

Product Catalogue





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Peyman Khotoot Shargh is Iranian Well-known an knowledge-based technological company who provides solutions in control and monitoring systems, dispatching and Scada in Infrastructure Such as electricity, Oil and gas and petrochemicals, Metal, Rail & Water & Wastewater Industries which was established in 2007. This experiences and expertise in addition to the ability to provide specialized engineering services, has led to the production of high-tech equipment such as Remote Terminal Unit (RTU/ PLC), Power meter, Smart Transducer and special Substation Automation software. In fact, the orientation of Peyman Khoot Shargh is providing equipment and services and the implementation of intelligence in the aforementioned infrastructure industries. Other activities of this company includes specialized implementation of signal conditioning with the aim of preparing information for control and monitoring systems and automation.



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RTU MODULES – Swing Mode SUBRACK















4

RTU MODULES – Wall-mount SUBRACK















RTU MODULES – I/O CARD " M series"















RTU MODULES – I/O CARD "R series"















RTU MODULES















RTU MODULES – CPU & BUS CONECTION















SUBRACK

The communication subrack CSMS10 is designed for the CMUs (communication unit) of the PKS RTU513 remote terminal unit. The communication subrack is prepared for mounting the power supply modules, the communication units, a real time clock and a bus connection unit BCU01. All necessary connections between the modules are done via the backplane of the subrack. All connections to the outside are done via the module connectors on the front plate. The communication subrack itself has no connections to the

Subrack

Dimension	19", 3 HE, 21 slots following DIN 41494	
Differiolofi	1 slot = 4 units = 20,32 mm	
	133 x 483 x 200 mm	
	(H x W x D)	

Mechanical Layout

Printed circuit board	3HE, Euro card format (160 x 100)
Front panel	4R, 1 Slot (20 mm)
weight	approx. 0.2 kg

Protection Earth- / Shield Terminal

Must be caused by electric conductive screwing to the frame or a cable plug screwed to the rack.

CSMS10

Slot configuration

Slot address 1, board address P1 and slot address 9, board address P2 for two redundant power supply modules. Each is 2 slots in width.

Slot addresses/board addresses17/8, 25/7, 33/6, 41/5, 49/4, 57/3, 65/2 and 73/1 for the communication units. Each is 2slots in width.

Slot address 81, board address 0 for the real time clock or bus connection unit BCU01. 1 Slot in width.

Types of Connection

Peripheral boards	11 connectors fe- male, 48 pole Type of DIN 41612
Peripheral boards	DIN 41612

Temperature	-10 65 °C
Relative humidity	5 95 % (non condensing)



SUBRACK

The subrack SMS10 is designed to accept up to19input/ 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 communi- cation 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



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

Monitoring connection

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

Mechanical Layout

Printed circuit board	433.7 x 132.8 mm (W x H)
--------------------------	--------------------------

Types of Connection

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

Serial interfaces

SPB (X1,X2)	2* RJ45-jack	
		11

Protection Earth

PE	2 * fasten 6.3 mm
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Environmental condi-

Temperature	070°C
Relative humidity	5 95 % (non condensing)



SUBRACK

The SMS12 rack is designed to be used with or without redundant power supply. Therefore, it has 2 slots for redundant power supply modules (PSM) and 17 slots that for I/O modules. can be used communication units (CMU) or a mixture of both. It is interfaced to other racks via the PKS RTU513 serial peripheral bus (SPB). Up to 7 SMS12 racks can be connected to a system. By using the bus connection unit 513BCM05, the SMS12 becomes a rack with up to 8 communication units (513CMB10). For applications requiring a communication unit, the use 513BCM05 is required. The rack SMS12 is of



Monitoring Connections

Power Supply Warning

X13,X14,X15	Plug-in terminal strip, 2-pole each
Relay contact	NC-contact 1A /60 VDC /30 W

Monitoring connection ALARM

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

Environmental conditions

Temperature	070°C
Relative humidity	5 95 % (noncondensing)

Protection Earth

PE	2 * fasten 6.3 mm
----	-------------------

Mounted on a quing from achingt

	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)

Types of Connection

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

Compliances

environmental EN60255, IEC60870 Safety EN60950

2* RJ45-jack

Serial interfaces

SPB (X1,X2)



SUBRACK

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.

WMS10

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

Serial interfaces

SPB (X1,X2)

2* RJ45-jack



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

SUBRACK

The WMS12 rack is designed to be used with or without redundant power supply. Therefore, it has 2 slots for redundant power supply units (48PSM) and 17 slots that can be used for I/O modules, communication units (CMU) or a mixture of both. It is interfaced to other racks via the RTU513 serial peripheral bus (SPB). Up to 7, WMS12 racks can be connected to a I/O Bus segment. By using the bus connection unit BCU04, the WMS12 becomes a rack with up to 8 communication unit (513CMB10).



Monitoring Connections

P.S. WARNING

X13, X14, X15	Plug-in terminal strip, 2-pole each
Relay contact	Normal closed contact 1 A / 60 V DC / 30 W

Monitoring Connections

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

Protection Earth

PE	2* faaten6.3 mm
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Environmental Conditions

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

 19", 3 U, 21 s according DIN 41494, 1s = 20,32 mm.

 Dimension
 132,8 x 482,6 x 190,5mm (H x W x D)

 With boards
 212 mm (D)

 With boards and connectors
 260 mm (D)

 Weight
 3.7 kg

Mounting Panel

Rack

Types of Connection

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

Serial interfaces



SUBRACK

The Mounting Plate Rack WMS11 accommodates up 2 communi- cation unit CMU02 or 513CMB10 and up to 8 peripheral modules in a RTU513 substation One more (extension) mounting plate rack can be connected to the WMS11 via the serial RTU513 sys- tem bus.

