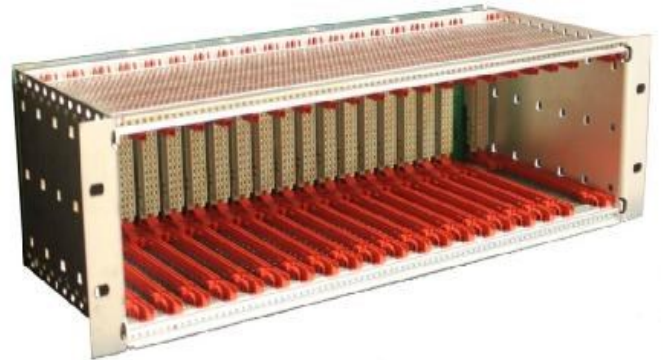


RTU513 Remote Terminal Unit DataSheet & Connection Setting

Sub-Rack SMS10

Application

The subrack SMS10 is designed to accept up to 19 input/output boards of a PKS RTU513 remote terminal unit. It is interfaced to the communication rack SMS10 via the serial PKS RTU513 peripheral bus. Up to 7 racks SMS10 can be connected to each bus segment of the communication rack SMS10. By using the bus connection unit 513BCM03 the sub-rack SMS10 will become a small communication rack with up to two communication unit (PKS RTU 513). The sub-rack SMS10 is installed in a swing frame cabinet or in a frame with 19" support.



Characteristic

The 19" subrack has a height of 3 HE for single Euro-card format boards (DIN 41494). There are 21/20 slots available for the installation of boards. The power supply unit has a predefined slot allocated to it, and occupies two slots.

Allocation of the slots:

- Maximum 19 peripheral boards
- Power supply unit (2 slots)
- Or
- Maximum 2 communication units (4 slots)
- Maximum 15 peripheral boards
- Power supply unit (2 slots)

For the physical interfacing of boards edge connectors of type F (DIN 41612) are used. Rows 2 to 20 of the edge connectors connect the PKS RTU 513 system bus and are soldered directly to printed circuit board. The connection of the process signals is made via the rows 22 to 32 by the means of sub-connectors. The sub-connector clips into a cut-out in the edge connector (see Fig. 1). The connection of the signal wires is made by means of crimp clips

Characteristics

using snap-in fixing. In addition to the use of prefabricated cables it is also possible to attach individual wires during commissioning. This interface technology minimizes the number of cable connectors as well as the space required in the rack SMS10.

A monitoring circuit on the rack SMS10 checks the supply voltages of the board (24 V DC, 5 VDC). In addition to the process signal connections, the following interface possibilities are located on the rear side of the printed circuit board:

- Interface to the serial peripheral bus
- Status relay contact for monitoring the internal voltages (24 V DC and 5 V DC)
- Supply power for the 513BCM03

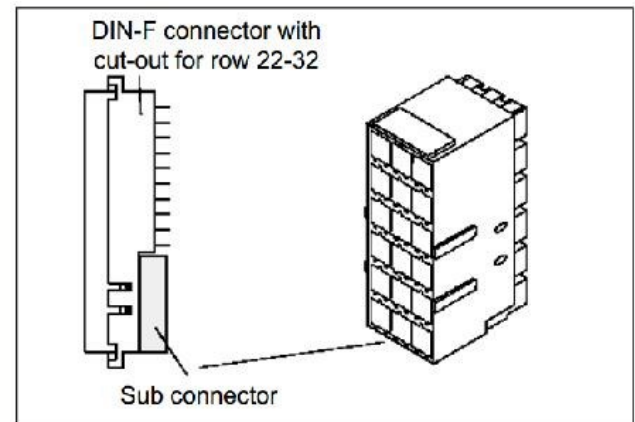


Fig.1:Sub-connector design

Processing Functions

Voltage Monitoring

Fig.2 shows the voltage monitoring diagram. The relay k01 is switched only, if the supply voltages 5 VDC and 24 VDC are present. If one or both of the supply voltages is/are missing, the relay k01 is released and the contact will be closed.

