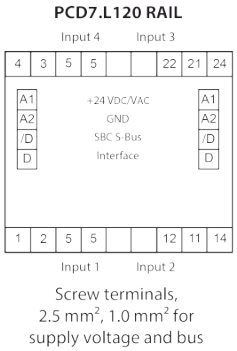
PCD7.L120 -Input / Output „RIO“ module with 4 digital inputs 24 VAC/DC and 2 Relays 250 VAC/ 16A - Application module for operation mode “Light” and “Blinds”

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, outputs set 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	18 VDC…32 VDC / 20 VAC…28 VAC
Current consumption	<80 mADC / <170 mAAC
Power consumption	2 W / 4 VA
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 EMC according to DIN EN 61000-6-2
Input state indicator	Yellow LED
Relay 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;
Test voltage:	
Relay contact / bus	5000 Veff



Screw terminals, 2.5 mm², 1.0 mm² for supply voltage and bus

Mounting and commissioning to be conform with current regulations:

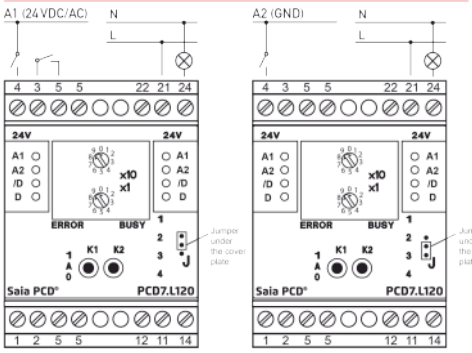
1. Power-off the installation
2. Place module onto the place of destination
3. Cable with max. single wire 1,5 mm² insert into the unit. With consideration of the protection class.
4. Connect the wires into the spring terminals

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

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

The module is EMC proved (electro magnetic compatibility) up to an amplitude of 2000 V. Voltage peaks caused by higher inductive loads may initiate a module reset. In such cases it is recommended to protect the relay contacts by an additional RC element.

Connection examples 1 + 2 / Connection example 3



Signal inputs

Input voltage max.	30 VDC	
High signal recognition	> 7 VDC	

Relay outputs

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

Housing

Protection class	Housing IP50 / Terminals IP20
Humidity classification	F (DIN 40040)
Plug-in terminal	2.5 mm²
Mounting position	any
Weight	126 g
Housing dimensions	B×H×T 50×68×60 mm
Joining	After 15 modules have been joined in sequence, the external supply voltage must be reapplied.

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 chosen application form. On a input information follows a direct relay reaction without delay time. Application forms “light” and “blind” are chosable. 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”

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

Address	Value	Function
9	1	Parity Mode
	2	Data Mode (factory setting)

Address	Value	Function
10	0	Bus error counter Reset

Address	Value	Function
11	0	Bustimeout (Defaultvalue)
	…255	… up to 255 seconds

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

Address	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 description 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	Door-/Windowcontact for safety stop
	4	Storm input for blind safety opening

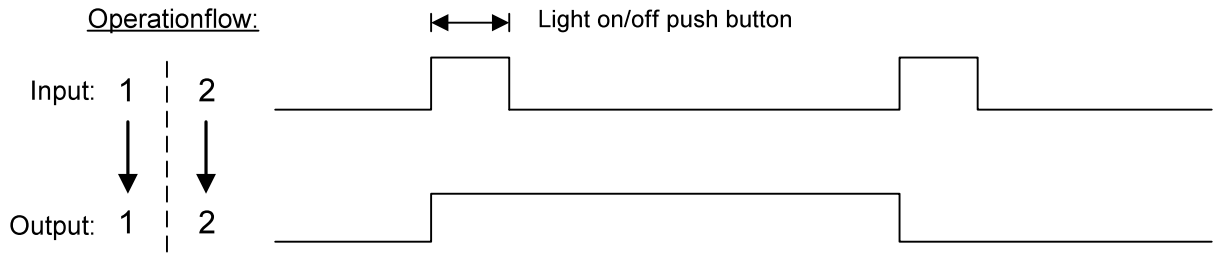
Output:	Terminal	Function
1	11/12/14	Blinds – opening direction
2	21/22/24	Blinds – closing direction