WMS11



Rack

Height 3 U, 9 slots according to DIN 1 slot = 4 raster = 20,32 mm 132,8 x 192 x 178 mm (H x W x D)	41494
Mounting depth with boards	198 mm
with boards and front plugs	248 mm

Mounting Panel

Dimensions	266 x 265 mm (H x W)
Weight	1,4 kg

Serial Interface

Peripheral Bus	RJ45 socket connector

Connection Type

CMU, I/O boards	Indirect, 48 pole, Type F DIN 41612
Process signals	Plug-in terminal strip, 19 pole, 18 signals, shield not connected



Connectors

Minute interrupt (TSI)	Plug-in terminal strip, 2 pole, 24 V DC
Power supply	Plug-in terminal strip, 2 pole, 24 V DC, 20.4 28.8 V DC, Output (internally): 5 V DC, max. 5 A 24 VDC direct connect from 24 VDC input
Relay 'Alarm'	Plug-in terminal strips, 2 * 2 pole, relay contact: 1 A / 60 V DC, 30 W
Relay 'Warning'	Plug-in terminal strip, 2 pole, relay contact: 1 A / 60 V DC, 30 W
Process voltages: C1, C2 and –Up	Plug-in terminal strips, 2 * 2 pole, 60 V DC, max. 5 A
Protection earth	2 * Fasten 6,3 mm

Protection

Fuse, SMD type F1	SMT FUSET 154 3820
	125 V 4A (delayed), ex- changeable
	Manufacture: Little FUSE
	Order code: 154004TDR

SUBRACK

WMS13

The WMS13 is designed to be used with power supply (48PSM10).The Mounting Plate Rack WMS13 accommodates up 2 communication unit CMU02 or 513CMB10 and up to 6 peripher- al modules in a RTU513 substation. One more (extension) mounting plate rack can be connected to the WMS13 via the serial RTU513 system bus.



Rack

Height 3 U, 9 slots according to DIN 41494 1 slot = 4 raster = 20,32 mm 132,8 x 192 x 178 mm (H x W x D)	
Mounting depth with boards	198 mm
with boards and front plugs	248 mm

Mounting Panel

Dimensions	266 x 265 mm (H x W)
Weight	1,4 kg

Connectors

Minute interrupt (TSI)	Plug-in terminal strip, 2 pole, 24 V DC
Relay 'Alarm'	Plug-in terminal strips, 2 * 2 pole, relay contact: 1 A / 60 V DC, 30 W
Relay 'Warning'	Plug-in terminal strip, 2 pole, relay contact: 1 A / 60 V DC, 30 W
Process voltages: C1, C2 and –Up	Plug-in terminal strips, 2 * 2 pole, 60 V DC, max. 5 A
Protection earth	2 * Fasten 6,3 mm

Serial Interface

Peripheral Bus	RJ45 socket connector

Connection Type

CMU, I/O boards	Indirect, 48 pole, Type F DIN 41612
Process signals	Plug-in terminal strip, 19 pole, 18 signals, shield not connected



I/O CARD

The 8AIM10 board records up to eight analog measured values. The 8AIM10 board allows it to connect all typ- ical measured value ranges. It can be configured for the following measurement ranges by simple switches and jumpers

- ±2mA (only for channel 1)
- ±10mA
- ±20mA
- ±1V

Input channel

Inputs	8 differential inputs
Measuring ranges	± 2 mA (only for channel 1) ± 10 mA ± 20 mA ± 1V
Shunt/ impedance	50Ω at 20 mA 100 Ω at 2/10 mA 164 KΩ at 1V
Resolution	12bit + sign = ±100%

Power Supply

Supply 5 V / 190 mA		Supply	5 V / 190 mA
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Mechanical Layout

Printed cir- cuit board	3HE, Euro card format (160 x 100)
Front panel	4R, 1 Slot (20 mm)
weight	approx. 0.2 kg

Connection Type

Connector	Indirect, 48 pole Type F DIN 41612
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8AIM10



Electromagnetic Compatibility

Electrostatic dis- charge Immunity IEC 61000-4-2 (level3)	6 kV Contact 8 kV Air Performance criteria A
Radiated Radio- Frequency Electromagnetic Field Immunity Test IEC 61000-4-3 (level 3)	10 V/m Performance criteria A
Immunity to Electrical Fast Transient IEC 61000-4-4 (level 3)	2 kV Performance criteria A
Surge Immunity Test IEC 61000-4-5 (level 3)	2 kV Performance criteria A
Immunity to Conducted Disturbances, induced by Radio Frequency IEC 61000-4-6 (level 3)	10 V Performance criteria A

Temperature	-10 65 °C
Relative humidity	5 95 % (non condensing)

I/O CARD

Via the analog output board 2AOM10, analog control outputs for sequential or closed loop control, display instruments, measured recorders etc. can be connected to the RTU513. The 2AOM10 board has 2 isolated output channels which can be configured to different output current ranges. The output format, unipolar or bipolar resp. Live-Zero (4...20mA), can be set by software parameters. The following output current ranges can be configured independently per channel via plugin jumpers:

Output Chanel

Outputs:	2	
Potential isolation	From one a	nother and against
Output current	±2.5 mA ±5 mA ±10 mA ±20 mA (4 20 mA)	
Range selection	Per channe	el by plug-in jumper
Load impedance	Max 10000	2 (±2.5±10mA)
	Max 500Ω	(±20 mA)
Resolution adjust- ment	11bit + sigr factory-adju	a 2000 digit =100% usted
Errors	(Reference	ce : 25°C)
Gain error:	Тур. (%)	max. (%)
±20 mA	0.01	0.02
±10 mA	0.01	0.01
±5 mA/± 2.5 mA	0.03	0.2
Offset error:	Тур. (%)	max. (%)
±20 mA/± 5 mA	0.03	0.1
±10 mA/± 2.5 mA	0.06	0.2
Temperature drift:	(Range : 0.	70°C)
Gain typ.	(ppm/°C)	max.(ppm/°C)
±20 mA/± 5 mA	100	200
±10 mA/± 2.5 mA Offset	100	200
±20 mA/± 5 mA	60	300
±10 mA/± 2.5 mA	120	600

2AOM10



Power Supply

Supply	5 V/ 650 mA	

Test voltages

Impulse voltage withstand test:	2 kV, unipolar impulses, waveform 1.2/50 µs EC 60255-27
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Electromagnetic Compatibility

Electrical fa	2 KV IEC 6100 t:	0-4-4
High freque disturbance	ncy test: 1/2.5 KV (1 MH IEC 61000-4-18	IZ) B
Connecti	on types	
Connector	Indirect, 48-pole	

Mechanical Layout

PCB	160 x 100 mm
Weight	App. 0.3 kg

Temperature	0 70 ℃
Relative humidity	5 95 % (non condensing)