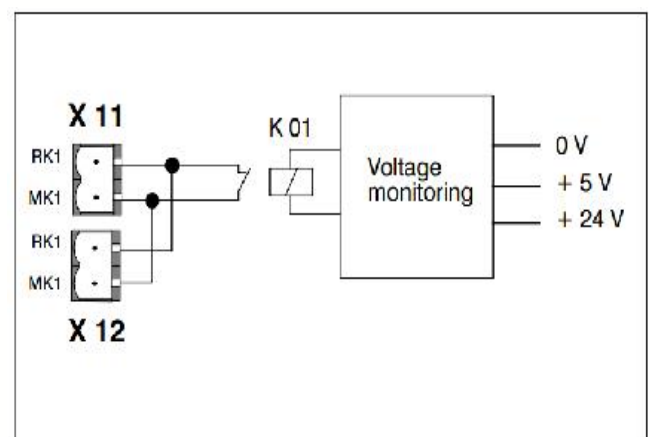


Fig.2: Voltage monitoring

Sub-Rack Address Setting

The DIP switch register S1 (see table.1) specifies the logical rack address of the PKS RTU513. Each subrack must have a unique rack address within one peripheral bus segment.


S1-1	S1-2	S1-3	Rack address
ON	OFF	OFF	1
OFF	ON	OFF	2
ON	ON	OFF	3
OFF	OFF	ON	4
ON	OFF	ON	5
OFF	ON	ON	6
ON	ON	ON	7
S1-4 Not used			
			

Table.1: Rack address setting

Serial Peripheral Bus Connection

Table.2 shows the principle serial peripheral bus routing. The two RJ45 jacks (see Figure9) X1 and X2 are used to expand the PKS RTU 513 with additional sub-racks by a daisy chain connection. The serial peripheral bus must be terminated by a 1 kΩ resistor at both ends. This is done in the first sub-rack by the communication unit (CMU). The resistor is equipped per default, and can be removed by carefully opening the drill hole X4 (see Figure 8 and Figure 12) with a 1.5 mm drill from the back side of the subrack. The resistor will stay only on the last sub-rack of the peripheral bus segment.


Connector X1 and X2			
Pin	Signal		<div>RJ45</div> 
1	-	Not used	
2	TA	Data -	
3	TB	Data +	
4	-	Not used	
5	GND	Ground	
6	-	Not used	
7	-		
8	-		
	Shield	Connected to the enclosure	

Table.2: Serial peripheral bus connector

Serial Peripheral Bus with FOSM10

If a longer distance must be linked or if the grounding situation is not clear, the fiber optic coupler FOSM10 must be used to connect the serial peripheral bus between two subracks. Figure10 shows the principle connection and the termination of the serial peripheral bus.

Fixing of peripheral boards

Each board in the subrack SMS10 must be fixed for operation. This is done by two crews in the upper and lower fixing rail of the subrack. The EMC specification of boards with metal front-plate is only valid, if the board front-plate is grounded by the two screws.

Grounding principle

Each subrack SMS10 must be grounded by using one of the two 6.3 mm Fasten connectors on the backside. At delivery the 0 V and the PE are connected (see Figure11). If this principle does not fit to the grounding principle of the plant, this connection can be removed by opening the drill hole X5 with a 5.0 mm drill at the back side of the sub-rack (see Fig.8 and Fig.11).

The process cables must be grounded at the entrance of the cabinet, or on a separate terminal block inside the cabinet.

Process I/O connections

The connection of the process signal wires is made by the means of crimp clips using snap-in fixing. In addition to the use auf pre-manufactured cables, it is also possible to attach individual wires during commissioning (see Figure3).