Address	Value range	Function
14	0 <-> 254	Max. Blinds running time “up/down” (default value 30 = 30 seconds)

Address	Value range	Function
15	0 <-> 254	Min. Lamella running time “angle” (default value 10 = 1.0 second)

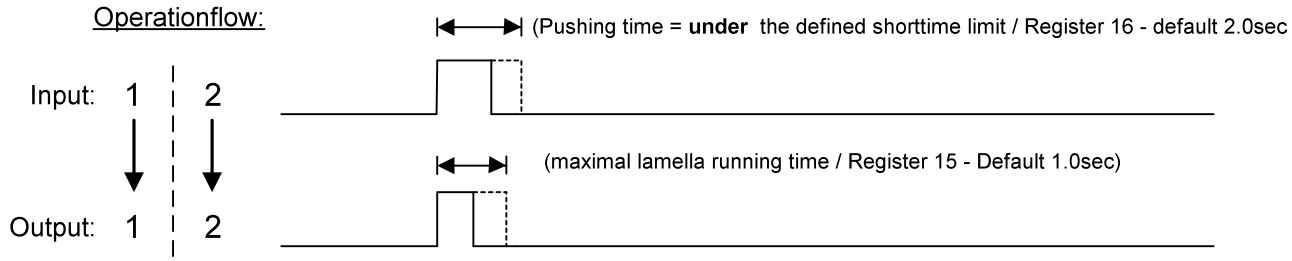
Address	Value range	Function
16	0 <-> 254	Max. Pushing time – Borderline short time to long time pushing (default 20 =2.0 sec)

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

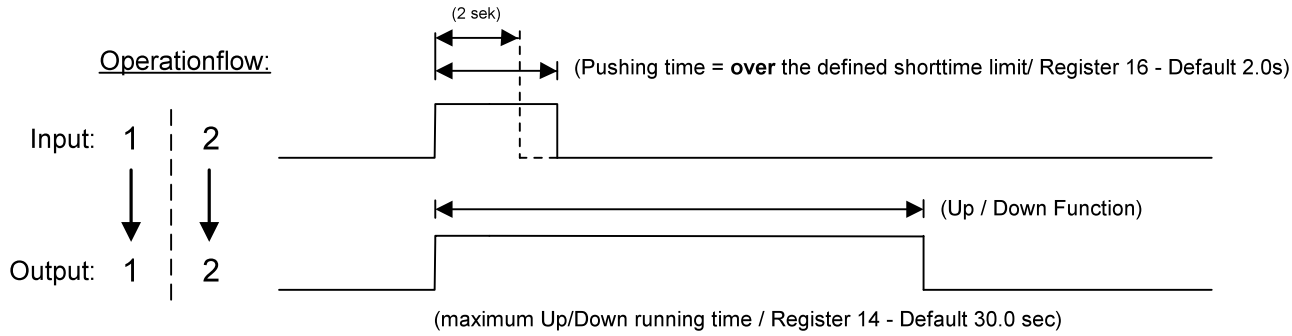
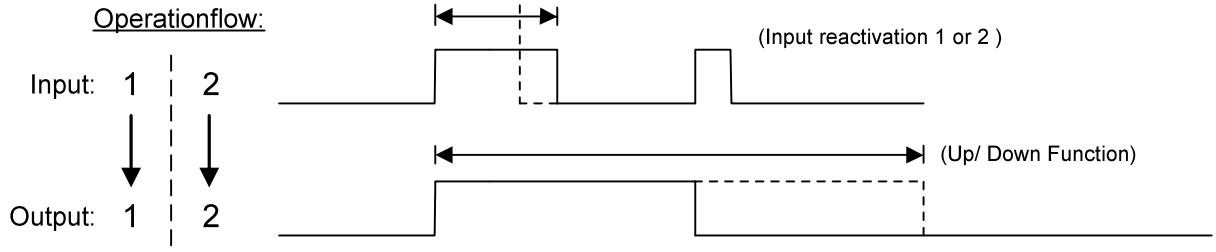


Application Blinds (Register 12 - "1" / Register 13 - "0")

Switch shorttime pushing (Lamella - Angle rotation)



Switch longtime pushing (Up / Down Function)



Running time - Interruption (Up / Down Function)