

SecuriFire

LAN network boards and units

B5-NET4-485

B5-NET2-485

B5-NET2-FXM

B5-NET2-FXS

B5-LAN

B6-NET2-485

B6-NET2-FXM

B6-NET2-FXS

B6-LAN

B6-LXI2

Technical Description



Imprint



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- Description of which dangers can occur
- Measures and preventative actions
- How dangers can be averted
- Other safety-relevant information



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- Description of which damage can occur
- Measures and preventative actions
- How dangers can be averted
- Other safety-relevant information



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- Description of the notice and which malfunctions can be expected
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- Description of parts for which there are environmental issues
- Description of how devices and their parts have to be disposed of in an environmentally-friendly way
- Description of the recycling possibilities

Document history

First edition **Date 27.08.2010**

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Most important changes compared with first edition:

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• all	n	new components	B5-NET2-FXM, B5-NET2-FXS B6-NET2-FXM, B6-NET2-FXS

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• 1	c	Introduction	Text adjusted
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• 12	c	Programming and planning	Text adjusted

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LAN interface 10/100	n	Protocol: ModBus/TCP, ISP/IP	Text added

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1 Introduction

A SecuriLan is a network consisting of SecuriFire SCP fire alarm control panels and the remote MIC711 indication and control maps of a logical fire alarm system. The entire system can be operated from any of the indication and control maps, and actuations can be implemented on the SecuriLan across all SCPs. Topology selection includes ring, stub and mesh; each of these may be implemented as a single or redundant design. The network is Ethernet-based; the SecuriFire 3000 and the SecuriFire 2000 are available as suitable network boards and units.

Up to 32 participants can be networked, of which a maximum of 16 may be SCPs.

Key features of the SecuriLan:

- high availability → mesh network with up to 4 connections per participant
- high speed → data transmission of 2,500 kBit/s
- more flexible topology → stub connection to ring possible
- Ethernet protocol → customer IT infrastructure can be used
- RemoteAccess expansion → access to the SCP via intranet and internet
- future-proof technology → use of standardised IT components

There are two types of SecuriLan networking:

- Networking SCP/MIC711 using its own, redundant line network.
- Integration of additional SCP/MIC711 units and various PC applications either directly or via a standard Ethernet.

The following boards and units are available for **networking**:

Component	Type of connection	Type of networking		
		SCP-SCP RS485	SCP-SCP 100BASE-TX	SCP-PC 100BASE-TX
SecuriFire 3000				
B5-MCB15	(1x 100BASE-TX)			x
B5-NET4-485	(4x RS485, 2x 100BASE-TX)	x	x	x
B5-NET2-485	(2x RS485, 2x 100BASE-TX)	x	x	x
B5-NET2-FXM	(2x RS 485, 2x 100BASE-TX, 2x 100BASE-FXM)	x	x	x
B5-NET2-FXS	(2x RS 485, 2x 100BASE-TX, 2x 100BASE-FXS)	x	x	x
B5-LAN	(1x 100BASE-TX)		x	x
SecuriFire 2000				
B6-BCB-13	(1x 100BASE-TX)			x
B6-NET2-485	(2x RS485, 1x 100BASE-TX)	x	x	x
B6-NET2-FXM	(1x RS 485, 1x 100BASE-TX, 2x 100BASE-FXM)	x	x	x
B6-NET2-FXS	(1x RS 485, 1x 100BASE-TX, 2x 100BASE-FXS)	x	x	x
B6-LAN	(1x 100BASE-TX)		x	x
B6-LXI2	(1x 100BASE-TX)		x	x
SecuriFire 1000				
B6-BCB-12	(1x 100BASE-TX)			x
SecuriFire 500				
B7-CPB-11	(1x 100BASE-TX)			x
MIC711	(2x RS485, 2x 100BASE-TX)	x	x	x

The B5-LAN and B6-LAN have Ethernet interfaces (100BASE-TX). These boards and units are intended for non-redundant networking of PC applications with SCPs.

The B5-NET4-485, B5-NET2-485, B6-NET2-485 and MIC711 all have Ethernet (100BASE-TX) and high-speed RS485 ports. These boards and units are designed to network SCP/MIC711s and PC applications.

The B5-NET2-FXM, B5-NET2-FXS, B6-NET2-FXM and B6-NET2-FXS also have optical network connections (multi-mode and single-mode) which enable networking the SecuriFire control panels over greater distances (up to 10 km).

Introduction

The types of SecuriLan **communication** are outlined below.

1.1 Communication between a PC application and SCP

The TCP/IP protocol family is used for this communication. A PC application can establish a direct connection to each SCP/MIC711 in the network and communicate with it.

1.2 Communication amongst the SCP/MIC711s

These units communicate with each other by means of point-to-point connections. Instead of the TCP/IP protocol, the DDCMP ([Digital Data Communications Message Protocol](#)) is used for the security of this connection.

1.2.1 Communication in the SecuriFire-specific Ethernet

The physical and logical network structures are identical in this case. An occurring event is sent only to the physically neighbouring SCP/MIC711, which then forwards it to its physically neighbouring SCP/MIC711.

1.2.2 Communication in the standard Ethernet

A logical network structure is superimposed on the physical connections. An occurring event is sent only to the logically neighbouring SCP/MIC711, which then forwards it to its logically neighbouring SCP/MIC711.

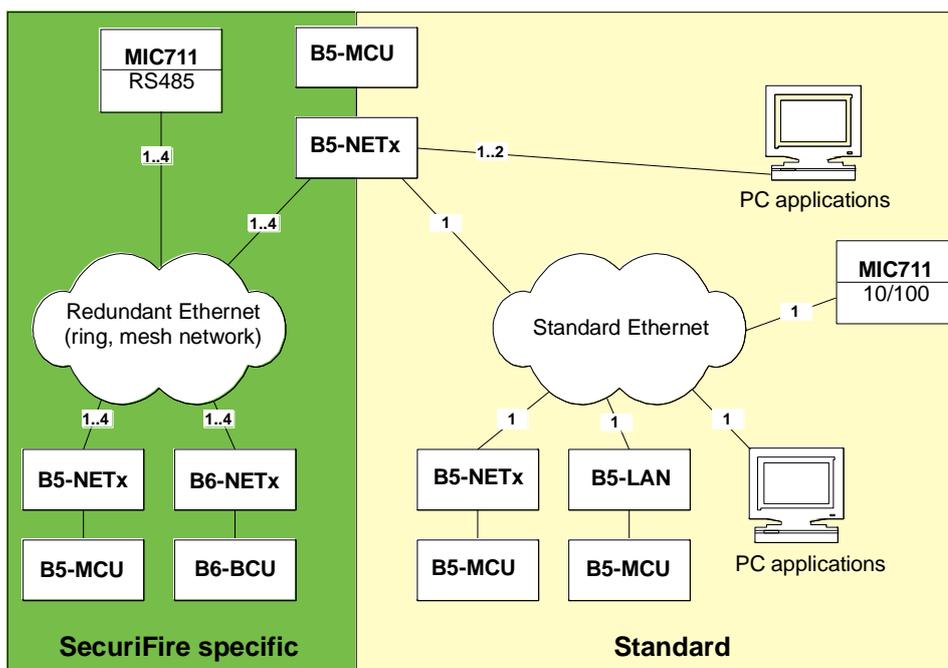


Fig. 1 Networking concept

2 B5-NET4-485 network board

2.1 General information and validity

2.1.1 Validity

Section 2 is valid for the B5-NET4-485 network board with edition EG072915--.

2.1.2 General information

The B5-NET4-485 is for redundant networking of the SecuriFire 3000 and for connecting PC applications. The network board can be fitted only on **slot 2** in the unit rack.

2.1.3 Compatibility notice



Notice

The B5-NET4-485 is supported beginning with SecuriFire software V 1.0.

2.2 Design and function

The B5-NET4-485 network board is for redundant networking of the SecuriFire 3000 and for connecting PC applications. It has four network ports which are implemented based on the RS485 standard and two 100BASE-TX ports.

2.2.1 Overview

The B5-NET4-485 network board has one front panel made of galvanised sheet steel and must be fitted at slot 2. The system connection to the B5-BUS is on the rear side using a 96-pin male connector. On the front side there are 10 RJ-45 ports for connecting SecuriLan, PC or Ethernet.



Fig. 2 B5-NET4-485 network board

2.2.2 Redundancy

The redundancy concept is implemented differently on the B5-NET4-485 network board than on all other B5 boards. The peripherals are not switched between system A and B but rather system half A has access to the network as does system half B. Depending on whether A or B is active, the corresponding network access is activated. Network access to the two switches is implemented as 100BASE-TX interfaces. They are also connected to each other with two 100BASE-TX interfaces. This permits A as well as B to have all network connections at their disposal.

B5-NET4-485 network board

2.2.3 Interfaces

X1	B5-BUS connector
X2	LAN interface (switch A / switch B)
X4	RS485 interface (switch B)
X8	RS485 interface (switch A)

Pin assignment (X2, X4, X8)

Pin	Signal RS485	Signal Ethernet
1	NC	TX+
2	NC	TX-
3	NC	RX+
4	GNDG	NC
5	GNDG	NC
6	NC	RX-
7	TX/RX+	NC
8	TX/RX-	NC

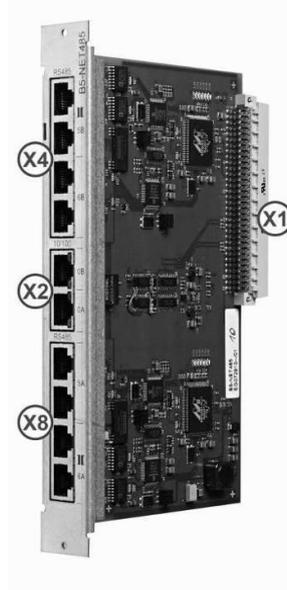


Fig. 3 B5-NET4-485 interfaces

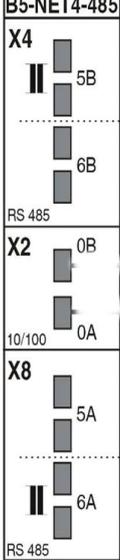
B5-NET4-485	Switch	Port	Socket	Type	Galvanic separation 
	B	5B (x)	10x RJ-45, 8-pin	RS485	Yes
		5B (y)			No
		6B (x)			
		6B (y)			
	A	0B		10/100	No
		0A		RS485	
		5A (x)			Yes
		5A (y)			
		6A (x)			
		6A (y)			

Fig. 4 B5-NET4-485

LAN interface 10/100

Connection:	Ethernet 100BASE-TX
Transmission type:	TCP/IP
Protocol:	ModBus/TCP, ISP/IP
Direction:	Bidirectional, full-duplex operation
Protection:	EMC and ESD with high-voltage capacitors
Mechanical design:	RJ-45 connector, 8-pin

RS485 interface

Connection:	RS485. Galvanic separation, see table above.
Transmission type:	Differential signal

2.3 Technical data

Power requirement

Power consumption 127 mA



Notice

In the event of a power failure, the fire alarm control panel is powered with batteries. Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

Ethernet TX (copper):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 100 m, 100BASE-TX, Cat5e copper
RS485 interface:	4 interfaces with line redundancy, 2 of which are galvanically separated.	
	Speed	max. 1.25 Mbit/s
	Distance	max. 1,200 m
	Cable	UTP Cat5e
Protection:	EMC by means of a zone concept, Transzorp diodes, filters and broad band decoupling of the power supply to protect the electronics. Earthing as protection for persons and electronics.	

Environmental conditions

Ambient temperature:	-5°C to +50°C, measured at natural convection under the board.
Relative humidity:	5% to 95%, without condensation
Air pressure:	≥ 80 kPa, up to 2,000 m above sea level.
Contact protection:	IP00, no protection against contact, foreign matter or water.

EMC:	EN 50130-4	Electromagnetic compatibility
	EN 55022	Information technology – Radio disturbance characteristics
	EN 61000-6-3	Emission standard for residential environments
	EN 61000-6-2	Immunity for industrial environments
	VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)
Security:	EN 60950-1	Information technology – Safety
	VDE 0800	Telecommunications – Security
	VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W)	195 x 115 x 1.6 mm
Front panel (H x D x W):	215 x 27.5 x 1.0 mm

3 B5-NET2-485 network board

3.1 General information and validity

3.1.1 Validity

Section 3 is valid for the B5-NET2-485 network board with edition EG072910--.

3.1.2 General information

The B5-NET2-485 is for redundant networking of the SecuriFire 3000 and for connecting PC applications. The network board can be fitted only on **slot 2** in the unit rack.

3.1.3 Compatibility notice



Notice

The B5-NET2-485 is supported beginning with SecuriFire software V 1.0.

3.2 Design and function

The B5-NET2-485 network board is for redundant networking of the SecuriFire 3000 and for connecting PC applications. It has four network ports which are implemented based on the RS485 standard and two 100BASE-TX ports.

3.2.1 Overview

The B5-NET2-485 network board has one front panel made of galvanised sheet steel and must be fitted at slot 2. The system connection to the B5-BUS is on the rear side using a 96-pin male connector. On the front side there are 6 RJ-45 ports for connecting SecuriLan, PC or Ethernet.



Fig. 5 B5-NET2-48 network board

3.2.2 Redundancy

The redundancy concept is implemented differently on the B5-NET2-485 network board than on all other B5 boards. The peripherals are not switched between system A and B but rather system half A has access to the network as does system half B. Depending on whether A or B is active, the corresponding network access is activated. Network access to the two switches is implemented as 100BASE-TX interfaces. They are also connected to each other with two 100BASE-TX interfaces. This permits A as well as B to have all network connections at their disposal.

