Application

The sub-rack WMS10 accommodates up to 19 input/ output modules in a PKS RTU513 substation. It is connected to the communication sub-rack CSMS10 via the serial peripheral bus. Up to seven WMS10 racks can be connected to each peripheral bus segment of a communication sub-rack CSMS10 (RTU513).

By using the bus connector unit 513BCM02 the subrack WMS10 can be used as small communication subrack for up to two communication units (RTU513).The sub-rack WMS10 will be mounted on a mounting plate in a cubicle. The sub-rack WMS10 is the successor of the sub- rack WMS10, and compatible in all functions.



Characteristics

A 19 inch sub-rack, 3U high to take single Europe-format boards, according to DIN 41494, is mounted on a printed circuit board with a height of 6 U. The sub-rack has 20 slots 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)

The 18 connection points of an F female connector for the connection of the process signals are located on a



Characteristics

plug-in socket block on the mounting panel. The process signal cables are connected to plug-in sockets with screw terminals or to connection pins for ,Standard Termi Point'. The process signals can therefore be disconnected from the plug-in socket block at any time.

A monitoring circuit on the sub-rack WMS10 checks the supply voltages for the boards (5 V DC, 24 V DC). In addition to the process signal connections, the following interface possibilities are located on the front 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 513BCM02

Processing Functions

Voltage Monitoring

Fig.1 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.1: Voltage monitoring



Sub-Rack Address Settings

The DIP switch register S1 (table.1) specifies the logical rack address of the PKS RTU513. Each sub-rack

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			
I </td			

Table.1: Rack address setting

Serial Peripheral Bus Connection

Table.2 shows the principle serial peripheral bus routing. The two RJ45 jacks X1 and X2 (see Figure 5) 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 $k\Omega$ resistor at both ends. This is done in the first subrack by the communication unit (CMU).

The resistor is equipped per default, and can be removed by carefully opening the drill hole X4 (Figure 9) with a 1.5 mm drill from the back side of the sub-rack. The resistor will stay only on the last sub-rack of the peripheral bus segment.

	Connector x1 and x2		
Pin	Signal		
1	-	Not used	
2	TA	Data -	RJ45
3	ТВ	Data +	
4	-	Not used	. 8
5	GND	Ground	
6	-		
7	-	Not used	
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. Figure 7 shows the principle connection and the termination of the serial peripheral bus.

Fixing of peripheral boards

Each board in the subrack WMS10 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 back side. At delivery the 0 V and the PE are connected (see Figure 8). 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.9).

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

Process I/O connections

The process connection is done via the plug-in terminal blocks. The DIN-F connector is directly connected to the terminal blocks. Table.3 shows the references.



Fixing on the mounting plate

The sub-rack will be fixed on the mounting-plate with 10 screws. Fig.10 shows in detail the mounting of the equipment, Fig.11 shows the position / size of the holes.

Terminal	DI	N-F conne	ctor
1			Z32
2		B32	
3	D32		
4			Z30
5		B30	
6	D30		
7			Z28
8		B28	
9	D28		
10			Z26
11		B26	
12	D26		
13			Z24
14		B24	
15	D24		
16			Z22
17	Not use	d	
18		B22	
19	D22		

Table.3: Process I/O connection





Fig.2: Front view of WMS10



Fig.3: Rear view





Fig. 4: Layout of the sub-rack and addressing







sv 🖵

28V



Fig. 6: Serial peripheral bus termination





Fig. 7: Serial peripheral bus with FOSM10





Fig. 8: Earthing /Grounding principle



Fig. 9: Position of the two drill holes





Fig. 10: Mounting on the mounting-plate





Fig. 11: Position /size of the fixing holes



Technical Data

In addition to the PKS RTU 513 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 190.5 mm (H x W x D)
With boards	212 mm (D)
With boards and connectors	260 mm (D)
Weight	3.7 kg

Types of Connection

Peripheral boards	Indirect, female, 48 pole Type of DIN 41612
Process signal connection	Plug-in terminal strips, 19 pole,18 signals

Environmental conditions

Temperature	-25 70 °C
Relative	5 93 %
humidity	(non condensing)

Monitoring connection

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

Mounting Panel

Dimension	6 HE , 256.6 x 482.6 mm (W x H)
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Protection Earth

PE 2 * fasten 6.3 mm

Serial interfaces

SPB (X1,X2)	2* RJ45-jack