I/O CARD

The binary input board 16DIM10 is used for the isolated input of up to 16 binary process signals. Scanning and processing of the inputs are executed with the high time resolution of 1ms. Allocation of an input to a processing function can be done according to the rules of configuration. The board 16DIM10 can process the following types of signals: 16 single indications with time stamp / 8 double indications with time stamp / 8 double with 8 bit /1 digital measured value with 16 bit / 16



Input channel

Inputs	16, in 2 groups of 8 with common return per group
Input voltage	24, 48, 60 V DC
Input current	Typically. 2 mA for 24 to 60 V DC

Power Supply

Su	DE	vlc	

5 V / 190 mA

Mechanical Layout

Printed circuit board	3HE, Euro card format (160 x 100)
Front panel	4R, 1 Slot (20 mm)
weight	approx. 0.2 kg

Connection Type

Connector	Indirect, 48 pole Type F DIN 41612
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Test Voltage

OURSE

AC Test Voltage EN 61000-4-16 IEC 60870-2-1 (class VW3)	2,5 kV, 50 Hz Test duration: 1 min
Impulse Voltage with stand test IEC 60255-5 IEC 60870-2-1 (class VW 3)	5 kV (1,2 / 50 μs)

Immunity Test

Electrostatic dis- charge Immunity Test IEC 61000-4- 2 (level 3)	6 kV Contact 8 kV Air Performance criteria A
Radiated Radio- Frequency Electro- magnetic Field Im- munity Test IEC 61000-4-3 (level 3)	10 V/m Performance criteria A
Immunity to Electri- cal Fast Transient / Burst IEC 61000-4-4 (level 3)	2 kV Performance criteria A
Surge Immunity Test IEC 61000-4-5 (level 3)	2 kV Performance criteria A
Immunity to Conduct- ed Disturbances, in- duced by Radio- Fre- quency Fields IEC 61000-4-6 (level 3)	10 V Performance criteria A

Temperature	-10 65 °C
Relative humidity	5 95 % (non condensing)

I/O CARD

The binary input board 16DIM12 is used for the isolated input of up to 16 binary process signals. Scanning and processing of the inputs are executed with the high time resolution of 1ms. Allocation of an input to a processing function can be done according to the rules of configuration. The board 16DIM12 can process the following types of signals: 16 single indications with time stamp /8 double indications with time stamp/ 2 digital measured values with 8 bit / 1 digital measured value with 16 bit / 16

Input channel

Inputs	16, in 2 groups of 8 with common return per group
Input voltage	60 to 110 V DC
Input current	Typically. 2 mA for 60 to 110 V DC

Power Supply

Supply

5 V / 190 mA

Mechanical Layout

Printed circuit board	3HE, Euro card format (160 x 100)
Front panel	4R, 1 Slot (20 mm)
weight	approx. 0.2 kg

Connection Type

Connector	Indirect, 48 pole Type F DIN 41612
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Test Voltage

OURSE

AC Test Voltage EN 61000-4-16 IEC 60870-2-1 (class VW3)	2,5 kV, 50 Hz Test duration: 1 min
Impulse Voltage with stand test IEC 60255-5 IEC 60870-2-1 (class VW 3)	5 kV (1,2 / 50 μs)



Immunity Test

Electrostatic dis- charge Immunity Test IEC 61000-4- 2 (level 3)	6 kV Contact 8 kV Air Performance criteria A
Radiated Radio- Frequency Electro- magnetic Field Im- munity Test IEC 61000-4-3 (level 3)	10 V/m Performance criteria A
Immunity to Electri- cal Fast Transient / Burst IEC 61000-4-4 (level 3)	2 kV Performance criteria A
Surge Immunity Test IEC 61000-4-5 (level 3)	2 kV Performance criteria A
Immunity to Conduct- ed Disturbances, in- duced by Radio- Fre- quency Fields IEC 61000-4-6 (level 3)	10 V Performance criteria A

Environmental conditions

Temperature	-10 65 °C
Relative humidity	5 95 % (non condensing)

20

I/O CARD

The binary output board 16DOM10 can be used for the potentially isolated output of up to 16 binary signals to the process. The assignment of an output to a number of processing functions can be freely under- taken within the scope of the configuration rules. The 16DOM10 can be used for the following types of signal:

 Object commands with 1 or 2 pole output without (1 out of n) check / Object commands with 1.5 or 2 pole output with (1 out of n)-check / Set-point

outnets sagest / General output messages

Outputs	16, relay contacts single pole, 2 groups of 8
Potential iso- lation	yes, group-wise, from one an- other and against power sup- ply

Power Supply

Supply	5v/120 mA
	24v/±10 mA per relay

Mechanical Layout

Printed cir- cuit board	3HE, Euro card format (160 x 100)
Front panel	4R, 1 Slot (20 mm)
weight	approx. 0.2 kg

Test Voltage

OURSE

AC Test Voltage EN 61000-4-16 IEC 60870-2-1 (class VW3)	2,5 kV, 50 Hz, VDE 804 safety electrical isola- tion
Impulse Voltage with stand test IEC 60255-5 IEC 60870-2-1 (class VW 3)	5 kV (1,2 / 50 μs)

8DOM10



Connection Type

Connector	Indirect, 48 pole Type F DIN 41612
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Environmental conditions

Temperature	-10 65 °C
Relative humidity	5 95 % (non condensing)

Electromagnetic Compatibility

Electrical fast transient test:	1 kV IEC 801-4 (class 2)
High frequency dis-	2.5 kV (1MHz) <i>IEC</i>
turbance test:	255-4 (class III)

Relay Characteristics in Connection with 16DOM10

max. switching voltage	60 V DC
max. switching capacity resistive load:	60 W
inductive load at L/R = 30 ms:	40 VA (at 60 VDC)
Continuous current of a relay group: (8 with common return)	max. 2 A
Continuos current: (pulse command and 16DOM10 board with booster relay)	± 2 A (for com- mand duration ± 25 sec.)

I/O CARD

The PKSAIR01 board records up to eight analog measured values.

The module PKSAIR01 is able to process the following types of signals:

- Analog measured values (AMI)
- Measured floating point information (MFI)

Following measurement ranges can be configured:

- ±2mA
- ± 5 mA
- ±10mA
- ±20mA
- ± 40 mA
- ± 2 V DC
- 0... 20 V DC

Other effective ranges and live zero signals become generated out of these ranges through conversion of the communication unit (CMU).