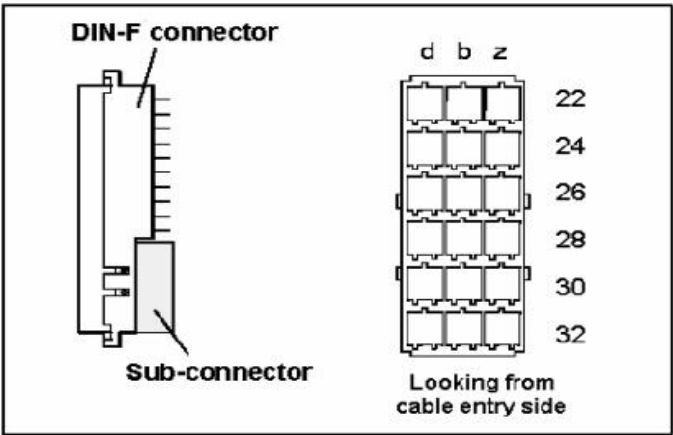


Fig.3: Sub connector

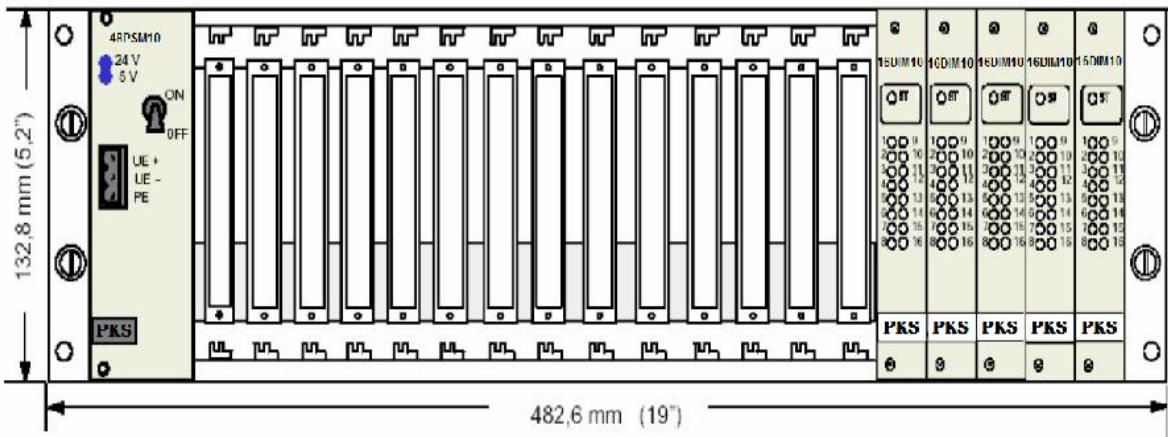


Fig.4:Front view of SMS10

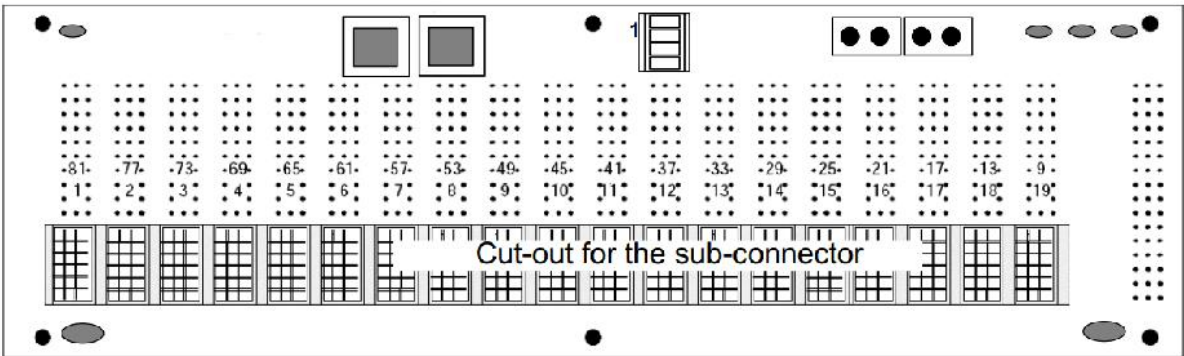


Fig.5: Rear view (Backplane) of SMS10

Sub-Rack Connection Setting

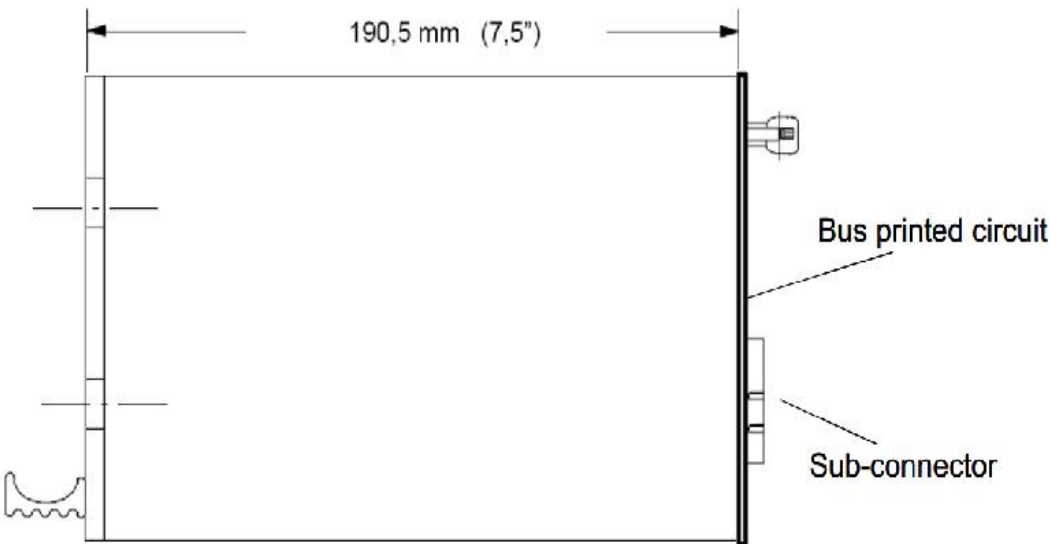


Fig.6: Side view

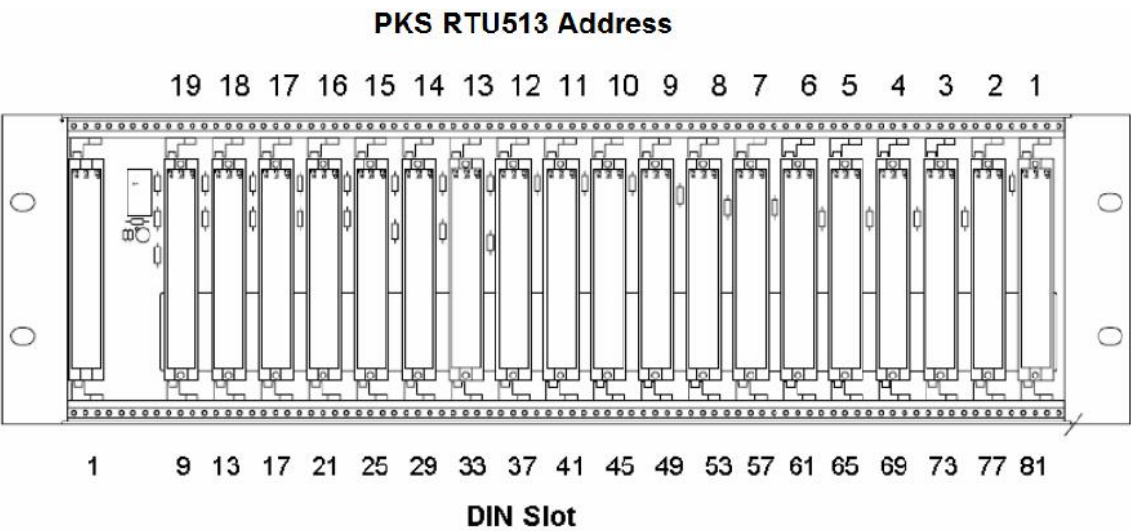


Fig.7: Layout of the sub-rack and addressing

Sub-Rack Connection Setting

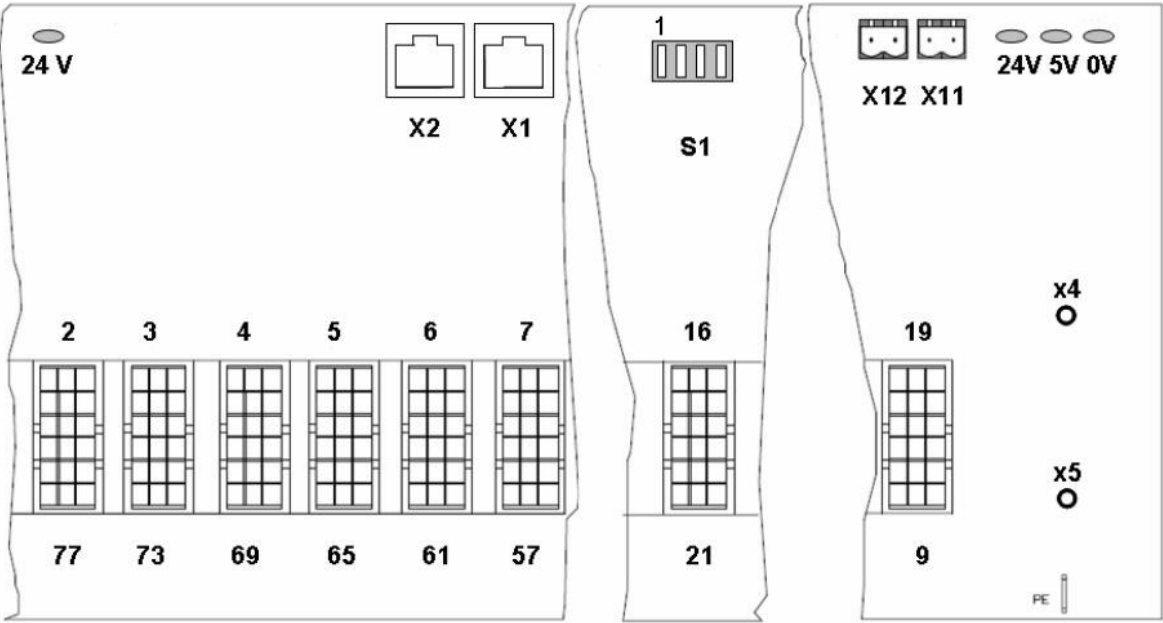


Fig.8: Connections and setting elements

Sub-Rack Connection Setting