3.2.3 Interfaces

- X1** B5-BUS connector
- X2** LAN interface (switch A / switch B)
- X4** RS485 interface (switch B)
- X8** RS485 interface (switch A)

Pin assignment (X2, X4, X8)

Pin	Signal RS485	Signal Ethernet
1	NC	TX+
2	NC	TX-
3	NC	RX+
4	GNDG	NC
5	GNDG	NC
6	NC	RX-
7	TX/RX+	NC
8	TX/RX-	NC

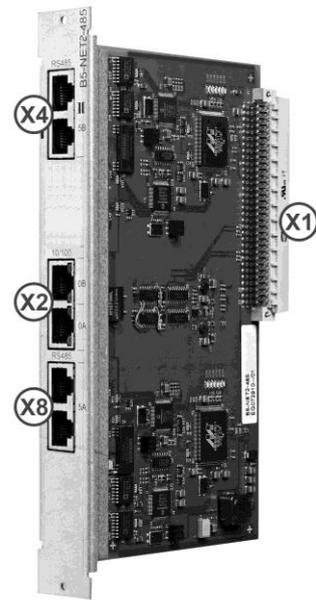


Fig. 6 B5-NET2-485 interfaces

B5-NET2-485	Switch	Port	Socket	Type	Galvanic separation	
	B	5B (x)	6x RJ-45, 8-pin	RS485	Yes	
		5B (y)				No
		0B			10/100	
		0A			A	RS485
	5A (x)	Yes				
	5A (y)					

Fig. 7 B5-NET2-485

LAN interface 10/100

Connection: Ethernet 100BASE-TX
 Transmission type: TCP/IP
 Protocol: ModBus/TCP, ISP/IP
 Direction: Bidirectional, full-duplex operation
 Protection: EMC and ESD with high-voltage capacitors
 Mechanical design: RJ-45 connector, 8-pin

RS485 interface

Connection: RS485. Galvanic separation, see table above.
 Transmission type: Differential signal

3.3 Technical data

Power requirement

Power consumption 120 mA



Notice

In the event of a power failure, the fire alarm control panel is powered with batteries. Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

Ethernet TX (copper):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 100 m, 100BASE-TX, Cat5e copper
RS485 interface:	4 interfaces with line redundancy, 2 of which are galvanically separated	
	Speed	max. 1.25 Mbit/s
	Distance	max. 1,200 m
	Cable	UTP Cat5e
Protection	EMC by means of a zone concept, Transzorp diodes, filters and broad band decoupling of the power supply to protect the electronics. Earthing as protection for persons and electronics.	

Environmental conditions

Ambient temperature:	-5°C to +50°C, measured at natural convection under the board
Relative humidity:	5% to 95%, without condensation
Air pressure:	≥ 80 kPa, up to 2,000 m above sea level.
Contact protection:	IP00, no protection against contact, foreign matter or water

EMC:	EN 50130-4	Electromagnetic compatibility
	EN 55022	Information technology – Radio disturbance characteristics
	EN 61000-6-3	Emission standard for residential environments
	EN 61000-6-2	Immunity for industrial environments
	VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)

Security:	EN 60950-1	Information technology – Safety
	VDE 0800	Telecommunications – Security
	VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W)	195 x 115 x 1.6 mm
Front panel (H x D x W):	215 x 27.5 x 1.0 mm

4 B5-NET2-FXM network board

4.1 General information and validity

4.1.1 Validity

Section 4 is valid for the B5-NET2-FXM network board with edition 20-1000001-01-01.

4.1.2 General information

The B5-NET2-FXM is for redundant networking of the SecuriFire 3000 and for connecting PC applications. The network board can be fitted only on **slot 2** in the unit rack.

4.1.3 Compatibility notice



Notice

The B5-NET2-FXM is supported beginning with SecuriFire software V 1.1.

4.2 Design and function

The B5-NET2-FXM network board is for redundant networking of the SecuriFire 3000 and for connecting PC applications. It has 2 network connections based on the RS485 standard, 2 optical network connections based on the FXM standard, and 2 100BASE-TX interfaces.

4.2.1 Overview

The B5-NET2-FXM network board has one front panel made of galvanised sheet steel and must be fitted at slot 2. The system connection to the B5-BUS is on the rear side using a 96-pin male connector. On the front side there are 6 RJ-45 ports and 2 MTRJ ports for connecting a SecuriLan, PC or Ethernet.



Fig. 8 B5-NET2-FXM network board

4.2.2 Redundancy

The redundancy concept is implemented differently on the B5-NET2-FXM network board than on all other B5 boards. The peripherals are not switched between system A and B but rather system half A has access to the network as does system half B. Depending on whether A or B is active, the corresponding network access is activated. Network access to the two switches is implemented as 100BASE-TX interfaces. They are also connected to each other with two 100BASE-TX interfaces. This permits A as well as B to have all network connections at their disposal.

B5-NET2-FXM network board

4.2.3 Interfaces

- X1** B5-BUS connector
- X2** LAN interface (switch A / switch B)
- X3** 100BASE-FXM interface (switch B)
- X4** RS485 interface (switch B)
- X5** 100BASE-FXM interface (switch A)
- X8** RS485 interface (switch A)

Pin assignment (X2, X4, X8)

Pin	Signal RS485	Signal Ethernet
1	NC	TX+
2	NC	TX-
3	NC	RX+
4	GNDG	NC
5	GNDG	NC
6	NC	RX-
7	TX/RX+	NC
8	TX/RX-	NC

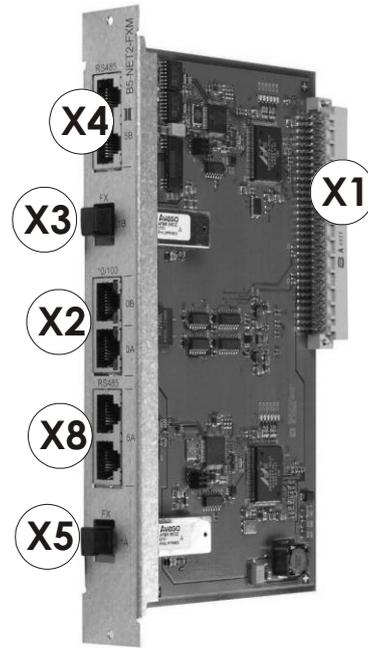


Fig. 9 B5-NET2-FXM interfaces

Pin assignment X5

Pin	Signal
A1	Receive Data
A2	Transmit Data

Pin assignment X3

Pin	Signal
B1	Receive Data
B2	Transmit Data

B5-NET2-FXM	Switch	Port	Socket	Type	Galvanic separation
	B	5B (x)	2x RJ-45, 8-pin	RS485	Yes
		5B (y)			
		1B	MTRJ	FX	
		0B	2x RJ-45, 8-pin	10/100	
	0A				
	A	5A (x)	2x RJ-45, 8-pin	RS485	No
		5A (y)			
		1A	MTRJ	FX	

Fig. 10 B5-NET2-FXM

LAN interface 10/100

Connection: Ethernet 100BASE-TX
Transmission type: TCP/IP
Protocol: ModBus/TCP, ISP/IP
Direction: Bidirectional, full-duplex operation
Protection: EMC and ESD with high-voltage capacitors
Mechanical design: RJ-45 connector, 8-pin

RS485 interface

Connection: RS485. Galvanic separation, see table above.
Transmission type: Differential signal

Base FXM interface

Connection: Ethernet 100BASE-FXM
Transmission type: TCP/IP
Direction: Bidirectional
Mechanical design: MTRJ connector

4.3 Technical data

Power requirement

Power consumption 205 mA



Notice

In the event of a power failure, the fire alarm control panel is powered with batteries. Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

Ethernet TX (copper):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 100 m, 100BASE-TX, Cat5e copper
Ethernet FXM (optical):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 2 km
	LWL	Multimode 62.5/125 µm or 50/125 µm (FXM)
	Connector	MTRJ (FXM)
RS485 interface:	2 interfaces with line redundancy, 1 of which are galvanically separated.	
	Speed	max. 1.25 Mbit/s
	Distance	max. 1,200 m
	Cable	UTP Cat5e
Protection:	EMC by means of a zone concept, Transzorp diodes, filters and broad band decoupling of the power supply to protect the electronics. Earthing as protection for persons and electronics.	

Environmental conditions

Ambient temperature:	-5°C to +50°C, measured at natural convection under the board.
Relative humidity:	5% to 95%, without condensation
Air pressure:	≥ 80 kPa, up to 2,000 m above sea level.
Contact protection:	IP00, no protection against contact, foreign matter or water.

EMC:	EN 50130-4	Electromagnetic compatibility
	EN 55022	Information technology – Radio disturbance characteristics
	EN 61000-6-3	Emission standard for residential environments
	EN 61000-6-2	Immunity for industrial environments
	VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)
Security:	EN 60950-1	Information technology – Safety
	VDE 0800	Telecommunications – Security
	VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W)	195 x 115 x 1.6 mm
Front panel (H x D x W):	215 x 27.5 x 1.0 mm

5 B5-NET2-FXS network board

5.1 General information and validity

5.1.1 Validity

Section 5 is valid for the B5-NET2-FXS network board with edition 20-1000000-01-01.

5.1.2 General information

The B5-NET2-FXS is for redundant networking of the SecuriFire 3000 and for connecting PC applications. The network board can be fitted only on **slot 2** in the unit rack.

5.1.3 Compatibility notice



Notice

The B5-NET2-FXS is supported beginning with SecuriFire software V 1.1.

5.2 Design and function

The B5-NET2-FXS network board is for redundant networking of the SecuriFire 3000 and for connecting PC applications. It has 2 network connections based on the RS485 standard, 2 optical network connections based on the FXS standard, and 2 100BASE-TX interfaces.

5.2.1 Overview

The B5-NET2-FXS network board has one front panel made of galvanised sheet steel and must be fitted at slot 2. The system connection to the B5-BUS is on the rear side using a 96-pin male connector. On the front side there are 6 RJ-45 ports and 2 LC ports for connecting a Securi-Lan, PC or Ethernet.



Fig. 11 B5-NET2-FXS network board

5.2.2 Redundancy

The redundancy concept is implemented differently on the B5-NET2-FXS network board than on all other B5 boards. The peripherals are not switched between system A and B but rather system half A has access to the network as does system half B. Depending on whether A or B is active, the corresponding network access is activated. Network access to the two switches is implemented as 100BASE-TX interfaces. They are also connected to each other with two 100BASE-TX interfaces. This permits A as well as B to have all network connections at their disposal.

B5-NET2-FXS network board

5.2.3 Interfaces

- X1** B5-BUS connector
- X2** LAN interface (switch A / switch B)
- X3** 100BASE-FXS interface (switch B)
- X4** RS485 interface (switch B)
- X5** 100BASE-FXS interface (switch A)
- X8** RS485 interface (switch A)

Pin assignment (X2, X4, X8)

Pin	Signal RS485	Signal Ethernet
1	NC	TX+
2	NC	TX-
3	NC	RX+
4	GNDG	NC
5	GNDG	NC
6	NC	RX-
7	TX/RX+	NC
8	TX/RX-	NC

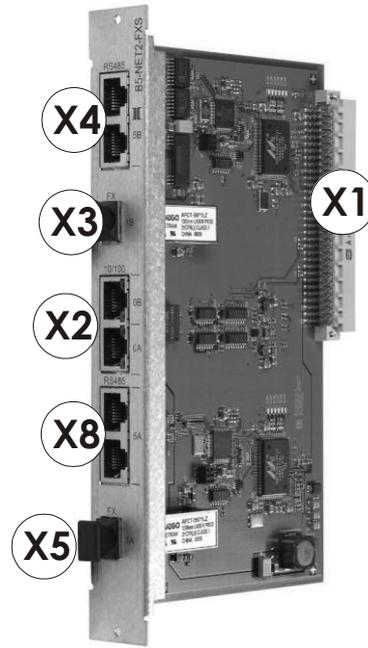


Fig. 12 B5-NET2-FXS interfaces

Pin assignment X5

Pin	Signal
A1	Receive Data
A2	Transmit Data

Pin assignment X3

Pin	Signal
B1	Receive Data
B2	Transmit Data

B5-NET2-FX	Switch	Port	Socket	Type	Galvanic separation
	B	5B (x)	2x RJ-45, 8-pin	RS485	Yes
		5B (y)			
		1B	LC 2x5	FX	
		0B	2x RJ-45, 8-pin	10/100	
	0A				
	A	5A (x)	2x RJ-45, 8-pin	RS485	No
		5A (y)			
		1A	LC 2x5	FX	

Fig. 13 B5-NET2-FXS

LAN interface 10/100

Connection: Ethernet 100BASE-TX
Transmission type: TCP/IP
Protocol: ModBus/TCP, ISP/IP
Direction: Bidirectional, full-duplex operation
Protection: EMC and ESD with high-voltage capacitors
Mechanical design: RJ-45 connector, 8-pin

RS485 interface

Connection: RS485. Galvanic separation, see table above.
Transmission type: Differential signal

Base FXS interface

Connection: Ethernet 100BASE-FXS
Transmission type: TCP/IP
Direction: Bidirectional
Mechanical design: LC 2x5 connector

5.3 Technical data

Power requirement

Power consumption 179.5 mA



Notice

In the event of a power failure, the fire alarm control panel is powered with batteries. Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

Ethernet TX (copper):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 100 m, 100BASE-TX, Cat5e copper
Ethernet FXS (optical):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 10 km
	LWL	Single-mode 9/125 µm (FXS)
	Connector	LC 2x5 (FXS)
RS485 interface:	2 interfaces with line redundancy, 1 of which are galvanically separated.	
	Speed	max. 1.25 Mbit/s
	Distance	max. 1,200 m
	Cable	UTP Cat5e
Protection:	EMC by means of a zone concept, Transzorp diodes, filters and broad band decoupling of the power supply to protect the electronics. Earthing as protection for persons and electronics.	

Environmental conditions

Ambient temperature:	-5°C to +50°C, measured at natural convection under the board.
Relative humidity:	5% to 95%, without condensation
Air pressure:	≥ 80 kPa, up to 2,000 m above sea level.
Contact protection:	IP00, no protection against contact, foreign matter or water.

EMC:	EN 50130-4	Electromagnetic compatibility
	EN 55022	Information technology – Radio disturbance characteristics
	EN 61000-6-3	Emission standard for residential environments
	EN 61000-6-2	Immunity for industrial environments
	VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)
Security:	EN 60950-1	Information technology – Safety
	VDE 0800	Telecommunications – Security
	VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W)	195 x 115 x 1.6 mm
Front panel (H x D x W):	215 x 27.5 x 1.0 mm

6 B5-LAN interface board

6.1 General information and validity

6.1.1 Validity

Section 6 is valid for the B5-LAN interface board with edition EG072903--.

6.1.2 General information

The B5-LAN ([Local Area Network](#)) interface board is for non-redundant networking of PC applications and non-redundant networking of SecuriFire 3000; it is always fitted at **slot 2** of the unit rack.

6.1.3 Compatibility notice



Notice

The B5-LAN is supported beginning with SecuriFire software V 1.0.

6.2 Design and function

The B5-LAN interface board is for non-redundant networking of PC applications and non-redundant networking of SecuriFire 3000; it is always fitted at slot 2 of the unit rack. There is the possibility that only the active processor establishes a connection to the Ethernet or both processors at the same time. This mode can be changed using a jumper.