Signaling by LEDs	
ERR (red)	Common fault information for the module

Connection type	
RTU513 backplane connector	48 pole type F DIN 41612

Environmental conditions	
Nominal operating temperature range:	-25°C 70°C -40 °C
Start up:	+85 °C
Max. operating	EN 60068-2-
temperature, max.	1, -2-2, -2-14
96h:	
Relative humidity	5 95 %
EN 60068-2-30	(non
	condensing)

Ordering information	
PKSAIR01 R0001	1KGT036500R0001



Mechanical layout	
Dimensions	160 mm x 100 mm, 3HE euro card format 4R (20 mm) front panel
Housing type	Printed circuit board
Mounting	for mounting in RTU513 racks
Weight	0.3 kg

Immunity test	
Electrostatic discharge IEC 61000- 4-2	8 kV air / 6 kV contact (level 3) Performance criteria A
Radiated Radio- Frequency Electromagnetic Field IEC 61000-4-3	10 V/m (level 3) Performance criteria A
Electrical Fast Transient Burst IEC 61000-4-4	2 kV (level 3) Performance criteria A
Surge IEC 61000-4-5	2 kV (level 3) Performance criteria A
Conducted Disturbances, induced by Radio- Frequency Fields IEC 61000-4-6	10 V (level 3) Performance criteria A





I/O CARD

AIR 01

PKS

Analog input channels PKSAIR01		
Inputs	8 differential inputs	
Configurable measuring range	• $\pm 2 \text{ mA}$ • $\pm 5 \text{ mA}$ • $\pm 10 \text{ mA}$ • $\pm 20 \text{ mA}$ • $\pm 40 \text{ mA}$ • $\pm 2 \text{ V DC}$ • 0 20 V DC	
Input impedance	150Ω @ ±2 mA and 5 mA 50Ω @ ±10 to ±40 mA 110 kΩ @ ±2 and 20 V DC	
Max. load	80 mA continuous @ ±10 to ±40 mA 40 mA continuous @ ±2 and ±5 mA 38 V/ 0.5 mA @ ±2 and 20 V DC	
Resolution	12 bit + sign 11 bit + sign @ ±2 V DC	
AD converter resolution	16 bit	
Accuracy at 25 °C	$\leq 0.1 \%$ $\leq 0.2 \% @ \pm 2 V DC$	
Linearity error at 25 °C	≤ 0.1 %	
Temperature drift	≤ 100 ppm/K (0 70 °C)	
Max. common mode input voltage	±150 V DC (electrical limit) ±8 V DC (functional limit)	
Max. differential input voltage	$\pm 4 \text{ V DC}$ (current input) $\pm 38 \text{ V DC}$ (voltage input)	
Common mode rejection	> 70 dB @ 25 °C	
Configurable line frequency fN	• 16.7 Hz • 50 Hz • 60 Hz	
Line frequency interference suppression	> 100dB @ fN ±2 % > 45 dB @ fN ±10 %	

Current consumption for power supplied via RTU513		
backplane		
5 VDC	75 mA	
24 VDC	-	



I/O CARD

The module 513DIR01 provides 16 galvanic isolated inputs for up to 16 binary process signals. Scanning and processing of the inputs are executed with the high time resolution of 1 ms. The allocation of an input signal to the processing functions can be done according to the rules of configuration.



DIR 01

The module 560BIR01 is able to process the following types of signals or a combination of them:

- 16 single point information with time stamp (SPI)
- 8 double point information with time stamp (DPI)
- 2 digital measured values each with 8 bit (DMI8)
- 1 digital measured value with 16 bit (DMI16)
- 16 integrated totals (max. 120 Hz) (ITI)
- 2 step position information each with 8 bit (STI)
- 2 bitstring input each with 8 bit (BSI8)
- 1 bitstring input with 16 bit (BSI16)
- or combinations of this signal types



I/O CARD

Binary input channels 513DIR01 R0001

Input	16channels, common return for 2 groups of 8 channels, isolated by opto-couplers
Nominal input voltage	24 60 V DC (+/- 20%)
Max. input voltage	72 V DC
Input current 1.8 2.2 mA constant	1.8 2.2 mA constant
Logical '1' definitely detected	>=18 VDC
Logical '0' definitely detected	>=9 VDC
Reverse voltage protection	yes
Max. input frequency for integrated totals	120MHhz



Mechanical layout

Dimensions	mm x 100 mm, 3HE \? euro card format 4R (20 mm) front panel
Housing type	Printed circuit board

Current consumption for power supplied via RTU513 backplane

5V DC	100 mA
24V DC	-

Signaling by LEDs

ERR (red)	Common fault information for the module
1 16	LED displays the active inputs

Signaling by LEDs

ERR (red)	Common fault information for the module
1 16	LED displays the active inputs

Mechanical Layout

PCB	160 x 100 mm
Weight	App. 0.3 kg

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



I/O CARD

The module 513DOR01 can be used for the control of 16 binary process signals using relay contacts.

The allocation of an output signal to the processing functions can be done according to the rules of configuration.

The module 513DOR01 is able to process the following type of signals:

- Single or double commands (SCO or DCO) with 1 or 2 pole output without (1 out of n) check
- Single or double commands (SCO or DCO) with 1.5 or 2 pole output with (1 out of n) check
- Regulation step command (RCO), 1 or 2 pole
- Binary output, 16 channels
- 16 output contacts configured as
- 1-pole command
- 2-pole command
- 1.5-pole command in configuration with 16DOSM12
- Operating voltage 24...125 V DC, 60 W
- Imax: 2 A <= 30 V DC (resistive load)
- Digital setpoints commands, 8 or 16 Bit without strobe (DSO8 or DSO16)
- Digital setpoint commands, 8 or 16 Bit with strobe (DSO8 or DSO16)
- Bitstring output, 1, 2, 8 or 16 Bit (BSO1, BSO2, BSO8 or BSO16)

The module allows switching voltages up to 150 V DC or max. 2 A continious current



DOR 01

I/O CARD

Binary output characteristics	
Outputs	16 Relay contacts,
	single pole, normal open,
	2 groups of 8 outputs with
	common return
Max. switching voltage	150 V DC
Continuous current	2 A total current for one
	group with the same
	common return
Max breaking current	2 A ≤ 30 V DC
(resistive load)	0.8 A @ 60 V DC
	0.15 A @ 150 V DC
Max. breaking	50 VA (L/R= 40 ms)
capacity	
(inductive load)	

