MULTI DROP NETWORK OR FAILSAFE RING

The RFO485 range of fiber optic repeaters allows you to create an optical multidrop network or a failsafe ring.

Various models for multimode or single mode fibre optics are available.

Great attention has been paid to security functions: All models provide an alarm output in case of a cut in the fibre optic link as well as a double DC suppy input to facilitate maintenance.

Key-features

- Up to 1.5 Mb/s asynchronous
- Failsafe-ring
- RS232 / RS485 / RS422 interface
- Profibus DP, MODBUS, DH485, UNITELWAY, SYSMACWAY
- Up to 68 km range (single mode)
- Alarm output
- Double DC supply
- DIN rail mounting
- 9 to 40 VDC power supply

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TELECOMMUNICATIONS

Fibre optic repeater
RS232-RS485-RS422 interface
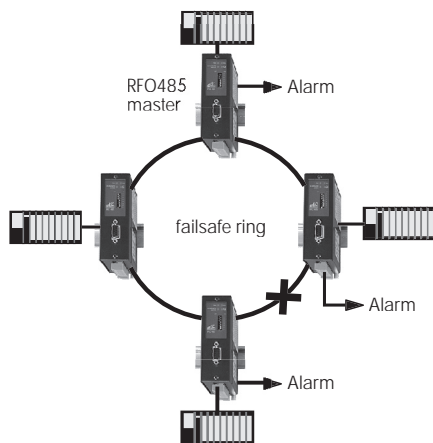
A complete range for long distances

The RFO485 with asynchronous RS232-RS485-RS422 interfaces are available as well for multimode F.O. (820 nm or 1300 nm optical wavelenght) or single mode F.O. (1300 nm optical wavelength).

The AFO485-AST70 model has a high optical power budget ensuring a 68 km range through single mode F.O..
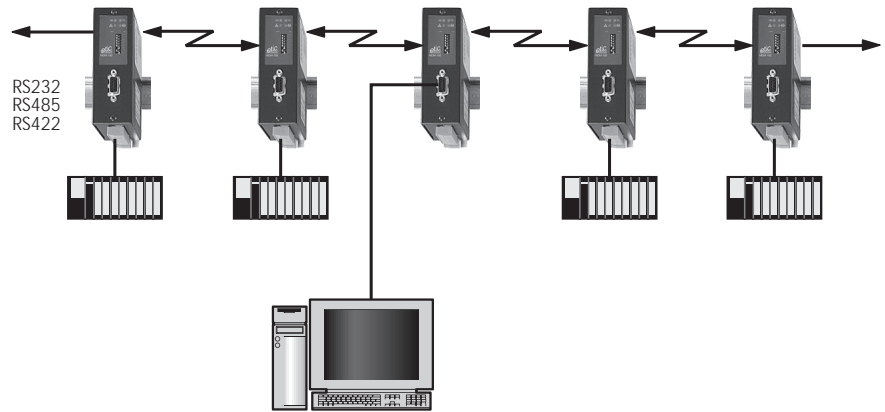
Failsafe ring

The failsafe ring function keeps the network operational if one fiber optic fails. If a failure occurs, the alarm output of the «ring master module» is opened as well as the alarm ouputs of the modules connected to the F.O. in failure.

Characteristics	
Dimensions	115 x 48 x 97 mm (h, l, d)
E.M.I.	89/366/CEE / EN 50082-2 / EN 5522 / EN 61000-4-5
Protection class	IP30
Power requirements	9 to 40 VDC 260 mA -24 VDC
Operating temperature	-20°C/ + 60°C dry air
RS232	■ Half-duplex ■ Not isolated ■ Asynch. 7 or 8 bits + 1 start, 1 or 2 stops ■ Parity: None / odd / even ■ 1,2 to 115,2 kb/s
RS485 - RS422	■ Half-duplex ■ Not isolated ■ Asynch. 7 or 8 bits + 1 start, 1 or 2 stops ■ Parity: None / odd / even ■ 1,2 to 115,2 kb/s - 93.5 - 187.5 - 500 - 1500 kb/s
Field bus	PROFIBUS DP, MODBUS, UNITELWAY, DH-485, SYSMAC-WAY
Configuration	8 micro-switches
Type of fibre optic	■ Multimode or Single mode ■ Reception and transmission F.O.
Optical connector	ST or SC
Modulation	«On-line» Miller code
Alarm output	Open when a failure has been detected on any RX F.O. or when the supply voltage is off

| F.O. repeaters (references for new designs)						
RFO485 - AST • •	**22**	**33**	**44**	**55**	**66**	**77**
RFO485 - ASC • •						
RS232 - RS485 - RS422 half-duplex	•	•	•	•	•	•
Multimode F.O.	•					
Single mode F.O.		•	•	•	•	•
1300 nm	•	•	•	•	•	•
Min. power budget (dB 25°C)	12	19	12	30	34	37
Alarm output	•	•	•	•	•	•
Double DC supply input	•	•	•	•	•	•
F.O. connectors	ST or SC					

F.O. repeaters				
RFO485 - • •	11	22	33	44
RS232 - RS485 - RS422 Half-duplex	•	•	•	•
Multimode F.O.	•	•		
Single mode F.O.			•	•
1300 nm	•	•	•	•
Min. power budget (dB 25°C)	12	12	17	10
Alarm output	•	•	•	•
Double DC supply input	•	•	•	•
ST connectors	•	•	•	•