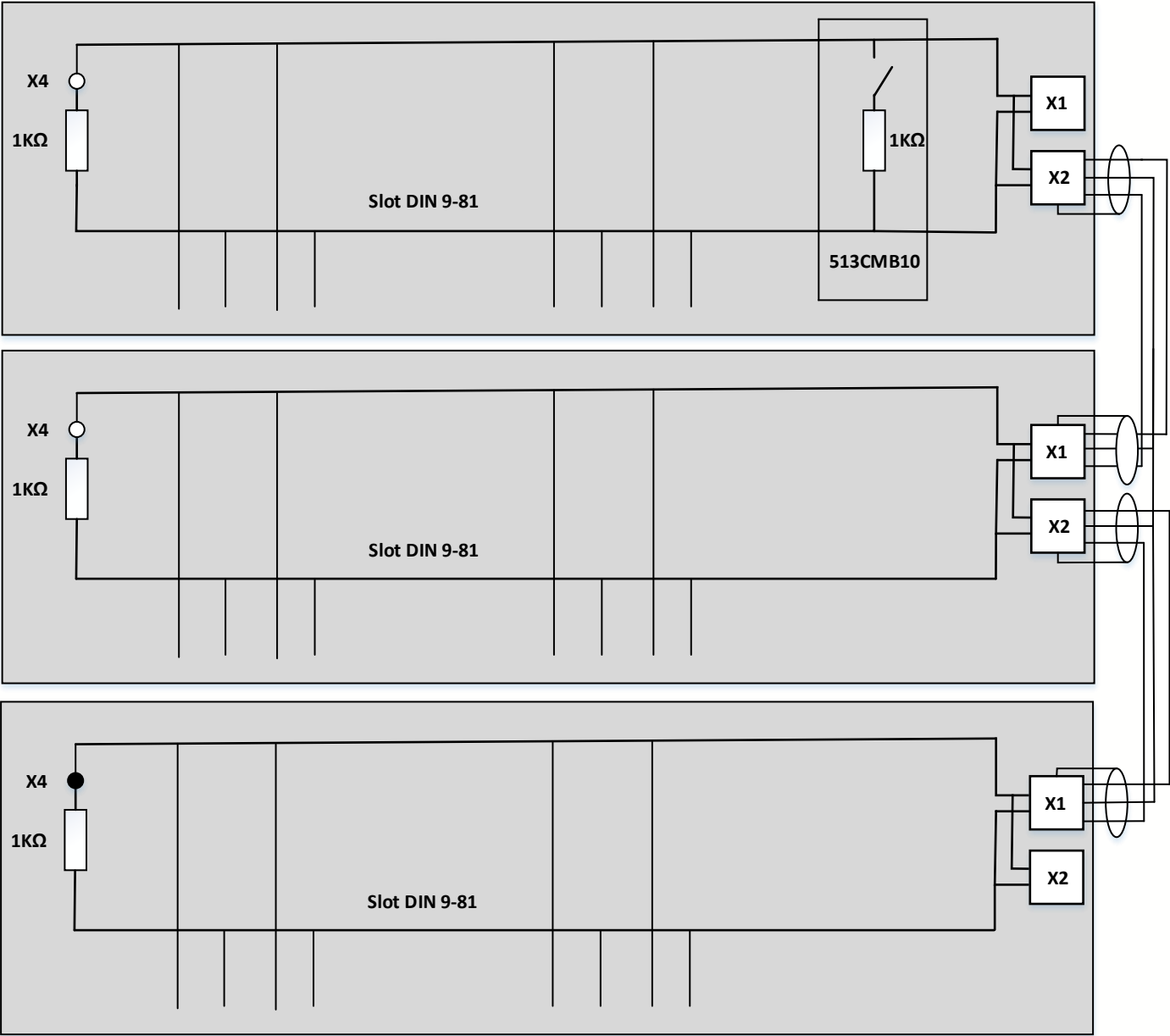


Fig.9: Serial peripheral bus termination

The diagram illustrates the fiber optic connection between two FOSM10 modules. Each module contains a Slot DIN 9 - 81 with 8 pins. The top module's output is connected to the bottom module's input, and the bottom module's output is connected to X1 and X2. The connection is labeled 'Fiber Optic'.

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Sub-Rack Connection Setting

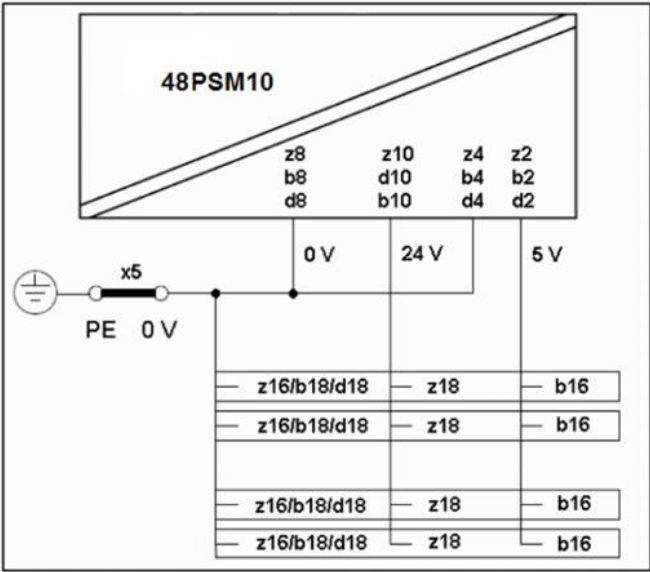


Fig.11: Grounding principle