6.2.1 Overview

The B5-LAN interface board has a front panel made of galvanised sheet steel. The system connection to the B5-BUS is on the rear side using a 96-pin male connector. There are two 8-pin RJ-45 ports on the front side.



Fig. 14 B5-LAN interface board

B5-LAN interface board

6.2.2 Interfaces

- X1** B5-BUS connector
- X2** LAN interface (RJ-45 connector)
- X3** LAN interface (RJ-45 connector) only for test purposes
- X4** Jumper

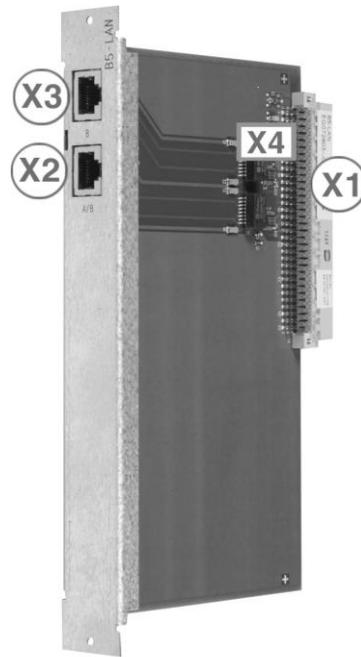


Fig. 15 B5-LAN interfaces

LAN interface

	X3	X2
Connection	Ethernet 10/100BASE-TX always on processor B, only for development purposes!	Ethernet 10/100BASE-TX on processor A or active processor, see jumper X4 (normal connection to Ethernet).
Transmission type	TCP/IP	
Direction	Bidirectional, full-duplex	
Protection	EMC and ESD with high-voltage capacitors	
Mechanical design	RJ-45 connector, 8-pin	

Terminal	Designation
1	TX+
2	TX-
3	RX+
4	Termination
5	Termination
6	RX-
7	Termination
8	Termination

X4 jumper

Jumper inserted The active processor has access to the LAN via plug X2; connector X3 is inactive (normal operation).

Jumper open Processor A has direct access to the LAN via plug X2. Processor B has access to the LAN via plug X3 (only for test and development purposes).

6.3 Technical data

Power requirement

Power consumption: 0 mA

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

LAN interface: 2x Ethernet 10/100BASE-TX (processor A and B)
2x RJ-45 plug on front panel

Protection: EMC by means of a zone concept, Transzorp diodes, filters and broadband decoupling of the power supply to protect the electronics.
Earthing as protection for persons and electronics.

Environmental conditions

Ambient temperature: -5°C to +50°C, measured at natural convection under the board

Relative humidity: 5% to 95%, without condensation

Air pressure: ≥ 80 kPa, up to 2,000 m above sea level.

Contact protection: IP00, no protection against contact, foreign matter or water

EMC: EN 50130-4 Electromagnetic compatibility
EN 55022 Information technology – Radio disturbance characteristics
EN 61000-6-3 Emission standard for residential environments
EN 61000-6-2 Immunity for industrial environments
VdS 2110 [Schutz gegen Umwelteinflüsse](#) (Protection against environmental influences)

Security: EN 60950-1 Information technology – Safety
VDE 0800 Telecommunications – Security
VDE 0804 Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W) 195 x 115 x 1.6 mm

Front panel (H x D x W): 215 x 27.5 x 1.0 mm

7 B6-NET2-485 network unit

7.1 General information and validity

7.1.1 Validity

Section 7 is valid for the B6-NET2-485 network unit with edition EG072934--.

7.1.2 General information

The B6-NET2-485 ([Network](#)) is for redundant networking of the SecuriFire 2000 and for connecting PC applications. The network unit is inserted at the expansion slot of the B6-BCU.

7.1.3 Compatibility notice



Notice

The B6-NET2-485 is supported beginning with SecuriFire software V 1.1.

7.2 Design and function

The B6-NET2-485 network unit is for redundant networking of the SecuriFire 2000 and for connecting PC applications. It has two network ports which are implemented based on the RS485 interface standard and one 100BASE-TX interface.

7.2.1 Overview

The B6-NET2-485 network unit is a sub-unit that is inserted at the expansion slot of the B6-BCU. The system connection to the B6-BCU is on the solder side using a 48-pin male connector. On the front side there are 5 RJ-45 ports for connecting SecuriLan and to the Ethernet.

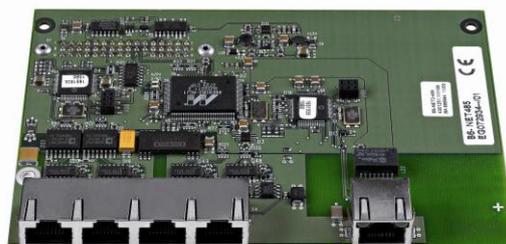


Fig. 16 B6-NET2-485 network unit

7.2.2 Interfaces

- X1** B6-BCU-X2 connector (rear side)
- X2** LAN interface (switch A / switch B)
- X4** RS485 interface

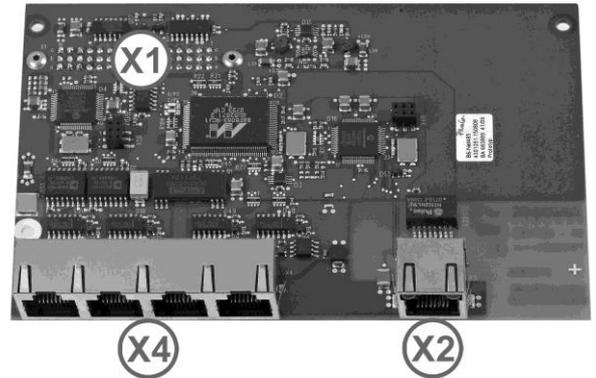


Fig. 17 B6-NET2-485 interfaces

Pin assignment (X2, X4)

Pin	Signal RS485	Signal Ethernet
1	NC	TX+
2	NC	TX-
3	NC	RX+
4	GNDG	NC
5	GNDG	NC
6	NC	RX-
7	TX/RX+	NC
8	TX/RX-	NC

B6-NET2-485	Port	Socket	Type	Galvanic separation	
	5 (y)	5x RJ-45, 8-pin	RS485	Yes	
	5 (x)				
	6 (y)			No	
	6 (x)				
				10/100	

Fig. 18 B6-NET2-485

LAN interface 10/100

- Connection: Ethernet 100BASE-TX
- Transmission type: TCP/IP
- Protocol: ModBus/TCP, ISP/IP
- Direction: Bidirectional, full-duplex operation
- Protection: EMC and ESD with high-voltage capacitors
- Mechanical design: RJ-45 connector, 8-pin

RS485 interface

- Connection: RS485. Galvanic separation, see table above.
- Transmission type: Differential signal

7.3 Technical data

Power requirement

Power consumption 53 mA



Notice

In the event of a power failure, the fire alarm control panel is powered with batteries. Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

Ethernet TX (copper):	1 interface	
	Speed	max. 100 Mbit/s
	Distance	max. 100 m, 100BASE-TX, Cat5e copper
RS485 interface:	2 interfaces with line redundancy, 1 of which is galvanically separated	
	Speed	max. 100 Mbit/s
	Distance	max. 1,200 m, 100BASE-TX, Cat5e copper
	Cable	UTP Cat5e
Protection:	EMC by means of a zone concept, Transzorp diodes, filters and broad band decoupling of the power supply to protect the electronics.	
	Earthing as protection for persons and electronics.	

Environmental conditions

Ambient temperature:	-5°C to +50°C, measured at natural convection under the unit
Relative humidity:	5% to 95%, without condensation
Air pressure:	≥ 80 kPa, up to 2,000 m above sea level.
Contact protection:	IP00, no protection against contact, foreign matter or water

EMC:	EN 50130-4	Electromagnetic compatibility
	EN 55022	Information technology – Radio disturbance characteristics
	EN 61000-6-3	Emission standard for residential environments
	EN 61000-6-2	Immunity for industrial environments
	VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)

Security:	EN 60950-1	Information technology – Safety
	VDE 0800	Telecommunications – Security
	VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W) 142 x 93 x 1.6 mm

8 B6-NET2-FXM network unit

8.1 General information and validity

8.1.1 Validity

Section 8 is valid for the B6-NET2-FXM network unit with edition 20-1100001-01-01.

8.1.2 General information

The B6-NET2-FXM ([Network](#)) is for redundant networking of the SecuriFire 2000 and for connecting PC applications. The network unit is inserted at the expansion slot of the B6-BCU.

8.1.3 Compatibility notice



Notice

The B6-NET2-FXM is supported beginning with SecuriFire software V 1.1.

8.2 Design and function

The B6-NET2-FXM network unit is for redundant networking of the SecuriFire 2000 and for connecting PC applications. It has 1 network connection based on the RS485 standard, 2 optical network connections based on the FXM standard, and 1 100BASE-TX interface.

8.2.1 Overview

The B6-NET2-FXM network unit is a sub-unit that is inserted at the expansion slot of the B6-BCU. The system connection to the B6-BCU is on the solder side using a 48-pin male connector. On the front side there are 3 RJ-45 ports and 2 MTRJ ports for connecting a SecuriLan and Ethernet.



Fig. 19 B6-NET2-FXM network unit

B6-NET2-FXM network unit

8.2.2 Interfaces

- X1** B6-BCU-X2 connector (rear side)
- X2** LAN interface (switch A / switch B)
- X3** 100BASE-FXM interface (switch B)
- X4** RS485 interface
- X5** 100BASE-FXM interface (switch A)

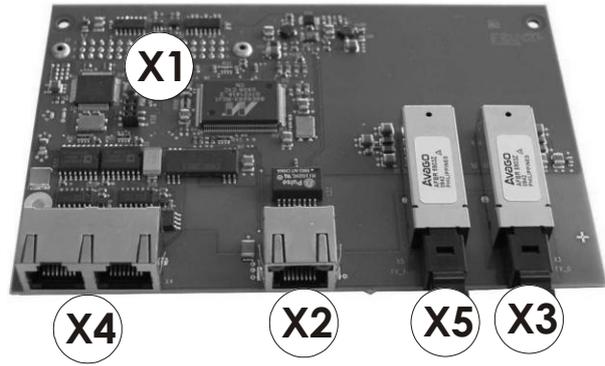


Fig. 20 B6-NET2-FXM interfaces

Pin assignment (X2, X4)

Pin	Signal RS485	Signal Ethernet
1	NC	TX+
2	NC	TX-
3	NC	RX+
4	GNDG	NC
5	GNDG	NC
6	NC	RX-
7	TX/RX+	NC
8	TX/RX-	NC

Pin assignment X5

Pin	Signal
A1	Receive Data
A2	Transmit Data

Pin assignment X3

Pin	Signal
B1	Receive Data
B2	Transmit Data

B6-NET2-FX	Port	Socket	Type	Galvanic separation
X4 RS 485 5	5 (y)	2x RJ-45, 8-pin	RS485	Yes
	5 (x)			
X2 10/100		RJ-45, 8-pin	10/100	
X5 FX 1A X3 FX 1B	1A	2x MTRJ	FX	
	1B			

Fig. 21 B6-NET2-FXM

LAN interface 10/100

Connection: Ethernet 100BASE-TX
Transmission type: TCP/IP
Protocol: ModBus/TCP, ISP/IP
Direction: Bidirectional, full-duplex operation
Protection: EMC and ESD with high-voltage capacitors
Mechanical design: RJ-45 connector, 8-pin

RS485 interface

Connection: RS485. Galvanic separation, see table above.
Transmission type: Differential signal
Mechanical design: RJ-45 connector, 8-pin

Base FXM interface

Connection: Ethernet 100BASE-FXM
Transmission type: TCP/IP
Direction: bidirectional
Mechanical design: MTRJ connector

8.3 Technical data

Power requirement

Power consumption 122 mA



Notice

In the event of a power failure, the fire alarm control panel is powered with batteries. Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

Ethernet TX (copper):	1 interface	
	Speed	max. 100 Mbit/s
	Distance	max. 100 m, 100BASE-TX, Cat5e copper
Ethernet FXM (optical):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 2 km
	LWL	Multimode 62.5/125 µm or 50/125 µm (FXM)
	Connector	MTRJ (FXM)
RS485 interface:	1 interface with line redundancy, galvanically separated	
	Speed	max. 1.25 Mbit/s
	Distance	max. 1,200 m, 100BASE-TX, Cat5e copper
	Cable	UTP Cat5e
Protection:	EMC by means of a zone concept, Transzorp diodes, filters and broad band decoupling of the power supply to protect the electronics. Earthing as protection for persons and electronics.	

Environmental conditions

Ambient temperature:	-5°C to +50°C, measured at natural convection under the unit
Relative humidity:	5% to 95%, without condensation
Air pressure:	≥ 80 kPa, up to 2,000 m above sea level.
Contact protection:	IP00, no protection against contact, foreign matter or water

EMC:	EN 50130-4	Electromagnetic compatibility
	EN 55022	Information technology – Radio disturbance characteristics
	EN 61000-6-3	Emission standard for residential environments
	EN 61000-6-2	Immunity for industrial environments
	VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)
Security:	EN 60950-1	Information technology – Safety
	VDE 0800	Telecommunications – Security
	VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W) 142 x 93 x 1.6 mm

9 B6-NET2-FXS network unit

9.1 General information and validity

9.1.1 Validity

Section 9 is valid for the B6-NET2-FXS network unit with edition 20-1100000-01-01.

9.1.2 General information

The B6-NET2-FXS ([Network](#)) is for redundant networking of the SecuriFire 2000 and for connecting PC applications. The network unit is inserted at the expansion slot of the B6-BCU.

9.1.3 Compatibility notice



Notice

The B6-NET2-FXS is supported beginning with SecuriFire software V 1.1.

9.2 Design and function

The B6-NET2-FXS network unit is for redundant networking of the SecuriFire 2000 and for connecting PC applications. It has 1 network connection based on the RS485 standard, 2 optical network connections based on the FXS standard, and 1 100BASE-TX interface.

9.2.1 Overview

The B6-NET2-FXS network unit is a sub-unit that is inserted at the expansion slot of the B6-BCU. The system connection to the B6-BCU is on the solder side using a 48-pin male connector. On the front side there are 3 RJ-45 ports and 2 LC ports for connecting a SecuriLan and Ethernet.



