PCD7.L121 -Input / Output „RIO“ module with 4 digital inputs 24 VAC/DC and 2 Relays 250 VAC/16 A -Application module for operation mode “Light” and “Blinds”

Description
The RIO module was developed as a S-Bus data node for local switching tasks. Via a DDC of the type PCDx / PCS1, inputs can be read and manual/auto function monitored. Two address switches (×1 / ×10) on the front panel allow module addressing and identification. Addresses can be set between 00 and 99. Up to 100 RIO modules and a maximum of 3 PCD stations can be connected to one bus branch simultaneously. If the bus cycle time is critical, fewer than 30 slaves should be operated in one segment.

Technical data

Bus system	S-Bus
Transmission rate	1200…38400
Transmission mode	Parity / Data
Bus length max.	1200 m (without repeater)
Nominal voltage UN	24 VDC (15 VDC…32 VDC)
Current consumption	<50 mA
Power consumption	1.2 W
Relative duty cycle	100 %
Reaction time	15 ms (from receive data to send data reaction)
Recovery time	< 3 s
Operating temperature range	0 °C…+55 °C
Storage temperature range	-25 °C…+70 °C
Protective wiring	Reverse battery protection of service voltage Reverse battery protection of supply and bus
Input state indicator	Yellow LED
Function indicator	Green LED for bus activity
Status indicator	Red LED for bus error message
Special features	Manual control level for relays with revertive communication via bus; Inputs electrically isolated
Test voltage input / bus	2500 VAC / 50 Hz / 1 min.

Mounting and commissioning to be conform with current regulations:

1. Power-off the installation
2. Place module onto the place of destination
3. Cable with max. single wire 1,5 mm^2 insert into the unit. With consideration of the protection class.
4. Connect the wires into the spring terminals

Connect supply voltage and field bus to the dedicated spring terminals.

Caution!!
Do not exchange the bus and supply spring terminals.

Signal inputs

Input voltage max.	30 VDC
Input current (24 VDC)	6 mA
High signal recognition	> 7 VDC
Low signal recognition	< 3 VDC

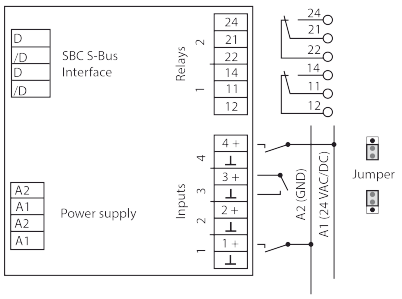
Relay outputs

Number of outputs	2 “make/break” contacts
Turn-on voltage	250 VAC
Constant current	16 A / Relay - max. 80 A/20 ms
Switching frequency	360/h

Housing

Protection class	IP65
Plug-in terminal	1.5 mm2 / spring terminals
Mounting position	any
Weight	350 g
Housing dimensions	W×H×D: 159×41,5×120 mm
Joining	without space

Connectiondiagramm



Operation behaviour “RIO” mode
The device works as an independent input/output module. The input information will be transmit to the master station by the S-Bus protocol. The relay output will switch on/off depending of the master station demands.
Operation behaviour “application” mode
The input information switches the relay outputs direct depending on the choosen application form. On a input information follows a direct relay reaction without delay time. Application forms “light” and “blind” are choosable. At every time the master station is able to have influence into the relay condition.

"Display Input "

Address	Information
1	0= Status input 1 off
	1= Status input 1 on (Signal: >7 VAC/DC)
2	0= Status input 2 off
	1= Status input 2 on (Signal: >7 VAC/DC)
3	0= Status input 3 off
	1= Status input 3 on (Signal: >7 VAC/DC)
4	0= Status input 4 off
	1= Status input 4 on (Signal: >7 VAC/DC)

„Display / Write Output“

Address	Information
5	0= Status relay 1 off
	1= Status relay 1 on
6	0= Status relay 2 off
	1= Status relay 2 on

Address	Information
7	0= relay 1 switched via bus
	1= relay 1 switched via manual control
8	0= relay 2 switched via bus
	1= relay 2 switched via manual control

„Register meaning"

Address	Information
5	Baud rate (plain text => kBit/s)
6	Module address
7	Status register
8	Bus timer
9	Current transmission mode (data / parity)
10	Bus error counter (divided into 4 bytes)
11	Bustimeout
12	Operation mode (RIO / Application)
13	Mode „Blind / Light“
14	Max. Blind running time
15	Max. Lamella running time “angle”
16	Push-time limitation

"Write Output"

Address	Value	Information
255	0	Autobaud Function not active
	1	Autobaud Function **active**

“Register function”

Adress	Value	Function(kbit/s)
5	4	1 200
	5	2 400
	6	4 800
	7	9 600
	8	19 200
	9	38 400

Adress	Value	Function
9	1	Parity Mode (Default)
	2	Data Mode

Adress	Value	Function
10	0	Bus error counter Reset

Adress	Value	Function
11	0	Bustimeout Defaultvalue
	…255	… up to 255 seconds

Adress	Value	Function
12	0	Operation Mode “RIO”
	1	Operation Mode “Application“ (Default)

Adress	Value	Function
13	0	Application “Blinds”
	1	Application ““Light” (default)

Status register:
Bit 0: 1= Device recognized last transmission
0= Device did not recognize last transmission
Bit 1: 1= Last transmission was a broadcast
0= Last transmission was not a broadcast
Bit 2: 1= Last transmission came from master
0= Last transmission came from a slave
Bit 3: 1= CRC of last message was correct
0= CRC of last message was incorrect
Bit 5: 1= Device has executed an internal reset
0= Device function is OK
Bit 8: 1= Internal bus to EEPROM is OK
0= Internal bus not working perfectly
Bit 9: 1= EEPROM data memory is OK
0= EEPROM data memory is faulty
Bit 10:1= Baud rate uploaded from EEPROM
0= Baud rate is at default value (9600 Bd.)
Bit 12: Switch 1: 0=Automatic 1=Manuel
Bit 13: Switch 2: 0=Automatic 1=Manuel
Bit 14: Not used
Bit 15: Not used
All other bits are reserved for factory tests.