Current consumption for power supplied via RTU513 backplane	
5 V DC	120 mA
24 V DC	10 mA per active relay

Mechanical layout	
Dimensions	160 mm x 100 mm, 3HE euro card format 4R (20 mm) front panel
Housing type	Printed circuit board
Mounting	for mounting in RTU513 racks
Weight	0.3 kg



DOR 01



I/O CARD

Connection type	
RTU513 backplane	48 pole type F
connector	DIN 41612

Insulation tests	
AC test voltage	2.5 kV, 50 Hz
IEC 61000-4-16	Test duration: 1 min
IEC 60870-2-1 (class VW3)	
Impulse voltage withstands	5 kV (1.2 / 50 µs)
test	
IEC 60255-5	
IEC 60870-2-1 (class VW 3)	
Insulation resistance	> 100 MΩ at 500 V DC
IEC 60255-5	



Immunity test		
Electrostatic discharge	8 kV air / 6 kV contact	
IEC 61000-4-2	(level 3)	
	Performance criteria A	
Radiated Radio-Frequency	10 V/m (level 3)	
Electromagnetic Field	Performance criteria A	
IEC 61000-4-3		
Electrical Fast Transient /	2 kV (level 3)	
Burst	Performance criteria A	
IEC 61000-4-4		
Surge	2 kV (level 3)	
IEC 61000-4-5	Performance criteria A	
Conducted Disturbances,	10 V (level 3)	
induced by Radio-	Performance criteria A	
Frequency Fields		
IEC 61000-4-6		

Environmental conditions		
Nominal operating	-25°C 70°C	
temperature range:		
Start up:	-40 °C	
Max. operating	+85 °C	
temperature, max. 96h:		
EN 60068-2-1, -2-2, -2-14	2 kV (level 3)	
	Performance criteria A	
Relative humidity	5 95 %	
EN 60068-2-30	(non condensing)	

Ordering information		
513BOR01 R0002	1KGT036800R0002	



MODEM

The FSKM10 modem is designed for the operation on telecontrol lines together with the PKS RTU 513. However it can also be connected to other data terminal equipments because it operates at the interfaces like a universal FSK-modem in the voice-band range (300-3400 Hz) according to CCITT.

The FSKM10 modem allows the assignment of a twoor four-wire line with communication channels in the CCITT raster for 50 to2400 Bit/s.

- 24 channels 50 Bit/s (R.35)
- 12 channels 100 Bit/s (R.37)
- 6 channels 200 Bit/s (R.38A)
- 2 channels 600 Bit/s
- 1 channel 1200 Bit/s (V.23)
- 1 channel 2400 Bit/s



FSKM10

A high-resistance staggering is possible with the FSKM10 modem on multi-drop lines. Duplex and half-duplex operation is possible without special additional provisions like butterfly connection according to channel assignment and selected two wire or four-wire line. It is designed for the transfer characteristics of local- cable-wires. Light emitting diodes indicate the most important operation states and disconnect test sockets on the front plate allow an easy testing and measuring of the VFT-channels as also of the data terminal equipment (DTE) interface signals.



MODEM

General Data

Type of modulation	Frequency shift keying (FSK) with carrier switch- off for multi-drop network
Type of communication	Point-to-point or multi-drop network
Operation modes	Duplex or half- duplex via two-/ four-wire links
Channel assignment	According to CCITT raster

FSKM10



Serial interface to DTE

Signal definition	V.24 / V.2	28
Signal lines	TxD	D1 / 103
	RxD	D2 / 104
	RTS	S2 / 105
	CTS	M2 / 106
	DCD	M5 / 109

Signal	quality	level	monitor
--------	---------	-------	---------

>40% for 501200 bd
>50% at 2400 bd
isochronous distortion
ON: > 10 errors with
< 4 sec distance
OFF: no errors for at
least 4 sec.

DCD	monitoring
-----	------------

DCD alarm at half duplex operation	if the carrier is lost for minimum n seconds (depends on baud rate): 50 baud 16 sec 100 baud 8 sec 200 baud 4 sec 600 2400 bd 2 sec
DCD alarm at duplex opera- tion	Switches with carrier directly, operation mode configurable by jumper
DCD - LED	Switches with carrier directly

Sensitivity	6 / 10 / 14 / 26 dB
Receiver filter	configurable between
characteristic	high (90 dB) and nor-
	mal selectivity (for
	50600 baud)



MODEM

Interface to transmission line

Input- / Output impedance	$600 \ \Omega$ non earthed and symmetrical, or 5 kΩ at Stagger operation
Transmission level at 600 Ω	022.5 dBm configurable by jumper, depending on bit rate (CCITT) or number of used channels
Transmitter pre-distortion	In high- / or low-pass 0 10 dB
Receiver level range	-658 dBm



Alarm relay

Switching function	DCD alarm or SQL alarm and / or sup- ply voltage failure
Alarm contact	60 V DC / 0.5 A / 30 W

Power Supply

Supply	2* RJ45-jack
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MODEM

FSKM12

The FSKM12 modem is designed for the operation on telecontrol lines together with the PKS RTU 513. However it can also be connected to other data terminal equipments because it operates at the interfaces like a universal FSK-modem in the voice-band range (300-3400 Hz) according to CCITT.



The FSKM12 modem allows the assignment of a twoor four-wire line with communication channels in the CCITT raster for 50 to2400 Bit/s.

- 24 channels 50 Bit/s (R.35)
- 12 channels 100 Bit/s (R.37)
- 6 channels 200 Bit/s (R.38A)
- 2 channels 600 Bit/s
- 1 channel 1200 Bit/s (V.23)
- 1 channel 2400 Bit/s

A high-resistance staggering is possible with the FSKM12 modem on multi-drop lines. Duplex and half-duplex operation is possible without special additional provisions like butterfly connection according to channel assignment and selected two wire or four-wire line. It is designed for the transfer characteristics of local- cable-wires.

Light emitting diodes indicate the most important operation states and disconnect test sockets on the front plate allow an easy testing and measuring of the VFT-channels as also of the data terminal equipment (DTE) interface signals.



MODEM

Sensitivity	6 / 10 / 14 / 26 dB
Receiver filter	configurable between
characteristic	high (90 dB) and nor-
	mal selectivity (for
	50600 baud)

Signal quality level monitor

Threshold	>40% for 501200 bd >50% at 2400 bd isochronous distortion
	ON: > 10 errors with
SQL - LED	< 4 sec distance
	OFF: no errors for at
	least 4 sec.