Fig. 22 B6-NET2-FXS network unit

B6-NET2-FXS network unit

9.2.2 Interfaces

- X1** B6-BCU-X2 connector (rear side)
- X2** LAN interface (switch A / switch B)
- X3** 100BASE-FXS interface (switch B)
- X4** RS485 interface
- X5** 100BASE-FXS interface (switch A)

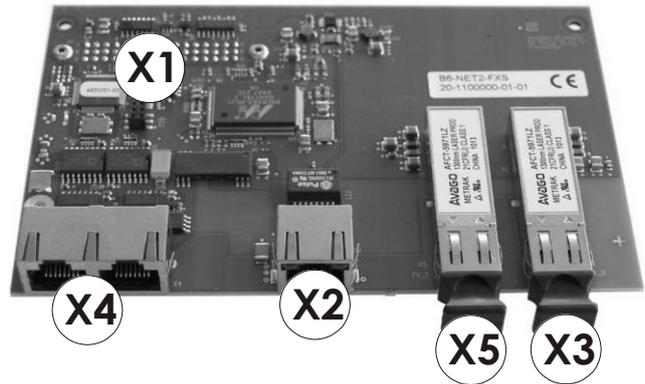


Fig. 23 B6-NET2-FXS interfaces

Pin assignment (X2, X4)

Pin	Signal RS485	Signal Ethernet
1	NC	TX+
2	NC	TX-
3	NC	RX+
4	GNDG	NC
5	GNDG	NC
6	NC	RX-
7	TX/RX+	NC
8	TX/RX-	NC

Pin assignment X5

Pin	Signal
A1	Receive Data
A2	Transmit Data

Pin assignment X3

Pin	Signal
B1	Receive Data
B2	Transmit Data

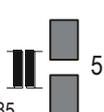
B6-NET2-FX	Port	Socket	Type	Galvanic separation
X4  RS 485 5	5 (y)	2x RJ-45, 8-pin	RS485	Yes
	5 (x)			
X2 10/100		RJ-45, 8-pin	10/100	
X5 FX 1A X3 FX 1B	1A	2x LC 2x5	FX	
	1B			

Fig. 24 B6-NET2-FXS

LAN interface 10/100

Connection:	Ethernet 100BASE-TX
Transmission type:	TCP/IP
Protocol:	ModBus/TCP, ISP/IP
Direction:	Bidirectional, full-duplex operation
Protection:	EMC and ESD with high-voltage capacitors
Mechanical design:	RJ-45 connector, 8-pin

RS485 interface

Connection:	RS485. Galvanic separation, see table above.
Transmission type:	Differential signal
Mechanical design:	RJ-45 connector, 8-pin

Base FXS interface

Connection:	Ethernet 100BASE-FXS
Transmission type:	TCP/IP
Direction:	bidirectional
Mechanical design:	LC 2x5 connector

9.3 Technical data

Power requirement

Power consumption 99 mA



Notice

In the event of a power failure, the fire alarm control panel is powered with batteries. Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Power requirement calculation

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

Features

Ethernet TX (copper):	1 interface	
	Speed	max. 100 Mbit/s
	Distance	max. 100 m, 100BASE-TX, Cat5e copper
Ethernet FXM (optical):	2 interfaces	
	Speed	max. 100 Mbit/s
	Distance	max. 10 km
	LWL	Single-mode 9/125 µm (FXS)
	Connector	LC 2x5 (FXS)
RS485 interface:	1 interface with line redundancy, galvanically separated	
	Speed	max. 1.25 Mbit/s
	Distance	max. 1,200 m, 100BASE-TX, Cat5e copper
	Cable	UTP Cat5e
Protection:	EMC by means of a zone concept, Transzorp diodes, filters and broad band decoupling of the power supply to protect the electronics. Earthing as protection for persons and electronics.	

Environmental conditions

Ambient temperature:	-5°C to +50°C, measured at natural convection under the unit
Relative humidity:	5% to 95%, without condensation
Air pressure:	≥ 80 kPa, up to 2,000 m above sea level.
Contact protection:	IP00, no protection against contact, foreign matter or water

EMC:	EN 50130-4	Electromagnetic compatibility
	EN 55022	Information technology – Radio disturbance characteristics
	EN 61000-6-3	Emission standard for residential environments
	EN 61000-6-2	Immunity for industrial environments
	VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)
Security:	EN 60950-1	Information technology – Safety
	VDE 0800	Telecommunications – Security
	VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W) 142 x 93 x 1.6 mm

10 B6-LAN interface unit

10.1 General information and validity

10.1.1 Validity

Section 10 is valid for the B6-LAN interface unit with edition EG072940--.

10.1.2 General information

The B6-LAN ([Local Area Network](#)) is for non-redundant networking of PC applications with SecuriFire 2000 SCP or for non-redundant networking of SecuriFire 2000 SCP. It is an expansion interface unit for B6-SecuriFire 2000 SCP and can be inserted on the interface of the B6-BCU-X2.

10.1.3 Compatibility notice



Notice

The B6-LAN is supported beginning with SecuriFire software V 1.1.

10.2 Design and function

The B6-LAN interface unit is for non-redundant networking of PC applications with SecuriFire 2000 or for non-redundant networking of SCP. It can also be used for development and test purposes.

10.2.1 Overview

The system connection to the B6-BCU-X2 is on the underside using a 48-pin male connector. There is one 8-pin RJ-45 port on the front side.

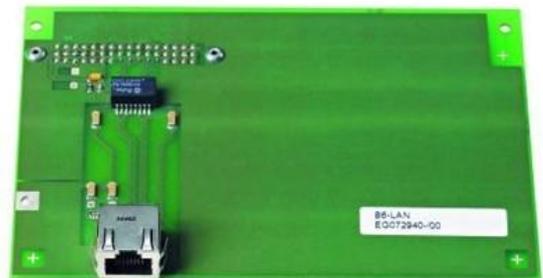


Fig. 25 B6-LAN interface unit

B6-LAN interface unit

10.2.2 Interfaces

- X1 B6-BCU-X2 connector (rear side)
- X2 LAN interface (RJ-45 connector)

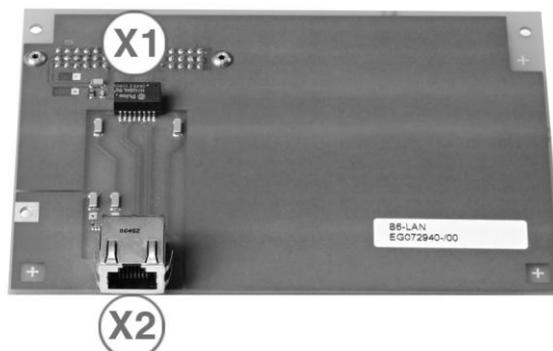


Fig. 26 B6-LAN interfaces

LAN interface (X2)

- Connection: Ethernet 10/100BASE-TX
- Transmission type: TCP/IP
- Direction: Bidirectional, full-duplex operation
- Protection: EMC and ESD with high-voltage capacitors
- Mechanical design: RJ-45 connector, 8-pin

Terminal	Designation
1	TX+
2	TX-
3	RX+
4	Termination
5	Termination
6	RX-
7	Termination
8	Termination

10.3 Technical data

Power requirement

Power consumption: 0 mA

Features

LAN interface: 2x Ethernet 10/100BASE-TX (processor A and B)
1x RJ-45 plug

Protection: EMC by means of a zone concept, Transzorp diodes, filters and broadband decoupling of the power supply to protect the electronics.
Earthing as protection for persons and electronics.

Environmental conditions

Ambient temperature: -5°C to +50°C, measured at natural convection under the unit

Relative humidity: 5% to 95%, without condensation

Air pressure: ≥ 80 kPa, up to 2,000 m above sea level.

Contact protection: IP00, no protection against contact, foreign matter or water

EMC:

EN 50130-4	Electromagnetic compatibility
EN 55022	Information technology – Radio disturbance characteristics
EN 61000-6-3	Emission standard for residential environments
EN 61000-6-2	Immunity for industrial environments
VdS 2110	Schutz gegen Umwelteinflüsse (Protection against environmental influences)

Security:

EN 60950-1	Information technology – Safety
VDE 0800	Telecommunications – Security
VDE 0804	Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W) 142 x 93 x 1.6 mm

11 B6-LXI2 SecuriLine unit

11.1 General information and validity

11.1.1 Validity

Section 11 is valid for the B6-LXI2 interface unit with edition 20-1100002-01-01.

11.1.2 General information

The B6-LXI2 ([Dialog Analog Interface](#)) can be fitted to the B6-BCB13 main control unit of the SCP2000 if required and serves to connect two additional SecuriLine eXtended loops with their associated detectors and modules. In addition, the module has a LAN interface.

11.1.3 Compatibility notice



Notice

The B6-LXI2 is supported beginning with SecuriFire software V 1.2.

11.2 Design and function

The B6-LXI2 SecuriLine Unit is used for power supply and evaluation of two addressable loops with the associated detectors and modules of the SecuriLine eXtended. Alternatively, an addressable loop and two stub lines or four stub lines can also be connected.

In addition, the module has a LAN interface. Thus even with 4 loops, all options of the LAN interface (ISP-IP for connecting alarm management systems, VirtualMIC, remote access, etc.) can be used.

11.2.1 Overview

The B6-LXI2 printed circuit board can be used as an option to the SCP2000. The system connection to the B6-BCB13 is on the rear side with a 48-pin male connector. The fire detection lines are connected on the front side with a 16-pin plug-in screw terminal.



Fig. 27 B6-LXI2 SecuriLine unit

11.2.2 Interfaces

- X1** Interface for the B6-BCB13 main control unit
- X2** Connection plug for 2 addressable loops or 4 stub lines
- X3** Connection plug for the LAN-Interface (RJ45)

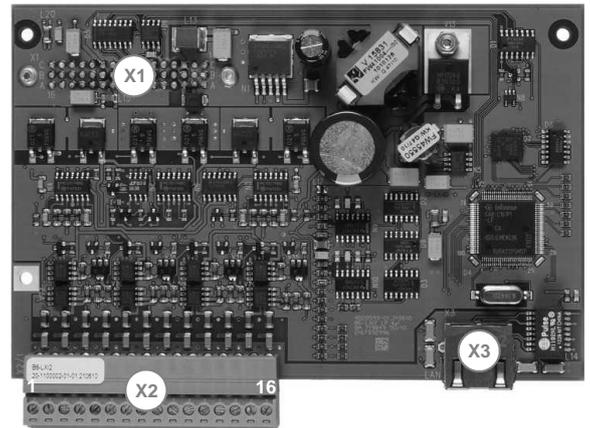


Fig. 28 B6-LXI2 SecuriLine interfaces

LAN interface (X3)

- Connection: Ethernet 10/100BASE-TX
- Transmission type: TCP/IP
- Direction: Bidirectional, full-duplex operation
- Protection: EMC and ESD with high-voltage capacitors
- Mechanical design: RJ-45 connector, 8-pin

Terminal	Designation
1	TX+
2	TX-
3	RX+
4	Termination
5	Termination
6	RX-
7	Termination
8	Termination

11.3 Technical data

Power requirement

Power consumption: 31 mA

Environmental conditions

- Ambient temperature: -5°C to +50°C, measured at natural convection under the unit
- Relative humidity: 5% to 95%, without condensation
- Air pressure: ≥ 80 kPa, up to 2,000 m above sea level.
- Contact protection: IP00, no protection against contact, foreign matter or water

- EMC:
 - EN 50130-4 Electromagnetic compatibility
 - EN 55022 Information technology – Radio disturbance characteristics
 - EN 50081-1 Emission standard for residential environments
 - EN 50081-2 Immunity for industrial environments
 - VdS 2110 [Schutz gegen Umwelteinflüsse](#) (Protection against environmental influences)

- Security:
 - EN 60950-1 Information technology – Safety
 - VDE 0800 Telecommunications – Security
 - VDE 0804 Telecommunications – Additional definitions

Dimensions

Printed circuit board (H x D x W) 142 x 93 x 18 mm

12 Programming and planning

A graphic editor in **Projection** of SecuriFire Studio lets you select and arrange SecuriLan participants. Afterwards, the participants are connected to each other with the desired type of connection. The required boards (e.g. B5-LAN, B5-NET2-485, B5-NET4-485) are automatically planned in the SCP by the tool. The “**redundant connection**” and “**high speed connection (<600m)**” parameters (see Section 12.3) can be performed in the planning.

Example for SecuriLan special characteristics:

- The system conforms to standards with the exception of SCP 5, which is not line-redundant integrated.
- Connection 6 provides additional failure protection for the redundant ring. This topology is called a mesh network.

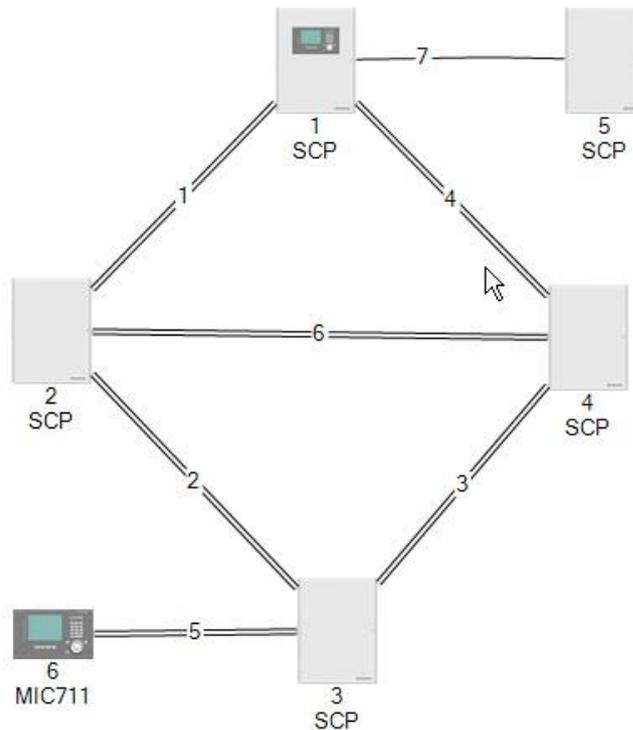


Fig. 29 SecuriLan example

The following limitations apply to SecuriLan:

- Max. 4 physical connections possible per SCP (RS485, 10/100BASE-TX)
- Max. 4 logical connections possible per SCP (LAN)
- Max. 4 connections (logical and physical) total possible per SCP
- A total of max. 64 connections (logical and physical) possible
- Max. 32 participants can be networked, of which max. 16 SCPs.