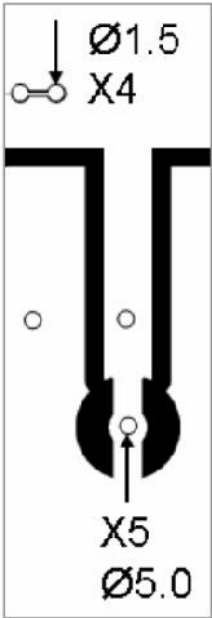


Fig.12: Position of the two drill holes

Technical Data

In addition to the PKS RTU513 general technical data, the following applies:

Subrack

	19", 3 HE, 21 slots following DIN 41494 1 slot = 4 units = 20,32 mm
Dimension	133 x 483 x 200 mm (H x W x D)
With boards	232 mm (D)
With boards And connectors	280 mm (D)
Weight	2.6 kg

Mechanical Layout

Printed circuit board	433.7 x 132.8 mm (W x H)
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Types of Connection

Peripheral boards	Indirect, female, 48 pole Type of DIN 41612 with cut- out for sub-connector
Process signal connection	18 pole sub-connector with crimp clips

Serial interfaces

SPB (X1,X2)	2* RJ45-jack
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Monitoring connection

X11,X12	Plug-in terminal strip, 2-pole each
Relay contact	NC-contact 1A /60 VDC /30 W

Protection Earth

PE	2 * fasten 6.3 mm
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Environmental condi-

Temperature	0...70°C
Relative humidity	5 ... 95 % (non condensing)