DCD monitoring

DCD alarm at half duplex operation	if the carrier is lost for minimum n seconds (depends on baud rate): 50 baud 16 sec 100 baud 8 sec 200 baud 4 sec 600 2400 bd 2 sec
DCD alarm at duplex opera- tion	Switches with carrier directly, operation mode configurable by jumper
DCD - LED	Switches with carrier directly

Alarm relay

Switching function	DCD alarm or SQL alarm and / or sup- ply voltage failure
Alarm contact	60 V DC / 0.5 A / 30 W

Power Supply

Supply

2* RJ45-jack





33

MODEM

General Data

Type of modulation	Frequency shift keying (FSK) with carrier switch- off for multi-drop network	
Type of	Point-to-point or	
communication	multi-drop network	
Operation modes	Duplex or half- duplex via two-/ four-wire links	
Channel	According to CCITT	
assignment	raster	

Serial interface to DTE

Signal definition	V.24 / V.28	
Signal lines	TxD	D1 / 103
	RxD	D2 / 104
	RTS	S2 / 105
	CTS	M2 / 106
	DCD	M5 / 109

Interface to transmission line

Input- / Output impedance	600 Ω non earthed and symmetrical, or 5 kΩ at Stagger operation
Transmission level at 600 Ω	022.5 dBm configurable by jumper, depending on bit rate (CCITT) or number of used channels
Transmitter pre-distortion	In high- / or low-pass 0 10 dB
Receiver level range	-658 dBm





POWER SUPPLY

The power supply unit 48PSM10 generates the two supply voltages (5 V DC and 24 V DC) for the PKS RTU513 subracks SMS10, WMS10, SMS12 and CSMS10. The output power is sufficient to supply the whole communication subrack.

There are two versions available:

- R0001 Input Range 18 ... 75 V DC
- R0002 Input Range 36... 75 V DC

48PSM10



Input

R0001	18 to 75 DC nominal
R0002	36 to 75 DC nominal
Fuse	F1=4A
Nominal voltage	48 VDC according to IEC60870-2-1

Output

Output Power	4.2 W total according to IEC60870-4
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Output1

Voltage	5.0 V DC
Tolerance	5.0 5.3 VDC
Current min	0.2 A
Current max	5 A

Voltage dips / short interruptions test

Voltage dips	70% Vnom /500 ms
Nominal Voltage:48V	IEC 61000-4-11
short interruptions	0V /11 ms
Nominal Voltage:48V	IEC 61000-4-29

Immunity

Immunity to surge IEC 61000-4-5	1.2/50 µs 0.5 , 1 , 2 KV line to line 0.5 , 1 , 2 KV line to line 0.5 , 1 , 2 KV line to ground
Immunity to electrical fast transient/ burst IEC 61000-4-4	2 KV



POWER SUPPLY

Connection types

48PSM10

Connector	Indirect, 48-pole,Type F DIN 41612
Supply connection	Indirect, 3-pole, COMBICON terminal connection

Mechanical—Layout

PCB	160 x 100 mm
Weight	App. 0.2 kg

Environmental conditions

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

Output2

Voltage	24 V DC
Tolerance	23.8 24.1 VDC
Current min	0 A
Current max	0.8 A
Residual Ripple	≤80 mVss

Isolation

Impulse voltage test	2 kV, unipolar impulses, waveform 1.2/50 µs, according IEC 60255-27
Insulation resistance measurements • Isolation resistance	>100 MΏ, 500 V DC IEC 60255-5
Dielectric tests Test voltage 	1 kV, 50 Hz, 1 min IEC 60255-5





POWER SUPPLY

The power supply unit 48PSM12 generates the two supply voltages (5 V DC and 24 V DC) for the RTU513 communication units within the communication subrack CSMS10. The output power is sufficient to supply the communication subrack CSMS10 with typical configurations.

It is possible to configure redundant power supplies for project configurations with higher requirements to availability. In this configuration two power supply units 48PSM12 are operating in parallel mode. They are able to take over the full load, if one power supply fails. 48PSM12 SV 2446VDC 2446VDC 2446VDC 2446VDC 2460VDC

The 48PSM12 power supply unit feed the +5 V DC (U1) and the +24 V DC (U2) for an RTU513 subrack.

There is one version available:

• R0001 Input Range 24 ... 60 V DC

Input

R0001	24 to 60 V DC nominal 19,2 69 V DC (-20 +15 %)
Voltage Interruption	≤ 50 ms; 0 % UN (no failure)
Starting Current:	≤ 10 A according IEC 60870-4
Fuse	F1=4A
Nominal voltage	48 VDC according to IEC60870-2-1

Output

Output Power	44.3 W total
De-rating	-2,5 % per Kelvin ≥ 50 Grad C

Output1

Voltage	5.0 V DC
Tolerance	5.0 5.3 VDC
Current min	0.2 A
Current max	5.5 A
Residual Ripple	≤ 30 mVss

Output2

Voltage	24 V DC
Tolerance	22,4 26,3 V DC
Current min	0 A
Current max	0.7 A
Residual Ripple	≤80 mVss



POWER SUPPLY

Mechanical—Layout

РСВ	3HE, Euro-Card format (160 x 100 mm)
Front panel	8R, 2 Slots (40 mm)
Weight	ApCa. 0,6 kg

48PSM12



Connection types

Connector	Indirect, 48-pole, Type F DIN 41612
Supply connection	Indirect, 3-pole, COMBICON terminal connection

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



FIBER MODULE

The fiber optic coupler FOSM10 is intended for the use in the Remote Terminal Unit PKS RTU513 or in other foreign devices. The module is used to transmit data via two independent optical links (Receive and Transmit). Optical fiber cables are not sensitive to inductive and capacitive interferences, as well for potential differences between the two data communication equipments. Fiber optic cables will be used to bridge over distances in critical environments, or if a potential isolation is required. The maximum distance can be up to 2600 m. The board can be used for signal conversion of the received and transmitted data for the following electrical interface standards:



FOSM10

- PKS RTU513 I/O-Bus
- RS485 Bus
- RS232 C

Hence it follows the following applications:

- Substitution of the PKS RTU513 electrical serial peripheral bus between the subracks of a station
- Coupling of digital protection relays with fiber optic interfaces according to IEC60870-5-103
 - With point to point connection
 - In a multi-drop link connection
 - In a bus link
- Optical booster to extend a fiber optic link
- Connection to any other unit with optical interface