Notice

- Max. two connections between two SecuriLan participants (SCP or MIC711). Only one of which may be a logical connection.
- Connection 7 is not standards-compliant because the connection is not redundant.

12.1 Connections

The connection type defines the kind of connection. The following types are currently available for local networking:

Type	Kind of connection	Description
RS485	Physical connection	RS485; direct connection between two SCPs; max. 1,200 m (high speed max. 600 m).
10/100BASE-TX	Physical connection	10/100BASE-TX; direct connection between two SCPs; max. 100 m.
FX-M	Physical connection	100BASE-FXM; direct connection between two SCPs; max. 2 km.
FX-S	Physical connection	100BASE-FXS; direct connection between two SCPs; max. 10 km.
LAN	Logical connection	10/100BASE-TX; connection to the standard-LAN, max. 100 m to the next network node.

12.2 Logical connections

A port which connects the SCP to a standard LAN must be reserved for implementing the logical connections. Several logical connections can be established to other SCPs in the LAN via this port.

12.3 Physical connections

A physical connection is always assigned to a port of the network boards (only one logical connection per port is possible). RS485 ports can be line redundant or line non-redundant.

The following table shows which ports of a B5-NET4-485 and B5-NET2-485 can be connected to each other via physical connections and which additional parameters can be defined:

Start port	Destination ports	Parameter
0A	0A, 0B	-
0B	0A, 0B	-
5A	5B, 6A	Line redundant, high speed
5B	5A, 6B	Line redundant, high speed
6A	5A, 6B	Line redundant, high speed
6B	5B, 6A	Line redundant, high speed

The following table shows which ports of a B5-NET2-FXM and B5-NET2-FXS can be connected to each other via physical connections:

Start port	Destination ports
1A	1A, 1B
1B	1A, 1B

No physical connections can be implemented with a B5-LAN or B6-LAN.



Notice

- Connections via RS485 interfaces shall be done from galvanic separated port to galvanic non-separated port (or vice versa).
- SecuriFire Studio automatically generates the start port and destination port. The assignments cannot be changed.

12.4 Overview of the PIN assignments of all SecuriLan participants

B5-MIC711 B5-MIC485 X4	
Terminal	Designation
1	Port 6 Bx TX/RX+
2	GND
3	Port 6 Bx TX/RX-
4	Port 6 By TX/RX+
5	GND
6	Port 6 By TX/RX-
7	Port 6 Ax TX/RX+
8	GND
9	Port 6 Ax TX/RX-
10	Port 6 Ay TX/RX+
11	GND
12	Port 6 Ay TX/RX-

B6-MIC711 B6-MIC485 X4	
Terminal	Designation
1	Port 6 Ax TX/RX+
2	GND
3	Port 6 Ax TX/RX-
4	Port 6 Ay TX/RX+
5	GND
6	Port 6 Ay TX/RX-
7	Port 5 Ax TX/RX+
8	GND
9	Port 5 Ax TX/RX-
10	Port 5 Ay TX/RX+
11	GND
12	Port 5 Ay TX/RX-

B5/B6 network board and units X4, X8. RJ45		
Port	Terminal	Designation
Port _	7	TX/RX+
	4,5	GNDG
	8	TX/RX-
Port _	7	TX/RX+
	4,5	GNDG
	8	TX/RX-
Port _	7	TX/RX+
	4,5	GNDG
	8	TX/RX-
Port _	7	TX/RX+
	4,5	GNDG
	8	TX/RX-



Notice

Take note of the different PIN assignments of plugs X4 of B5-MIC485 and B6-MIC485!

12.5 Addressing

Communication is via TCP/IP; for this, each SecuriLan participant must have an IP address. To simplify commissioning, the following guideline for addressing must be adhered to:

- The IP addresses are defined with SecuriFire Studio during commissioning (local download).
- The IP addresses of the SCP/MIC711 must be consecutively numbered consistent with their number. Each participant knows its own IP address as well as its own number and the number of the communication partner. The IP address of the communication partner can be determined based on this parameter.

e.g.: SCP (1) has IP 10.112.168.101
 SCP (2) has IP 10.112.168.102
 MIC711 (3) has IP 10.112.168.103

Advantage: no configuration is necessary for the SecuriLan network.

12.6 Minimum requirements for IP networking



Notice

It is mandatory that these minimum requirements are adhered to.

IP address:	Consecutive static IPv4 addresses in the same subnet. This is possible at distributed locations only with appropriate measures of the IT infrastructure (IP tunnelling).
Bandwidth:	700 kBit/s per programmed line.
Run time:	Typically (average) must be less than 10 ms; maximum may be 100 ms (when < 5% of the datagrams). The slowest line determines the processing speed!
Packet loss:	< 0.5%
Availability:	99.9%

13 Cabling

13.1 Specification copper cable

Depending on the application, either an F-UTP Cat5e or UTP Cat5e data cable with red sheath, or fibre-optic cable (multi-mode or single-mode) is used for networking the SecuriLan participants.

F-UTP (Foiled – Unshielded Twisted Pair) Cat5e:

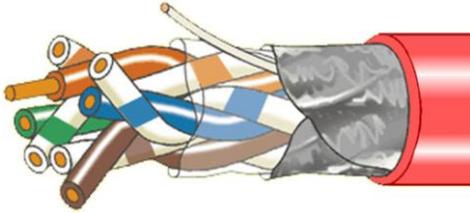


Fig. 30 F-UTP Cat5e

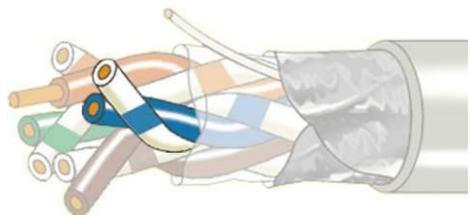


Fig. 31 F-UTP Cat5e

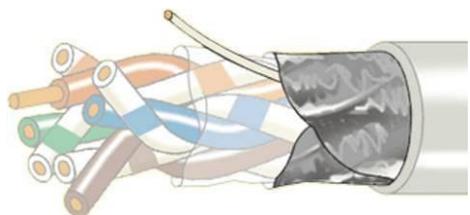


Fig. 32 F-UTP Cat5e

The cable consists of 8 wires, one foil shield and a shielding wire.

The following colour pairs are twisted together:

- blue-white / blue
- green-white / green
- orange-white / orange
- brown-white / brown

This cable is used for **10/100BASE-TX** and **LAN** connections.

UTP (Unshielded Twisted Pair) Cat5e:

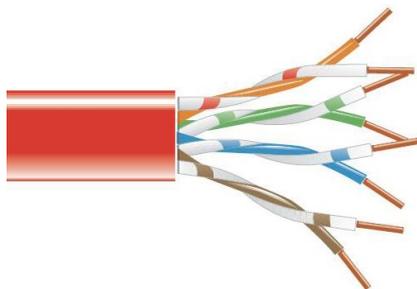


Fig. 33 UTP Cat5e

The cable consists of 8 wires and is unshielded.

The following colour pairs are twisted together:

- blue-white / blue
- green-white / green
- orange-white / orange
- brown-white / brown

This cable is used for **RS485** connections.

13.2 Specification fibre-optic cable and connector types

Fibre-optic cable (multi-mode or single-mode):

Depending on the concerned unit, these cables are used for FXM (multi-mode) or FXS (single-mode) connections. The following requirements apply to fibre-optic cables:

FXM – Glass fibre multi-mode for B5-NET2-FXM and B6-NET2:

Speed: max. 100 Mbit/s
 Distance: max. 2 km
 Fibre-optic cable: Multimode 62,5/125 µm or 50/125 µm
 Connector: MTRJ

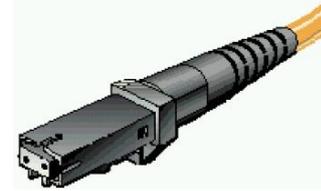


Fig. 34 Example connector type MTRJ

FXS – Glass fibre single-mode for B5-NET2-FXS and B6-NET2-FXS:

Speed: max. 100 Mbit/s
 Distance: max. 10 km
 Fibre-optic cable: Single-mode 9/125 µm
 Connector: LC 2x5 (duplex)

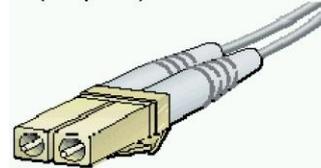


Fig. 35 Example connector type LC 2x5

13.3 Crimping the RJ-45 plug

RJ-45 plug and pin assignment:

There is an insert for the RJ-45 plug. This is a plastic piece in which the 4 wire pairs are threaded. The insert with the 8 wires is subsequently put together with the RJ-45 plug and crimped with a suitable crimping tool as follows:

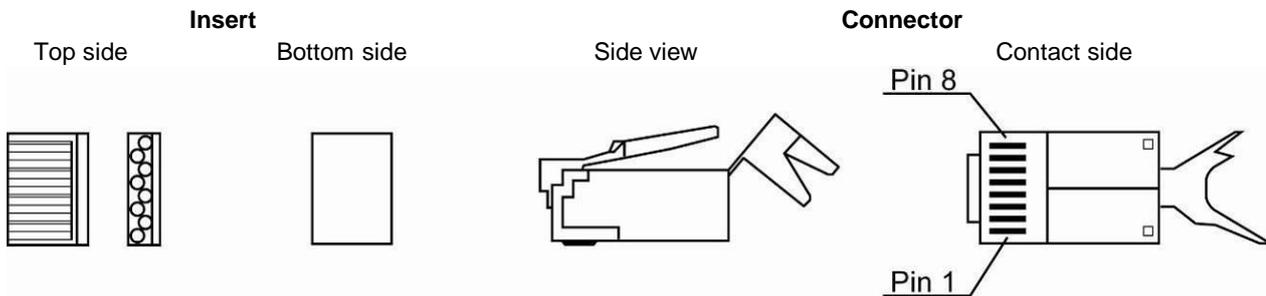


Fig. 36 RJ-45 plug and pin assignment

RJ-45 plug assignment (according to EIA/TIA – 568A):

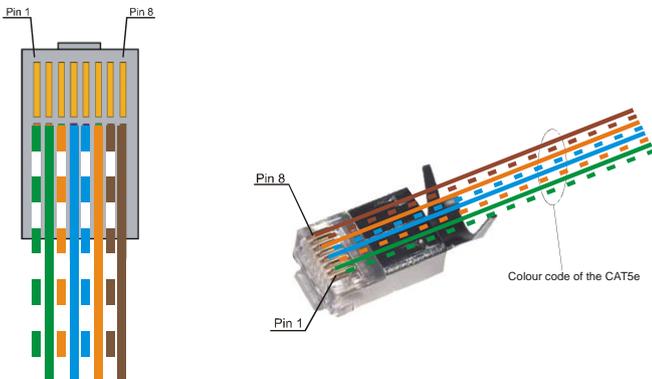


Fig. 37 RJ-45 plug assignment

Pin	Wire colour	Signal RS485	Signal Ethernet
1	white / green	NC	TX+
2	green	NC	TX-
3	white / orange	NC	RX+
4	blue	GNDG	NC
5	white / blue	GNDG	NC
6	Orange	NC	RX-
7	white / brown	TX/RX+	NC
8	Brown	TX/RX-	NC

Crimp plug:

Strip min. 3 cm of insulation. Foil shielding and wire shielding must remain undamaged.

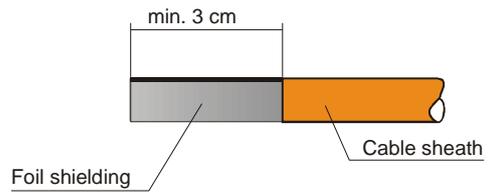


Fig. 38 Crimp plug

Fold the foil shielding and shielding wire back over the cable sheath.

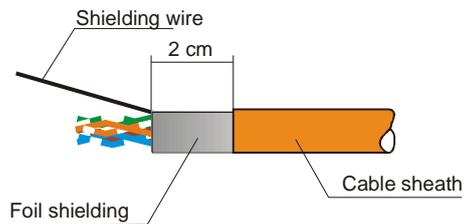


Fig. 39 Crimp plug

4 wire pairs, every pair twisted.

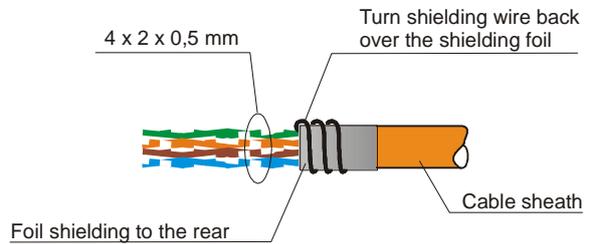


Fig. 40 Crimp plug

Unplait wires and prepare as shown.

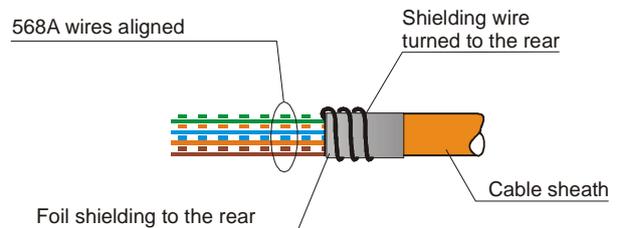


Fig. 41 Crimp plug

Nip off the wires at an angle of about 30°.

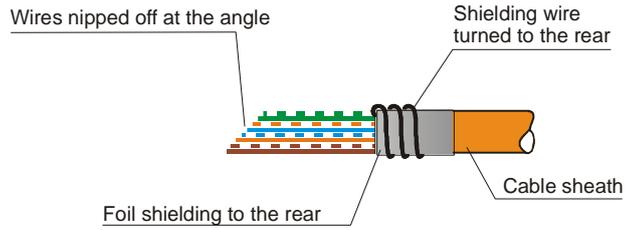


Fig. 42 Crimp plug

With the nose pointing down, push the insert onto the wires as close as possible to the cable insulation.

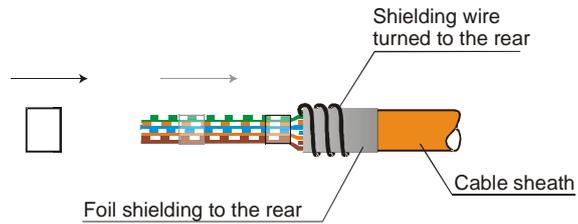


Fig. 43 Crimp plug

Nip off protruding wires flush.