Description
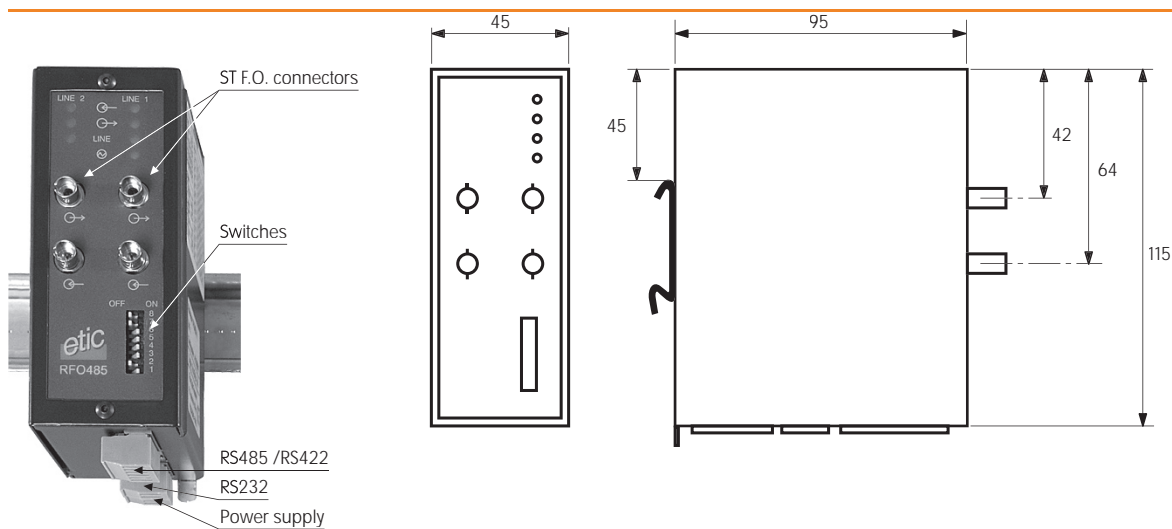
Range (multi-drops)

Table 1 : Range over multimode F.O.				F.O. type G50/125		F.O. type G62/125	
Reference	Optical source	Optical pow. (dB)	Reserve (dB)	Loss (dB/km)	Range (km)	Loss (dB/km)	Range (km)
		A	B	C	D1=(A-B)/C	C	D1=(A-B)/C
RFO485-11	820 nm	12	3	2,5	3,5	3,5	3,5
RFO485-22	1300 nm	12	3	1	9	1,5	6
RFO485-AST22	1300 nm	8	3	1	5	1,5	6

Table 2 : Range over single mode F.O.					
Reference	Optical source	Optical pow. (dB)	Reserve (dB)	Loss (dB/km)	Range (km)
		A	B	C	D1=(A-B)/C
RFO485-33	1300 nm	17	3	0,5	28
RFO485-44	1300 nm	10	3	0,5	14
RFO485-AST33	1300 nm	19	3	0,5	32
RFO485-AST44	1300 nm	12	3	0,5	18
RFO485-AST55	1300 nm	30	3	0,5	54
RFO485-AST66	1300 nm	34	3	0,5	62
RFO485-AST77	1300 nm	37	3	0,5	68

Bridgeable distance (ring)

Distance D1 between 2 repeaters :

The distance between 2 repeaters cannot exceed the value (D1) indicated in table 1 and 2 on the previous page.

Moreover, that distance cannot exceed the distance indicated in table 3 below according to the asynchronous data rate.

Table 3 Distance between 2 repeaters	
kb/s	(km)
9.6	20
19.2	10
38.4	5
93.75	2,1
115.2	1,7
187.5	1
500	0,4
1500	0,1

Maximum ring length D2 :

The ring length cannot exceed the value D2 (Km) as indicated below:

$D2 = 200 \times (40-N) / R$ if the silence between the answer of any slave and the next request is greater than 4 character times.

$D2 = 200 \times (20-N) / R$ if the silence between the answer of any slave and the next request is greater than 2 character times.

$D2 = 200 \times (10-N) / R$ if the silence between the answer of any slave and the next request is greater than 1 character times.

N= Number of repeaters
R (Kb/s) = Asynchronous data rate (1.2 to 1500)
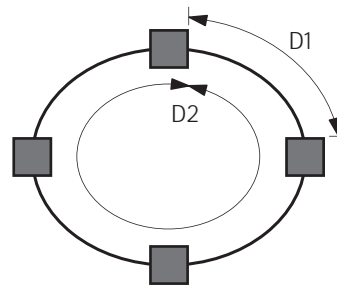
Accessories

Designation	Characteristics	Reference
RS232 cable	L. 1,5 m - DB9 M / RJ45	CAB593
Multimode F.O. cable	L. 1 m - ST connector	CAB594
Monomode F.O. cable	L. 1 m - ST connector	CAB595
Power supply modules	Refer to Power supply modules for details	AS05 - AS06 - AS07
Power supply surge protection	Refer to Protections for details	PS05

Connecting cables for PLCs

Refer to Cables section (page 41) to select the cable corresponding to your application.

Delivery content

RFO485	Repeater - User guide in English