The board FOSM10 occupies one slot in a PKS RTU513 rack. It couples itself via the backplane direct with the RTU513 peripheral bus. The board is available for 820 nm glass fiber optic cable with bayonet lock socket



FIBER MODULE

Optical Interface

Fiber optic cable length with consideration of a 3 dB reserve:

Fiber optic cable type	Output optical power (dBm)	Input optical power (dBm)	System power (dBm)
50/125µm	-19.7		1.3
*62.5/125µm	-15.9	-24	5.1
*100/140µm	-10.4	-24	10.6
200 µm	-5.4		15.6
Attenuation through two plugs included			
* : Recommended cable types			

FOSM10

Fiber optic coupler

Emission wave length	820 nm
Input optical power	Min.–24.0 dBm Max.–10.0 dBm
Transmission rate	1 Mbit/s max. (max. rate of serial interface)
Marking condition	adjustable



FIBER MODULE

Available fiber optic cable length

Fiber optic cable length with consideration of a 3 dBm reserve, in dependence of the output power and typical fiber optic cable attenuations:

Fiber optic cable type	System power (dBm)	Plug attenuation (dB)	Cable attenuation (dB/km)	Fiber optic cable length (m)
50 µm	1.3	0.3	3.0	447
*62.5µm	5.1		3.5	1469
*100 µm	10.6		5.0	2128
200 µm	15.6	1.8	6.0	2607
* : Recommended cable types				



FOSM10

Уŀ

Electrical serial interfaces

RTU513I/O and RS485 Bus

Signals	TA / TB; RxA / RxB
Input Voltage	-12 V bis + 15 V
Output voltage (at 54 Ω load)	5.0 V max.1.5 V min
Input impedance	>12 kΩ
Transmission rate	19.2 Kbit/s
Ready to receive after send	<10 µsec.
No optical echo	Approx10 µsec.



FIBER MODULE

Power Supply

Supply	5 V /260 mA max.
Сарру	24 V /4mA

Mechanical Layout

PCB	3HE, Euro card format (160 x 100)
Weight	App. 0.2 kg
Front plate	4R, 1 slot (20 mm)



FOSM10

Interface RS232C

Output Signals	RxD / TxDT
Input Signals	TxD
Input voltage	±30 V max.
Output voltage	±5 V min.
Input impedance	>3000Ω
Transmission rate	=230Kbit/s

Connection types

Connector	Indirect, 48-pole Type F DIN 41612
Fiber Optic Cable	Bayonet lock socket Type BFOC/2,5 (IEC874-10)

Temperature	070°C
Relative humidity	5 95 % (noncondensing)



FIBER MODULE

The fiber optic coupler FOSM12 is intended for the use in the Remote Terminal Unit PKS RTU513 or in other foreign devices. The module is used to transmit data via two independent optical links (Receive and Transmit). Optical fiber cables are not sensitive to inductive and capacitive interferences, as well for potential differences between the two data communication equipments. Fiber optic cables will be used to bridge over distances in critical environments, or if a potential isolation is required. The maximum distance can be up to 5 km. The board can be used for signal conversion of the received and transmitted data for the following electrical interface standards:

FOSM12



- PKS RTU513 I/O-Bus
- RS485 Bus
- RS232 C

Hence it follows the following applications:

- Substitution of the PKS RTU513 electrical serial peripheral bus between the subracks of a station
- Coupling of digital protection relays with fiber optic interfaces according to IEC60870-5-103
 - With point to point connection
 - In a multi-drop link connection
 - In a bus link
- Optical booster to extend a fiber optic link
- Connection to any other unit with optical interface

The board FOSM12 occupies one slot in a PKS RTU513 rack. It couples itself via the backplane direct with the RTU513 peripheral bus. The board is available for 1310 nm glass fiber optic cable with bayonet lock socket



FIBER MODULE

Electrical serial interfaces

RTU513I/O and RS485 Bus

Signals	TA / TB; RxA / RxB
Input Voltage	-12 V bis + 15 V
Output voltage (at 54Ω load)	5.0 V max.1.5 V min
Input impedance	>12 kΩ
Transmission rate	19.2 Kbit/s
Ready to receive after send	<10 µsec.
No optical echo	Approx10 µsec.



FOSM12

Interface RS232C

Output Signals	RxD / TxDT
Input Signals	TxD
Input voltage	±30 V max.
Output voltage	±5 V min.
Input impedance	>3000Ω
Transmission rate	=230Kbit/s



FIBER MODULE

Power Supply

Supply	5 V /260 mA max. 24 V /4mA
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Mechanical Layout

PCB	3HE, Euro card format (160 x 100)
Weight	App. 0.2 kg
Front plate	4R, 1 slot (20 mm)



FOSM12

Connection types

Connector	Indirect, 48-pole Type F DIN 41612
Fiber Optic Cable	Bayonet lock socket Type BFOC/2,5 (IEC874-10)

Temperature	070°C
Relative humidity	5 95 % (noncondensing)



BUS CONECTION MODULE

BCM02

The bus connection module 513BCM02 is designed to make the PKS RTU513 System Bus Signals accessible to the outside. ALARM (ALR) and WARNING (WRN) are signaled to the outside with relay contacts. An external minute impulse may be connected via an optocoupler. The filtered internal minute impulse is outputted as 24 V impulse. The 513BCM02 may only be used in the WMS10. With this board two PKS RTU513 communication boards SLI01 and/or ETH01 are usable within the WMS10.



Environmental conditions

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

Power Supply

0	5 V / app. 80 mA
Supply	24 V / app. 80 mA

Mechanical Layout

PCB	100 x 55 mm
Weight	App. 0.2 kg

Connection types

connector	2 pluq-in terminal strips 18 pole each
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Minute impulse input

TSI:	plug-in terminal strip 2-pole isolated, 24 V input	
Minute impulse output		
TSO:	plug-in terminal strip 2-pole 24 V output.	
Signal outputs		
Alarm-/Warning:	plug-in terminal strip	
Output:	2-pole each	
Relay contact:	active closed Warning set also with Alarm ≤ 1A/ ≤ 60 V DC / ≤ 30 W	
Watchdog		
Supervision time:	30 sec.	