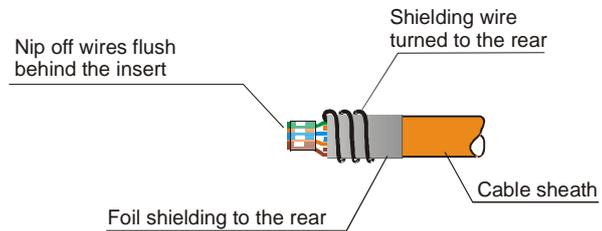


Fig. 44 Crimp plug

Turn the cable with insert 180° on the length-wise axis and push on the plug.

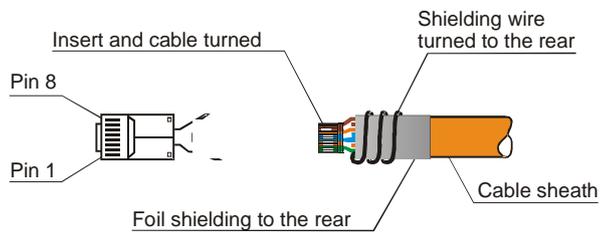


Fig. 45 Crimp plug

Push cable with insert into the plug to the stop.

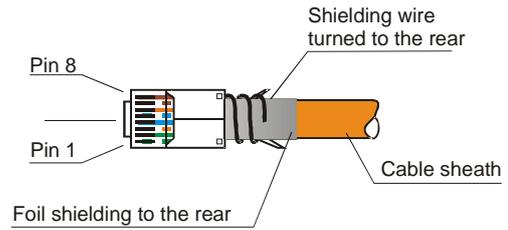


Fig. 46 Crimp plug

Bend the strain relief straight.

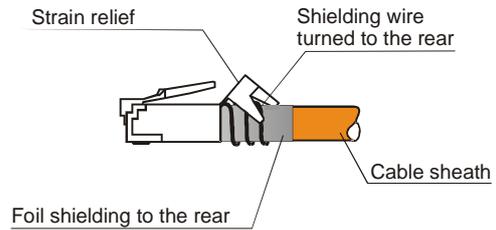


Fig. 47 Crimp plug

Use a crimping tool to crimp the plug.
The RJ- 45 plug is ready for use.

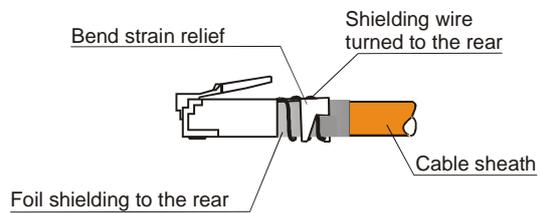


Fig. 48 Crimp plug



Connection examples follow in Section 14.

Notice

14 Connection examples

SecuriFire Studio automatically generates port assignments. Connection must be performed in accordance with the SecuriFire Studio planning data. A data cable as described in Section 13.1 can be used for all connection examples.

14.1 Standard-compliant SecuriLan networking

14.1.1 Line-redundant connections

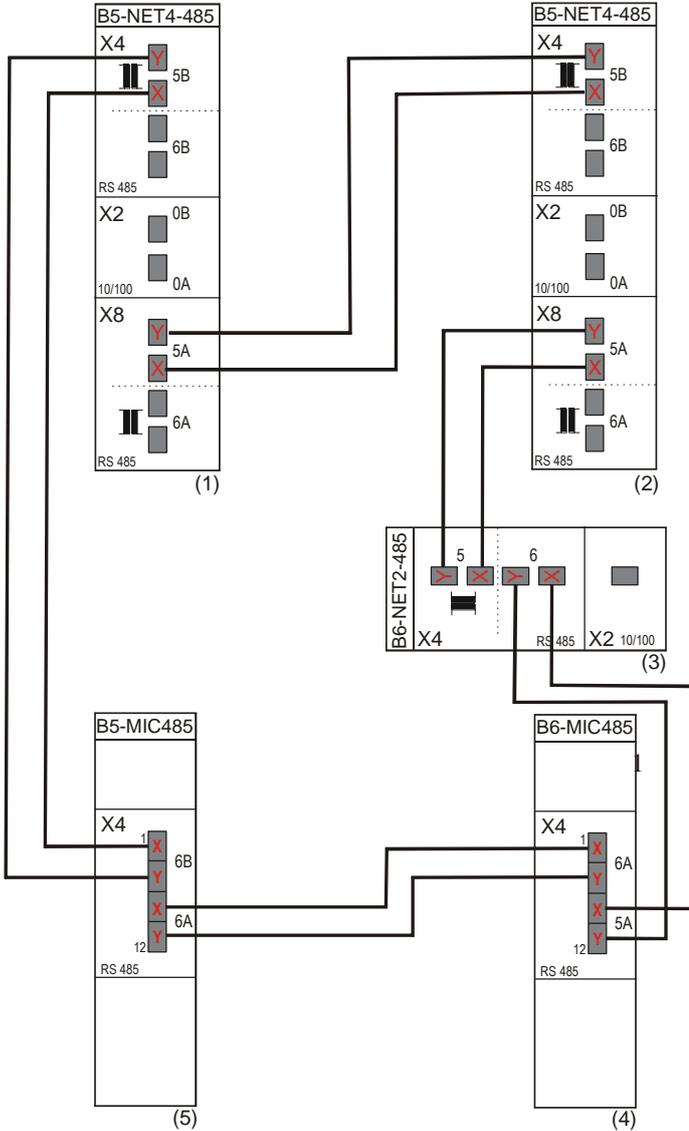


Fig. 49 Line-redundant connections

Board / unit	Used interfaces
B5-NET4-485	X4 [5B] or X4 [6B] or X8 [5A] or X8 [6A]
B5-NET2-485	X4 [5B] or X8 [5A]
B6-NET2-485	X4 [5] or X4[6]
B5-NET2-FX	X4 [5B] or X8 [5A]
B6-NET2-FX	X4 [5]
B5-LAN	-
B6-LAN	-
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	-
B7-CPB11	-

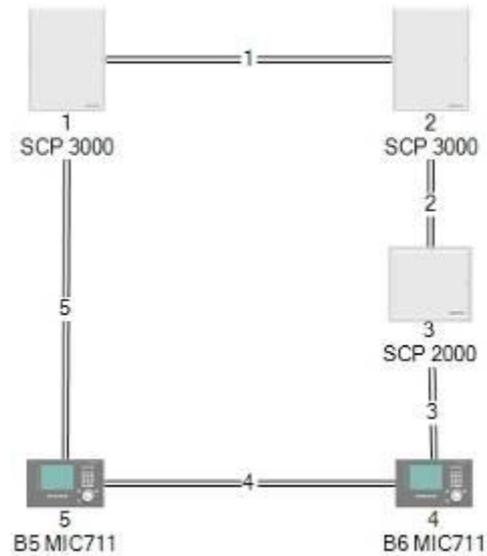


Fig. 50 SecuriFire planning

The first failure protection of the network is rendered by the ring topology. Additional failure protection is rendered by line redundancy. Here the connections (RS485) between the ports are doubled. If a line fails, the signal can still be transmitted via the second line. Line redundancy is supported by the following boards/units: B5-NET4-485, B5-NET2-485, B5-NET2-FXM, B5-NET2-FXS, B6-NET2-FXM, B6-NET2-FXS, B6-NET2-485 and MIC711.



Notice

Redundant connections must always be “X with X” and “Y with Y”. X/Y are not permitted to cross over (see Fig. 49).

14.1.2 Connections with glass fibre segment

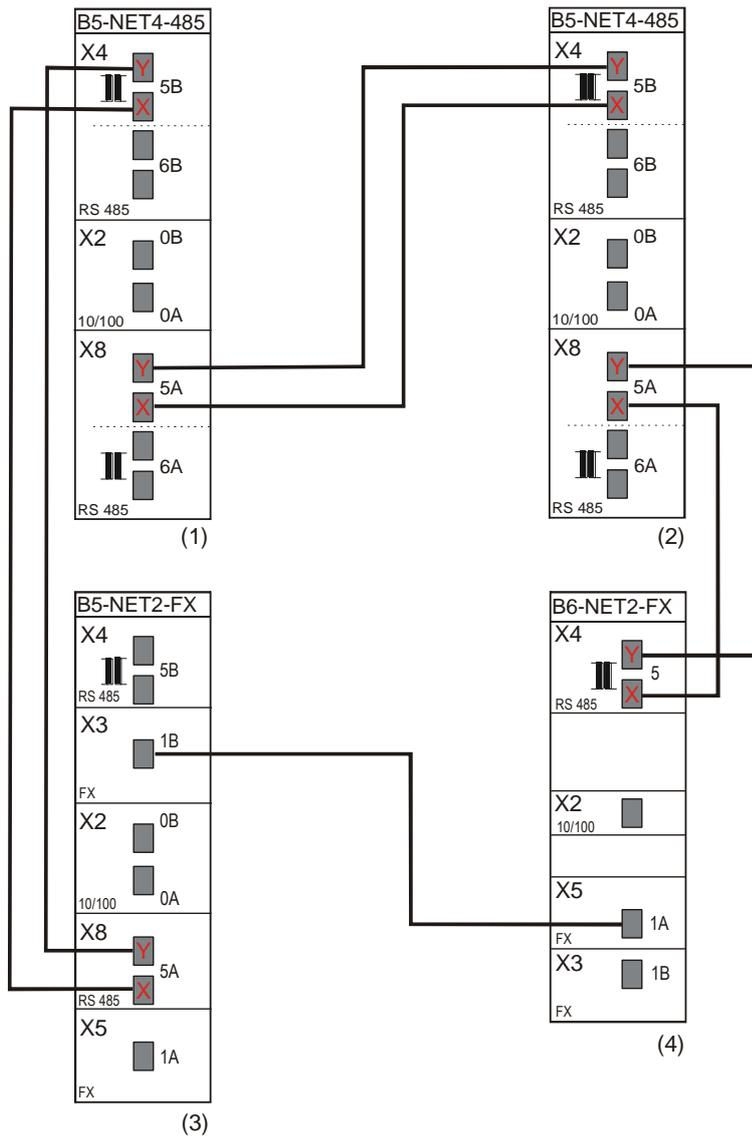


Fig. 51 Connections with glass fibre segment

Board / unit	Used interfaces
B5-NET4-485	-
B5-NET2-485	-
B6-NET2-485	-
B5-NET2-FX	X3 [1B] or X5 [1A]
B6-NET2-FX	X3 [1B] or X5 [1A]
B5-LAN	-
B6-LAN	-
MIC711	-
B6-LXI2	-
B7-CPB11	-

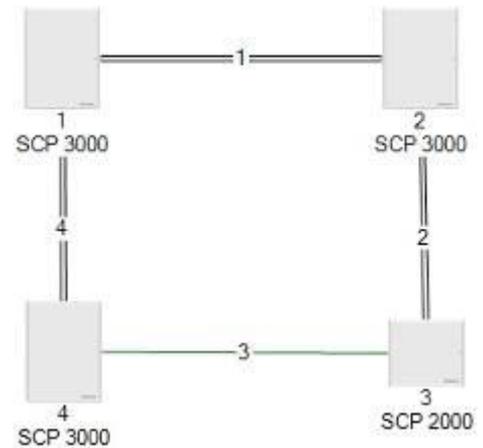


Fig. 52 SecuriFire planning

Glass fibre connections enable distances of more than 1,200 m between participants. Up to 2,000 m is possible in multi-mode (FXM) and up to 10,000 m in single-mode (FXS).

These features are supported by the following boards and units: B5-NET2-FXM, B5-NET2-FXS, B6-NET2-FXM and B5-NET2-FXS.

14.1.3 Mesh network

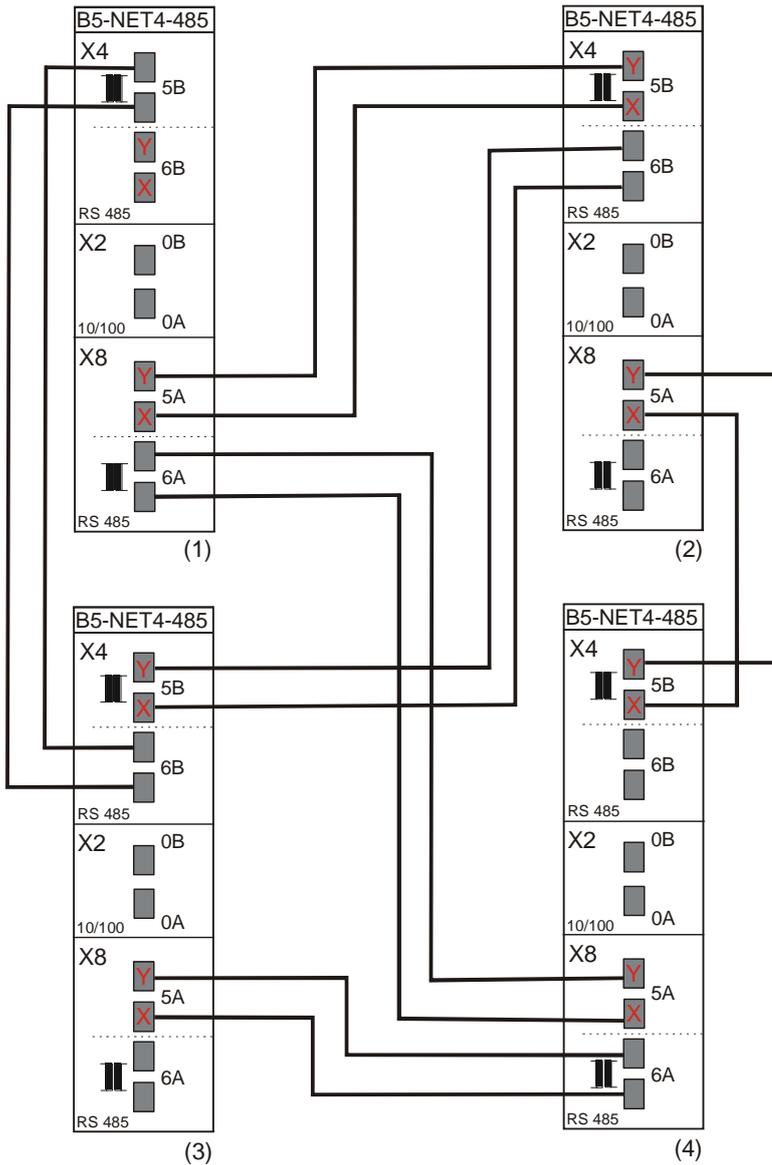


Fig. 53 Mesh network

Board / unit	Used interfaces
B5-NET4-485	X4 [5B] or X4 [6B] or X8 [5A] or X8 [6A]
B5-NET2-485	-
B6-NET2-485	-
B5-NET2-FX	X4[5B] or X8[5A] or X3[1B] or X5[1A]
B6-NET2-FX	X4 [5] or X3[1B] or X5[1A]
B5-LAN	-
B6-LAN	-
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	-
B7-CPB11	-

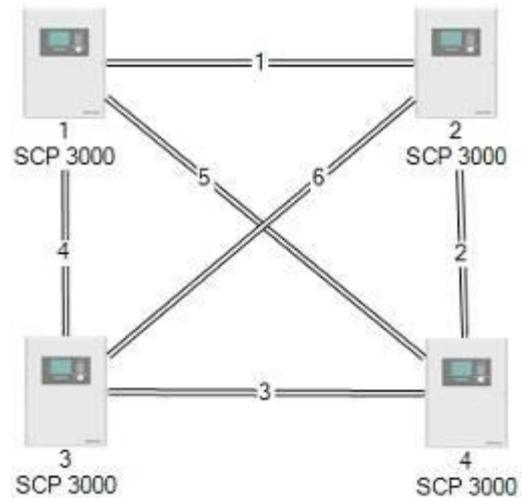


Fig. 54 SecuriFire planning

In the SecuriLan networking concept the control units can be networked as a ring or as mesh network. This is not obligatory – the topology is freely selectable. The only limitation is that a max. of 4 ports of the network board can be used for this control unit network. This type of network can be implemented only with the B5-NET4-485, B5-NET2-FXM and B5-NET2-FXS network boards.