Input-/Output describtion for operation mode “application”

Application: Light

Input	Terminal	Function
1	1	Light switch – input 1
2	2	Light switch – input 2
	3	Independent input
	4	Independent input

Output:	Terminal	Function
1	11/12/14	Lights part 1
2	21/22/24	Lights part 2

Application: Blinds

Input:	Terminal	Function
1	1	Switch “Up” function
2	2	Switch “Down” function
	3	Dor-/Windowcontact for safety stop
	4	Storm input for blind safty opening

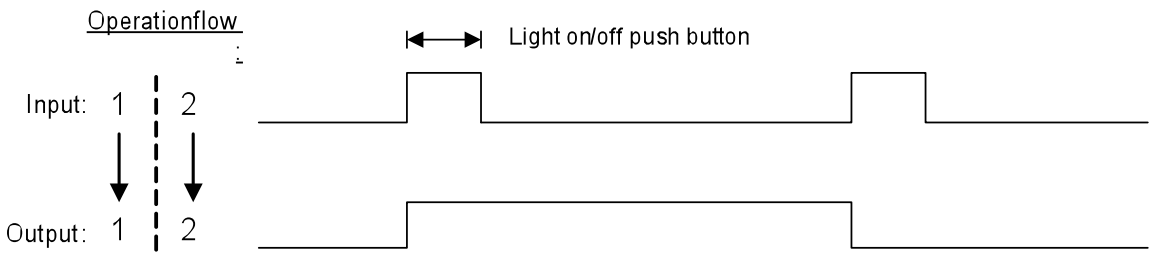
Output:	Terminal	Function
1	11/12/14	Blinds – opening direction
2	21/22/24	Blinds – closing direction

Adress	Valuerange	Function
14	0 <-> 254	Max. Blinds running time “up/down” (defaultvalue 30 = 30 seconds)

Adress	Valuerange	Function
15	0 <-> 254	Max. Lamella running time “angle” (defaulvalue 10 = 1.0 second)

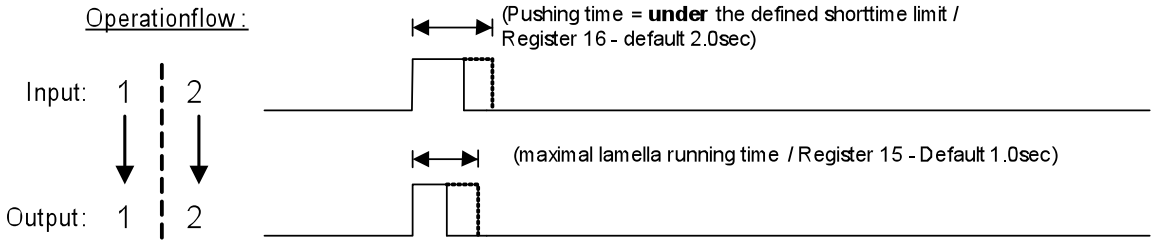
Adress	Valuerange	Function
16	0 <-> 254	Max. Pushing time – Borderline shorttime to longtime pushing (default 20 =2.0 sec)

Application Light (Register 12 - "1" / Register 13 - "1")

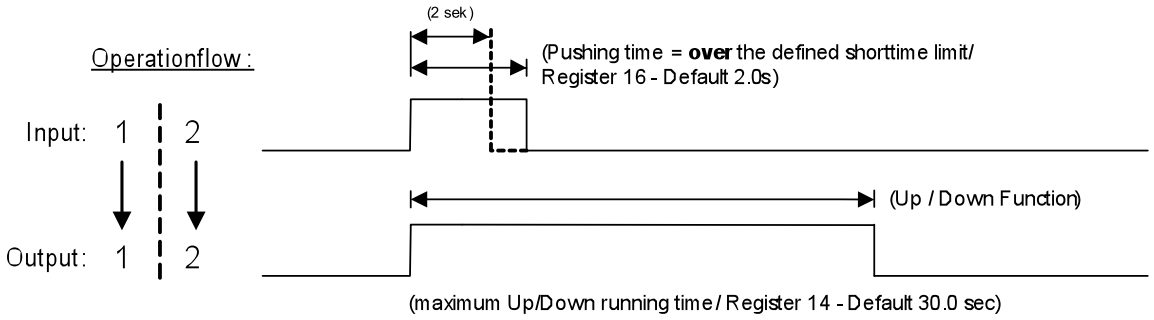


Application Blinds (Register 12 - "1" / Register 13 - "0")

Switch shorttime pushing (Lamella - Angle rotation)



Switch longtime pushing (Up / Down Function)



Running time - Interruption (Up / Down Function)