR8



USING AN INDIVIDUAL CHANNEL



## TECHNICAL DATA

## OPTICS - TRANSMITTER - Multi Mode

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Optical Connector	ST				
Mode	Multi Mode ( MM )				
Output Center Wavelength			820		[ nm ]
Optical Power - Multi Mode	with 50 / 125 $\mu$ m fibre		-15,8		[ dBm ]
Optical Power - Multi Mode	with 62.5 / 125 $\mu$ m fibre		-12		[ dBm ]
Link Distance				2000	[ m ]
BER	Data rate <5 MBd		10 <sup>-9</sup>		

## OPTICS - RECEIVER - Multi Mode

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Optical Connector	ST				
Mode	Multi Mode ( MM )				
Output Center Wavelength			820		[ nm ]
Receiver Sensitivity			-21		[ dBm ]
Link Distance				2000	[ m ]

## OPTICS - TRANSMITTER - BIDI

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Optical Connector	SC				
Mode	Multi Mode ( MM ), Single Mode ( SM )				
Output Center Wavelength			1310		[ nm ]
Optical Power	Measured at 20km link	-8		-3	[ dBm ]
Link Distance	SM/MM			20 / 2	[ km ]

## OPTICS - RECEIVER - BIDI

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Optical Connector	SC				
Mode	Multi Mode ( MM ), Single Mode ( SM )				
Output Center Wavelength			1550		[ nm ]
Receiver Sensitivity	Measured at 20km link		-22	-22	[ dBm ]
Link Distance	SM/MM			20 / 2	[ km ]

## TECHNICAL DATA

## OPTICS - TRANSMITTER - POF

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Optical Connector	POF				
Mode	Plastic Optical Cable				
Output Center Wavelength			600		[ nm ]
Optical Power		-13,6		-4,5	[ dBm ]
Link Distance	Plastic Cable	17	43		[ m ]

## OPTICS - RECEIVER - POF

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Optical Connector	POF				
Mode	Plastic Optical Cable				
Output Center Wavelength			600		[ nm ]
Receiver Sensitivity		-20		-42	[ dBm ]
Link Distance	Plastic Cable	17	43		[ m ]

## DATA - RS 485

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Baud Rate Speed	RX / TX - standard	0,6		1000	[ kbps ]
Baud Rate Speed Detection	Automatic				
Connector	2-pin Terminal				

## DATA - RS 422

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Speed				10	[ MBps ]
Connector	4-pin Terminal				

## DATA - RS 232

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
Baud Rate ( EIA 232 )		0		115200	[ kbps ]
Connector	9 - pin D-sub, FEMALE				



## TECHNICAL DATA

## ETHERNET

PARAMETER	TYPE / CONDITIONS
Ethernet interface	10/100BaseT Ethernet
Module interface	Ethernet-to-serial
Supported network protocols	UDP, TCP, ICMP (ping) and DHCP
Supported serial interface	UART*
Module software support	IDST (Initra device server toolkit)
Connector	Standard RJ-45

\*- Baudrates up to 115'200bps; none/even/odd/mark/space parity and 7/8 bits/character; full-duplex UART mode with optional flow control and half-duplex UART mode with automatic direction control; RX, TX, RTS, CTS, DTR, and DSR lines.

## GENERAL

PARAMETER	TYPE / CONDITIONS	MIN	TYPICAL	MAX	UNITS
<b>ELECTRICAL</b>					
Power Source	AC	8	9	27	[ V AC ]
Power Source	DC	11	12	40	[ V DC ]
Power Consumption	DIN/ 19" FRAME			2,5/25	[ W ]
<b>ENVIRONMENTAL</b>					
Temperature range	storage	-40		+70	[ ° C ]
	operating	-25		+85	[ ° C ]
Humidity	non - condensing	0		95	[ % ]
<b>MECHANICAL - DIN</b>					
Dimensions	Width x Depth x Height		100x120x22		[ mm ]
Case type	DIN plastic enclosure				
Case material	plastic				
Mounting	DIN rail				
Weight	unit		142		[ g ]
<b>MECHANICAL - RACK</b>					
Dimensions	19" rack mount, Width x Depth x Height		482x620x44		[ mm ]
Case type	19"1U freestanding				
Case material	metal				
Mounting	rack mount with rack ears into 19" rack shelf				
Weight	unit		2,0		[ Kg ]
<b>GENERAL</b>					
Compliances	CE				
MTBF	ground fix 45°C per MIL217F		240000		[ h ]
Warranty	2 years parts and labor				



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