14.1.4 SecuriLan without line redundancy

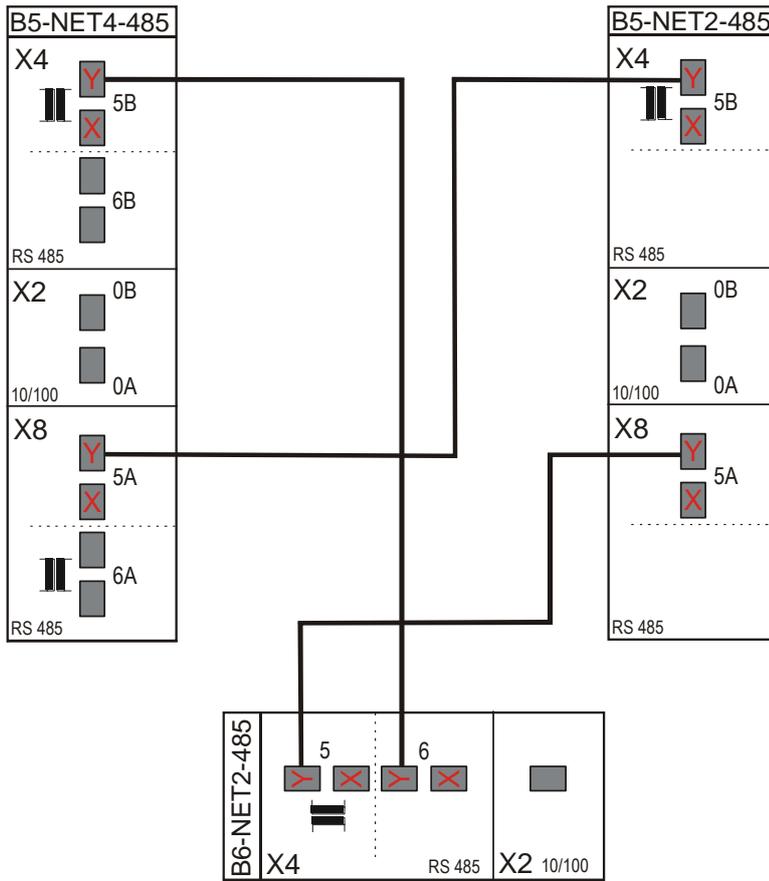


Fig. 55 SecuriLan without line redundancy

Board / unit	Used interfaces
B5-NET4-485	X4 [5B] or X4 [6B] or X8 [5A] or X8 [6A]
B5-NET2-485	X4 [5B] or X8 [5A]
B6-NET2-485	X4 [5] or X4[6]
B5-NET2-FX	X4[5B] or X8[5A] or X3[1B] or X5[1A]
B6-NET2-FX	X4 [5] or X3[1B] or X5[1A]
B5-LAN	-
B6-LAN	-
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	-
B7-CPB11	-

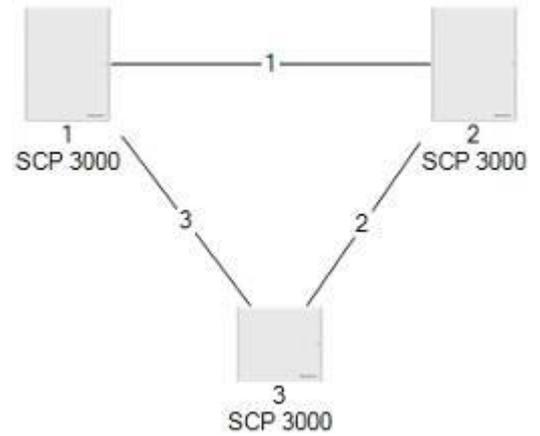


Fig. 56 SecuriFire planning

For this networking variant the following boards and units are possible: B5-NET4-485, B5-NET2-485, B5-NET2-FXM, B5-NET2-FXS, B6-NET2-FXM, B6-NET2-FXS and B6-NET2-485 and MIC711.

Connection examples

14.1.5 Port-redundant connections

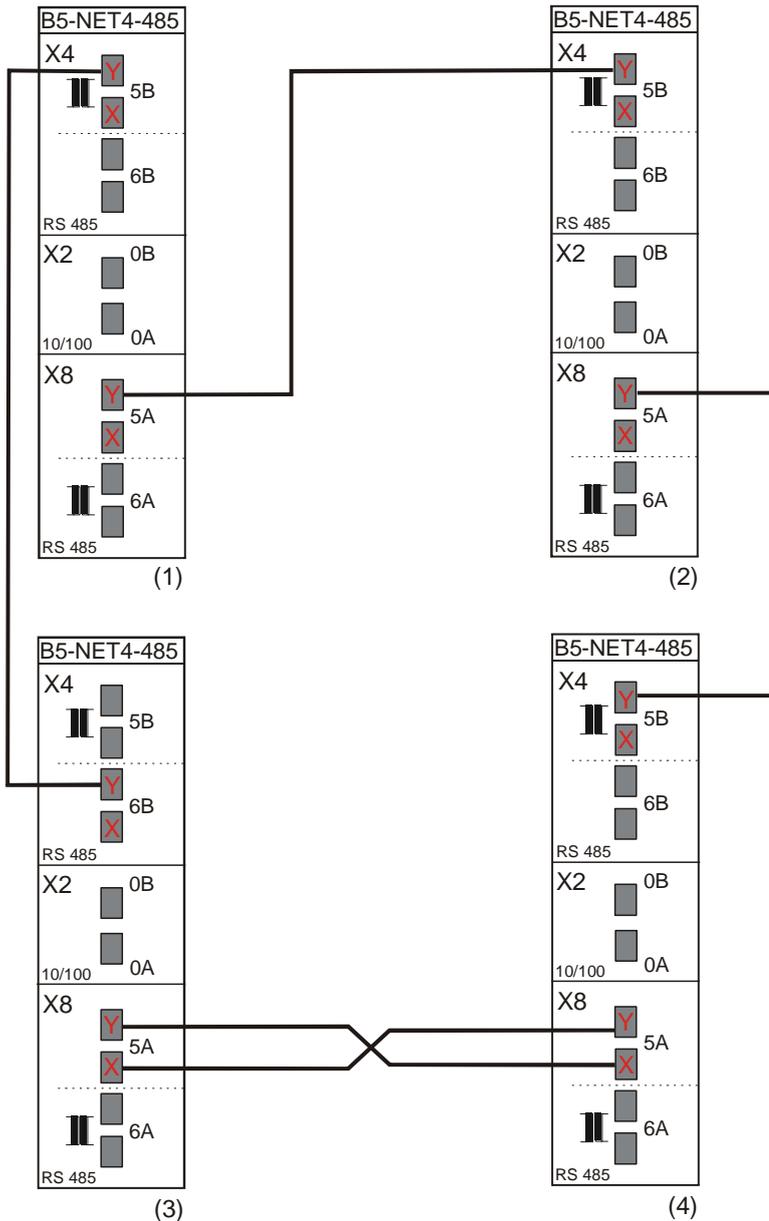


Fig. 57 Port-redundant connections

Board / unit	Used interfaces
B5-NET4-485	X2 [0B] and X2 [0A]
B5-NET2-485	X2 [0B] and X2 [0A]
B6-NET2-485	-
B5-NET2-FX	X2[0B] and X2[0A]
B6-NET2-FX	
B5-LAN	-
B6-LAN	-
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	-
B7-CPB11	-

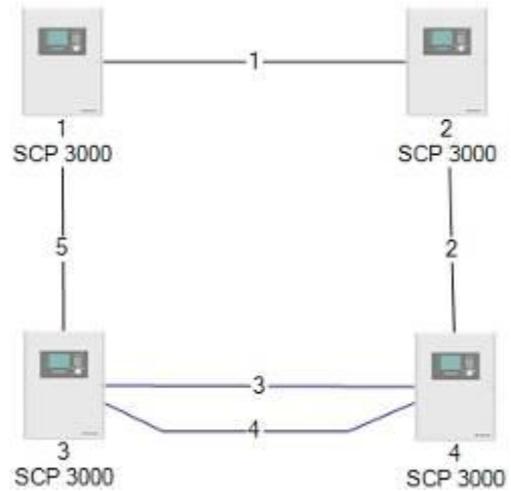


Fig. 58 SecuriFire planning

Other physical connections (e.g. 10/100BASE-TX) cannot be implemented as line-redundant but rather as port-redundant. This is possible with the following boards: B5-NET4-485, B5-NET2-485, B5-NET2-FXM und B5-NET2-FXS and MIC711.

14.1.6 Tree structure

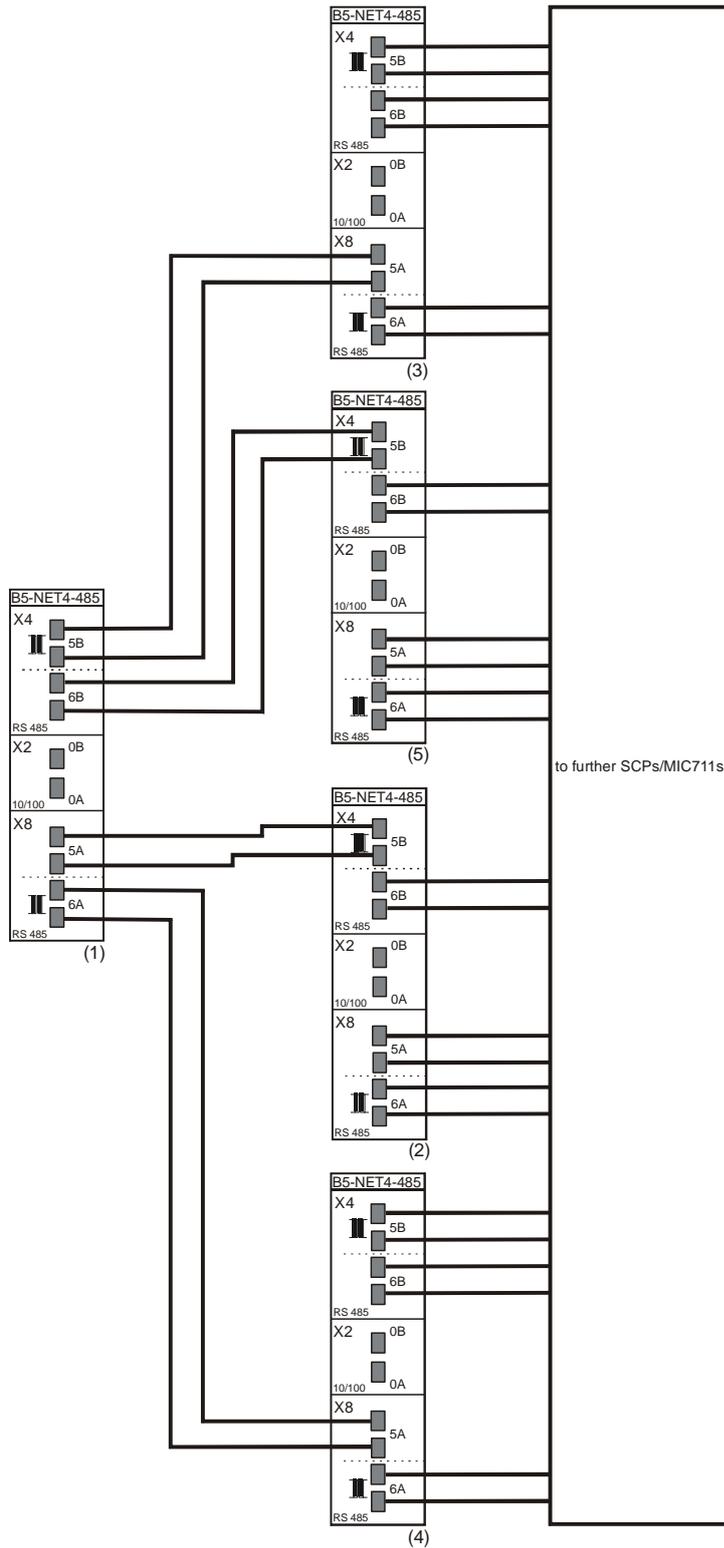


Fig. 59 Tree structure

Board / unit	Used interfaces
B5-NET4-485	X4 [5B] or X4 [6B] or X8 [5A] or X8 [6A]
B5-NET2-485	-
B6-NET2-485	-
B5-NET2-FX	-
B6-NET2-FX	-
B5-LAN	-
B6-LAN	-
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	-
B7-CPB11	-

A tree structure can also be implemented when using line-redundant connections. Note that when this is done the redundancy of the switches can no longer be used.

