

## Redundancy module - FL RED 2001E PRP 2LC - 2701864

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Ethernet redundancy module for redundant networks with the redundancy protocol PRP.

### Product Description

The compact redundancy modules (RED) enable flexible and economical design of high-availability Ethernet networks in the field of energy and automation. With robustness according to IEC 61850-3 and IEEE 1613, their wide temperature range from -40°C to +70°C, and extensive power supply range from 18 to 58 V DC, they cover all the requirements of industrial and energy technology applications. Parallel redundancy according to IEC 62439 enables high availability networks without switch-over time to be established.


### Your advantages

- ✔ Meets the requirements of IEC 61850-3 and IEEE 1613
- ✔ Standardized PRP redundancy function according to IEC 62439-3
- ✔ Easy startup without configuration
- ✔ Parallel redundancy without switch-over times for maximum availability
- ✔ No loss of packets in the event of network failure
- ✔ Low power consumption during operation
- ✔ -40°C ... +70°C ambient temperature
- ✔ Alarm contact



IEC 61850-3

### Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 867450
GTIN	4046356867450
Weight per Piece (excluding packing)	580.000 g
Custom tariff number	85176200
Country of origin	Germany

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## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	40 mm
Height	100 mm
Depth	109 mm

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-45 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	70 kPa ... 106 kPa (3000 m above sea level)
Air pressure (storage/transport)	70 kPa ... 106 kPa (3000 m above sea level)

### Interfaces

Interface	Ethernet (RJ45)
No. of ports	1 (RJ45 port)
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)
Data flow control/protocols	IEC 61850-3, IEEE 1613
Interface	Ethernet FO
No. of ports	2 (LC multi-mode)
Transmission physics	multi-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	2 km (per segment)

### Function

Basic functions	Ethernet redundancy module for the Parallel Redundancy Protocol
Redundancy	PRP (Parallel Redundancy Protocol)
Status and diagnostic indicators	LEDs: U <sub>S1</sub> , U <sub>S2</sub> (redundant voltage supply), link and activity per port

### Supply voltage

Supply voltage	24 V DC (redundant)
	48 V DC (redundant)
Residual ripple	3.6 V <sub>PP</sub> (within the permitted voltage range)

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## Technical data

### Supply voltage

Supply voltage range	18 V DC ... 58 V DC
Typical current consumption	250 mA (at $U_s = 24$ V DC)

### General

Mounting type	DIN rail
Type AX	Block design
Net weight	444 g

### Connection data

Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	1.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	1.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16

### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 61000-6-4
Noise immunity	IEC 61850-3, IEEE 1613, EN 61000-6-2: 2005

### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

## Classifications

### eCl@ss

eCl@ss 10.0.1	19170404
eCl@ss 4.0	24010500
eCl@ss 4.1	24010500
eCl@ss 5.0	19030100
eCl@ss 5.1	19030100
eCl@ss 6.0	19170100
eCl@ss 7.0	19170101
eCl@ss 8.0	19170101
eCl@ss 9.0	19170101

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## Classifications

### ETIM

ETIM 4.0	EC001478
ETIM 5.0	EC000515
ETIM 6.0	EC000515
ETIM 7.0	EC000515

### UNSPSC

UNSPSC 6.01	20142601
UNSPSC 7.0901	20142601
UNSPSC 11	20142601
UNSPSC 12.01	20142601
UNSPSC 13.2	43201404
UNSPSC 18.0	43201404
UNSPSC 19.0	43201404
UNSPSC 20.0	43201404
UNSPSC 21.0	43201404

## Approvals

### Approvals

Approvals

UL Listed / cUL Listed / cULus Listed

Ex Approvals

### Approval details

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
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cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
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### Approvals

cULus Listed



### Accessories

#### Accessories

#### Data cable preassembled

Patch cable - NBC-R4AC-R4AC-IE8A/.../... - 1411854



Patch cable, degree of protection: IP20, number of positions: 8, 10 Gbps, CAT6<sub>A</sub>, cable outlet: straight

Patch cable - NBC-R4AC/10G-R4AC/10G-94F/2,0 - 1408360



Patch cable, CAT6<sub>A</sub>, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 2.0 m

Patch cable - NBC-R4AC/10G-R4AC/10G-94F/3,0 - 1408365



Patch cable, CAT6<sub>A</sub>, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 3.0 m