BUS CONECTION MODULE

The bus connection module 513BCM03 is designed to make the RTU513 System Bus Signals accessible to the outside. ALARM (ALR) and WARNING (WRN) are signaled to the outside with relay contacts. An external minute impulse may be connected via an optocoupler. The filtered internal minute impulse is outputted as 24 V impulse. The 513BCM03 may only be used in the SMS10. With this board two RTU513 communication boards SLI01 and/or ETH01 are usable within the SMS10.



Environmental conditions

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

Power Supply

24 V / app. 60 mA	Supply	5 V / app. 80 mA 24 V / app. 60 mA
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Mechanical Layout

PCB	88 x 76 mm
Weight	App. 0.2 kg

Connection types

connector	2 sub connectors on flat
	cable for 18 pole each



Minute impulse input

TSI:	plug-in terminal strip 2-pole isolated, 24 V input	
Minute impulse output		
TSO:	plug-in terminal strip 2-pole 24 V output.	
Signal outputs		
Alarm-/Warning:	plug-in terminal strip	
Output:	2-pole each	
Relay contact:	active closed Warning set also with Alarm ≤ 1A/ ≤ 60 V DC / ≤ 30 W	
Watchdog		
Supervision time:	30 sec.	

BUS CONECTION MODULE

The Bus Connection Module 513BCM04 R0001 is designed to make the RTU513s TSI, TSO, Alarm and Warning signals accessible to the outside.

By using the bus connection module 513BCM04 R0001, up to 8 CMUxx communication units can be used in a rack configuration (WMS10,WMS12).

To expand the RTU513 system bus to another rack (WMS10, WMS12), an 8 pole RJ45 connector is available. For cabling, a shielded 8 pole RJ45 patch cable can be used.

BCM04



plug-in terminal strip 2-pole isolat-

Environmental conditions

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

Minute impulse input (TS)

X11

Power Supply

Supply	5 V / app. 80 mA
Supply	24 V / app. 60 mA

Watchdog

Supervision time	30 sec.
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Connection types

connector	2 –8 sub connectors wit flat cable for 14 pole each
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Mechanical Layout

PCB	126 x 78 mm
Weight	App. 0.1 kg

Power Supply (external)



Minute impulse output (TSO)

X10	plug-in terminal strip 2-pole 24 V output.	
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ed, 24 V input

Rack-to-Rack Interface

X17 RJ45 connector 180°

Signal outputs

X12 (Alarm)	plug-in terminal strip 2-pole
X13 (Warning)	each
Relay contact:	active closed Warning set also with Alarm ≤ 1A/ ≤ 60 V DC / ≤ 30 W

BUS CONECTION MODULE

BCM05

The Bus Connection Module 513BCM05 is designed to make the PKS RTU513 TSI, TSO, Alarm and Warning signals accessible to the outside. By using the bus connection unit 513BCM05, up to 8 communication units (CMUs) can be used in a rack configuration. To expand the RTU513 system bus to another rack (SMS10, SMS12), an 8 pole RJ45 connector is available. For cabling, a shielded 8 pole RJ45 patch cable can be used .



Environmental conditions

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

Power Supply

Supply	5 V / app. 80 mA
Supply	24 V / app. 60 mA

Watchdog

Supervision time	30 sec.
------------------	---------

Connection types

connector	2 –8 sub connectors wit flat cable for 14 pole each
-----------	---

Mechanical Layout

РСВ	126 x 78 mm
Weight	App. 0.1 kg

Power Supply (external)

+24V	Scre	w tei	rmina	I conne	ctiononly
	in c	case	of	SMS10	subrack



Minute impulse input (TS)

¥11	plug-in terminal strip 2-pole isolat-		
	ed, 24 V input		

Minute impulse output (TSO)

X10	plug-in terminal strip 2-pole 24 V output.
-----	---

Rack-to-Rack Interface

X17	RJ45 connector 180°
-----	---------------------

Signal outputs

X12 (Alarm)	plug-in terminal strip 2-pole
X13 (Warning)	each
Relay contact:	active closed Warning set also with Alarm ≤ 1A/ ≤ 60 V DC / ≤ 30 W

COMMIUNICATION UNIT

CMB10

The 513CMB10 Communication Unit is one of the CMU boards (CMU = Communication Main Unit) of the remote terminal unit RTU513 The essential tasks are :

- Managing and controlling of the I/O boards via the interfaces to the RTU peripheral bus
- · Reading Process events from the input boards
- · Writing commands to the output boards
- Communications with control centers and local MMI systems via the integrated serial line interfaces and the implemented Ethernet 10/100BaseT LAN interfaces



- · Managing the time base for the RTU513 station and synchronizing the I/O boards
- · Handling the dialogue between RTU513 and Web-Browser via LAN interface

Within the RTU513 subracks the board occupies two slots. It contacts itself via a DIN F socket connector to the subrack .

The Communication Unit 513 CMB10 is available in one version for RTU peripheral bus and UART-based communication protocols.



COMMIUNICATION UNIT

Main Processing Unit MPU

Microprocessor	ARMCortex-5@ 400MHz
RAM	128 MByte
Flash Memory	256MByte (Nand Flash)



Serial Line Controller SLC

Controller Type	IC24F
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Serial Interfaces 1, 2, A and B

The physical Interface is switchable between RS232C and RS485 by the configuration tool RTUtil513

Ethernet LAN Interfaces E1 and E2

Physical Interface:	10BaseT/100BaseT
Bit rate:	10/100 MBit/s

Power Consumption

5 V DC	1500 mA
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Physical Interfaces	RS232C
Bit rate	≤ 38 400 bit/s
Signal lines RS232C	GND E2/102 TXD D1/103 RXD D2/104 RTS S2/105 CTS M2/106 DTR S1.2/108 DCD M5/109
Physical Interfaces	RS485
Bit rate	≤ 19 200 bit/s
Signal lines RS485	G Signal ground A Receive/Transmit B Receive/Transmit



COMMIUNICATION UNIT

Mechanical Layout

CMB10

Printed Circuit	3HE, Euro-card format (160 x 100 mm)
Front Panel	8R, 2 slots (40 mm)
Weight	approx. 0.3 kg



Connector Types

Subrack connector	Indirect, 48 pole Type F DIN 41612
Ethernet Interfaces	RJ45 jack, 8 pole
Serial interfaces 1, 2, A and B	RJ45 jack, 8 pole

Environmental Conditions

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

Ordering Information





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