Connection examples

14.2 Not standard-compliant SecuriLan networking

14.2.1 Non-redundant direct connection of two SCPs

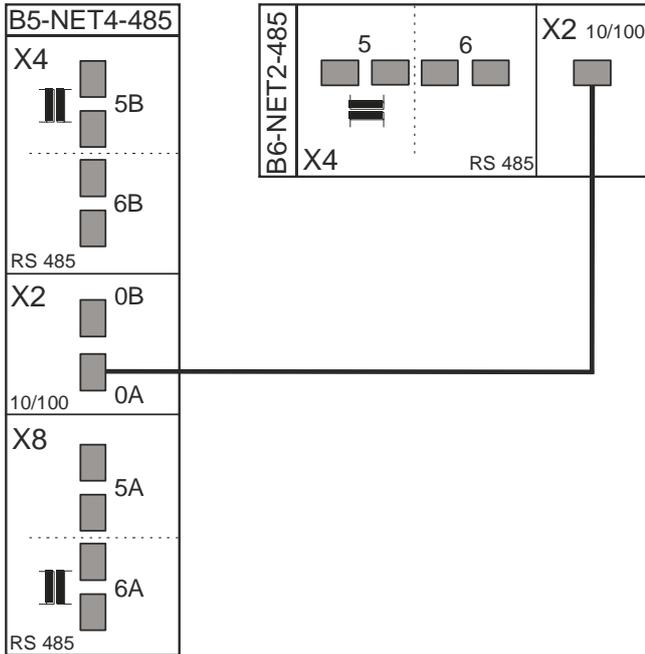


Fig. 60 Non-redundant direct connection of two SCPs

Board / unit	Used interfaces
B5-NET4-485	X2 [0B] or X2 [0A]
B5-NET2-485	X2 [0B] or X2 [0A]
B6-NET2-485	X2
B5-NET2-FX	X2 [0B] or X2 [0A]
B6-NET2-FX	X2
B5-LAN	X2
B6-LAN	X2
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	X3
B7-CPB11	-

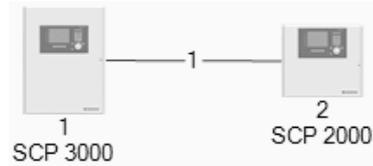


Fig. 61 SecuriFire- planning

14.2.2 Non-redundant networking

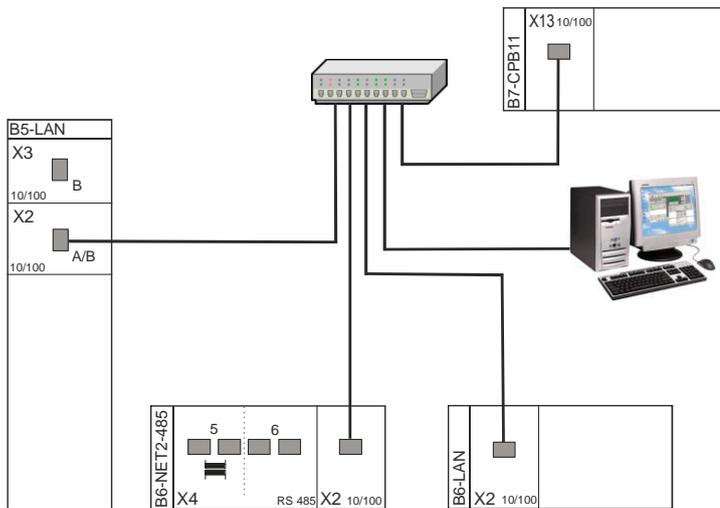


Fig. 62 Non-redundant networking

Board / unit	Used interfaces
B5-NET4-485	X2 [0B] or X2 [0A]
B5-NET2-485	X2 [0B] or X2 [0A]
B6-NET2-485	X2
B5-NET2-FX	X2 [0B] or X2 [0A]
B6-NET2-FX	X2
B5-LAN	X2
B6-LAN	X2
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	X3
B7-CPB11	X13

Integrating PC applications is possible via a standard Ethernet. Further, SecuriFire SCPs can be networked via a standard Ethernet. This type of networking is possible only when non-redundant.



Notice

This connection option is not standards-compliant for SCPs and therefore permitted only for PC applications, since components without VdS device approval (e.g. switches) are used.

14.2.3 Connection via modem

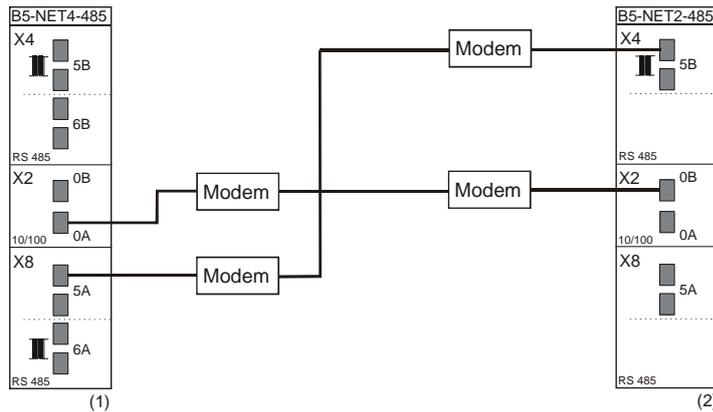


Fig. 63 Connection via modem

Board / unit	Used interfaces
B5-NET4-485	All possible
B5-NET2-485	All possible
B6-NET2-485	All possible
B5-NET2-FX	All possible
B6-NET2-FX	X2
B5-LAN	X2
B6-LAN	X2
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	X3
B7-CPB11	X13

When networking SecuriFire SCPs for distances > 1,200 m, suitable modems and converters or fibre-optic cable have to be used. A separate document is devoted to the use of external fibre-optic modems.

14.3 Mixed forms

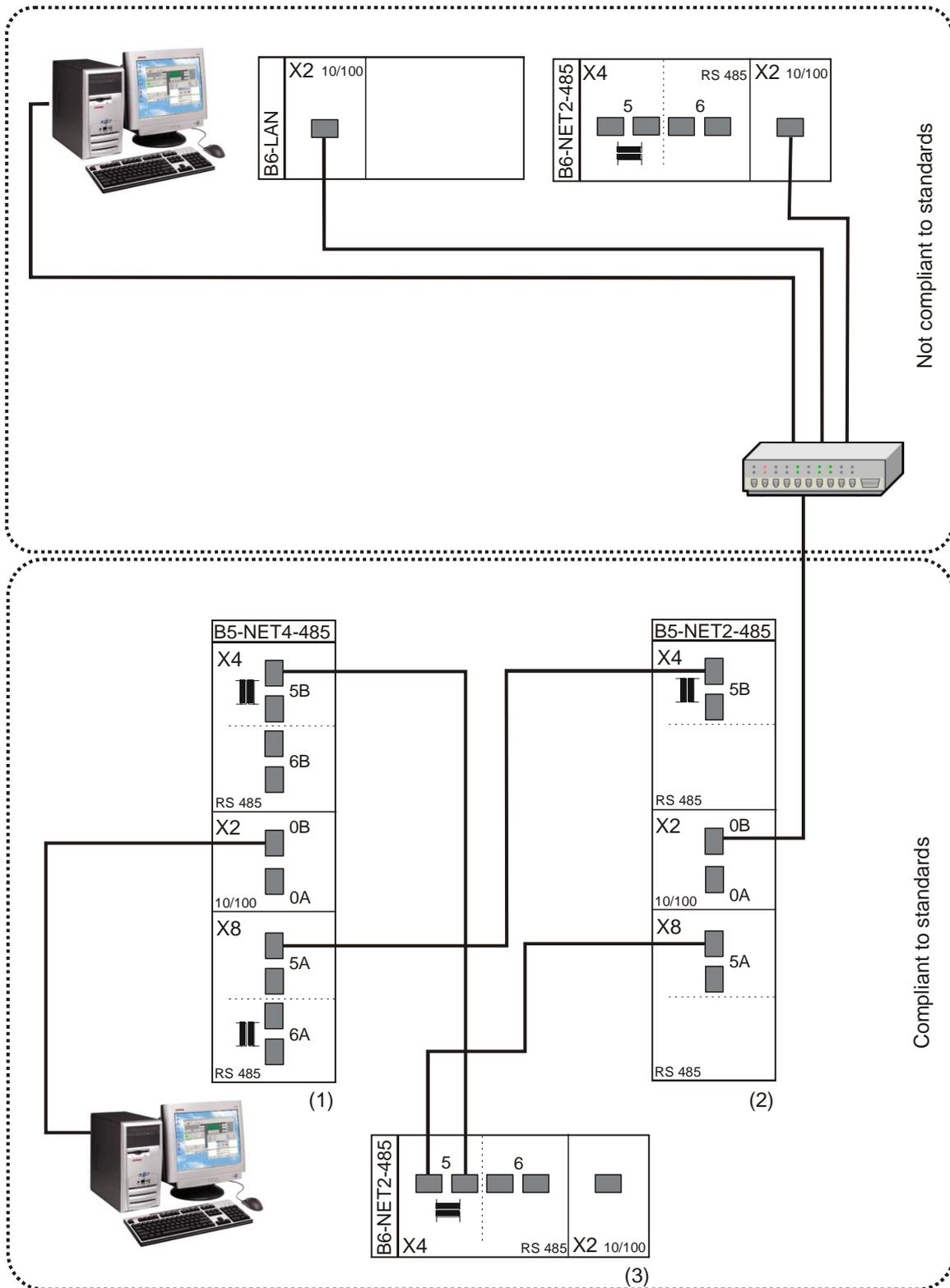
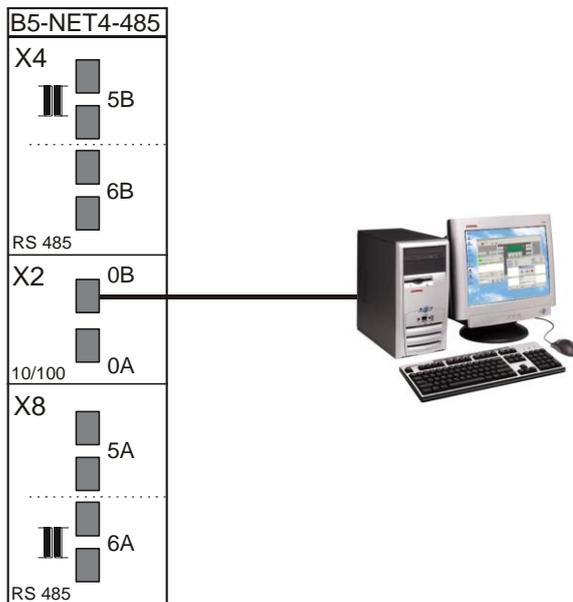


Fig. 64 Mixed forms

Additional PC applications can be connected on the free ports of the network boards. Integrating additional PC applications and SCP/MIC711 via a non-redundant standard Ethernet is also possible.

14.4 PC applications

14.4.1 Non-redundant connection to PC applications

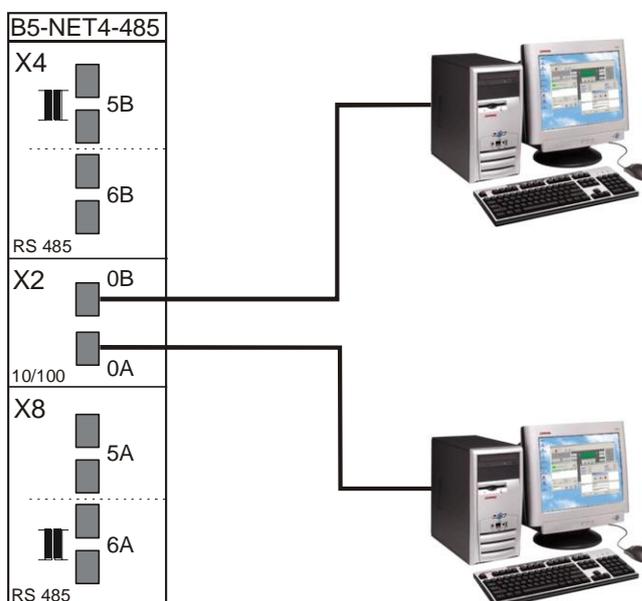


Board / unit	Used interfaces
B5-NET4-485	X2 [0B] or X2 [0A]
B5-NET2-485	X2 [0B] or X2 [0A]
B6-NET2-485	X2
B5-NET2-FX	X2 [0B] or X2 [0A]
B6-NET2-FX	X2
B5-LAN	X2
B6-LAN	X2
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	X3
B7-CPB11	X13

Fig. 65 Non-redundant connection to PC applications

This networking variant is intended above all for integrating PC applications (e.g. SecuriFire Studio). A PC be connected non-redundantly to the following boards and units: B5-NET4-485, B5-NET2-485, B6-NET2-485, B5-NET2-FXM, B5-NET2-FXS, B6-NET2-FXM, B6-NET2-FXS, B5-LAN B6-LAN, B6-LXI2, B7-CPB11 and MIC711.

14.4.2 Non-redundant connection to two PC applications



Board / unit	Used interfaces
B5-NET4-485	X2 [0B] or X2 [0A]
B5-NET2-485	X2 [0B] or X2 [0A]
B6-NET2-485	-
B5-NET2-FX	X2 [0B] or X2 [0A]
B6-NET2-FX	-
B5-LAN	-
B6-LAN	-
MIC711	X4 [6B] or X4 [6A]
B6-LXI2	X3
B7-CPB11	X13

Fig. 66 Non-redundant connection to two PC applications

With this networking variant, two PC applications (e.g. SecuriFire Studio) and an SCP/MIC711 can be connected non-redundantly. The following boards are possible: B5-NET4-485, B5-NET2-485, B5-NET2-FXM, B5-NET2-FXS and MIC711.

15 Article numbers / spare parts

Short designation		Art. number CH	Art. number
B5-NET4-485	RS485 / 100BASE-TX network board	115.242 438	EG072915
B5-NET2-485	RS485 / 100BASE-TX network board	115.242 420	EG072910
B5-NET2-FXM	FXM / RS 485 /100BASE-TX NW board	115.245 879	20-1000001-01-01
B5-NET2-FXS	FXS / RS 485 /100BASE-TX NW board	115.245 887	20-1000000-01-01
B5-LAN	Interface board	115.242 446	EG072903
B6-NET2-485	RS485 / 100BASE-TX network unit	115.245 909	EG072934
B6-NET2-FXM	FXM / RS 485 /100BASE-TX network unit	115.245 917	20-1100001-01-01
B6-NET2-FXS	FXS / RS 485 /100BASE-TX network unit	115.245 925	20-1100000-01-01
B6-LAN	Interface unit	115.245 895	EG072940
B6-LXI2	SecuriLine unit	115.248 118	20-1100002-01-01

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