Patch cable - NBC-R4AC/1,0-93B/R4AC - 1408968



PROFINET patch cable, shielded, star-quad, 22 AWG stranded (7-wire), green, straight RJ45 male connector/IP20 to straight RJ45 male connector/IP20, length: 1.0 m

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### Accessories

Patch cable - NBC-R4AC/2,0-93B/R4AC - 1408969



PROFINET patch cable, shielded, star quad, 22 AWG stranded (7-wire), green, straight RJ45 plug/IP20, to straight RJ45 plug/IP20, length: 2 m

Patch cable - NBC-R4AC/5,0-93B/R4AC - 1408970



PROFINET patch cable, shielded, star quad, 22 AWG stranded (7-wire), green, straight RJ45 plug/IP20 to straight RJ45 plug/IP20, length: 5 m

FO patch cable - FOC-LC:PA-SC:PA-OM2:D01/1 - 1115607



FO patch cable - FOC-LC:PA-SC:PA-OM2:D01/2 - 1115605



FO patch cable - FOC-LC:PA-LC:PA-OM2:D01/1 - 1115633



Multi-mode OM2 duplex jumper, LC-LC, UPC polishing, length 1 m

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### Accessories

FO patch cable - FOC-LC:PA-LC:PA-OM2:D01/2 - 1115634



Multi-mode OM2 duplex jumper, LC-LC, UPC polishing, length 2 m

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Fiber optic cable - FOC-LC:PA-ST:PA-OM2:D01/1 - 1115588



Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 1 m

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Fiber optic cable - FOC-LC:PA-ST:PA-OM2:D01/2 - 1115587



Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 2 m

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FO patch cable - FOC-LC:PA-SC:PA-OM4:D01/1 - 1115601



Multi-mode OM4 duplex jumper, LC-SC, UPC polishing, length 1 m

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FO patch cable - FOC-LC:PA-SC:PA-OM4:D01/2 - 1115600



Multi-mode OM4 duplex jumper, LC-SC, UPC polishing, length 2 m

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### Accessories

FO patch cable - FOC-LC:PA-LC:PA-OM4:D01/1 - 1115625



Multi-mode OM4 duplex jumper, LC-LC, UPC polishing, length 1 m

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FO patch cable - FOC-LC:PA-LC:PA-OM4:D01/2 - 1115624



Multi-mode OM4 duplex jumper, LC-LC, UPC polishing, length 2 m

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FO patch cable - FOC-LC:PA-LC:PA-OS2:D01/1 - 1115636



Single-mode OS2 duplex jumper, LC-LC, UPC polishing, length 1 m

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FO patch cable - FOC-LC:PA-LC:PA-OS2:D01/2 - 1115629



Single-mode OS2 duplex jumper, LC-LC, UPC polishing, length 2 m

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FO patch cable - FOC-LC:PA-ST:PA-OS2:D01/1 - 1115596



Single-mode OS2 duplex jumper, LC-ST, UPC polishing, length 1 m

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## Redundancy module - FL RED 2001E PRP 2LC - 2701864

### Accessories

FO patch cable - FOC-LC:PA-ST:PA-OS2:D01/2 - 1115595



Single-mode OS2 duplex jumper, LC-ST, UPC polishing, length 2 m

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FO patch cable - FOC-LC:PA-SC:PA-OS2:D01/1 - 1115618



Single-mode OS2 duplex jumper, LC-SC, UPC polishing, length 1 m

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FO patch cable - FOC-LC:PA-SC:PA-OS2:D01/2 - 1115617



Single-mode OS2 duplex jumper, LC-SC, UPC polishing, length 2 m

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### End block

End clamp - E/NS 35 N - 0800886



End clamp, width: 9.5 mm, color: gray

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### Patch cable

Patch cable - FL CAT5 PATCH 0,5 - 2832263



Patch cable, CAT5, assembled, 0.5 m

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### Accessories

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Patch cable - FL CAT5 PATCH 1,0 - 2832276



Patch cable, CAT5, assembled, 1 m

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Patch cable - FL CAT5 PATCH 2,0 - 2832289



Patch cable, CAT5, assembled, 2 m

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### Protective cap

Dust protection - FL RJ45 PROTECT CAP - 2832991



Dust protection caps for RJ45 socket

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### Safety locking

Port Guard Security Element - FL SEC PAC 4TX - 2832865



Layer1 security elements for four RJ45 network connections for use with patch boxes and panels

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