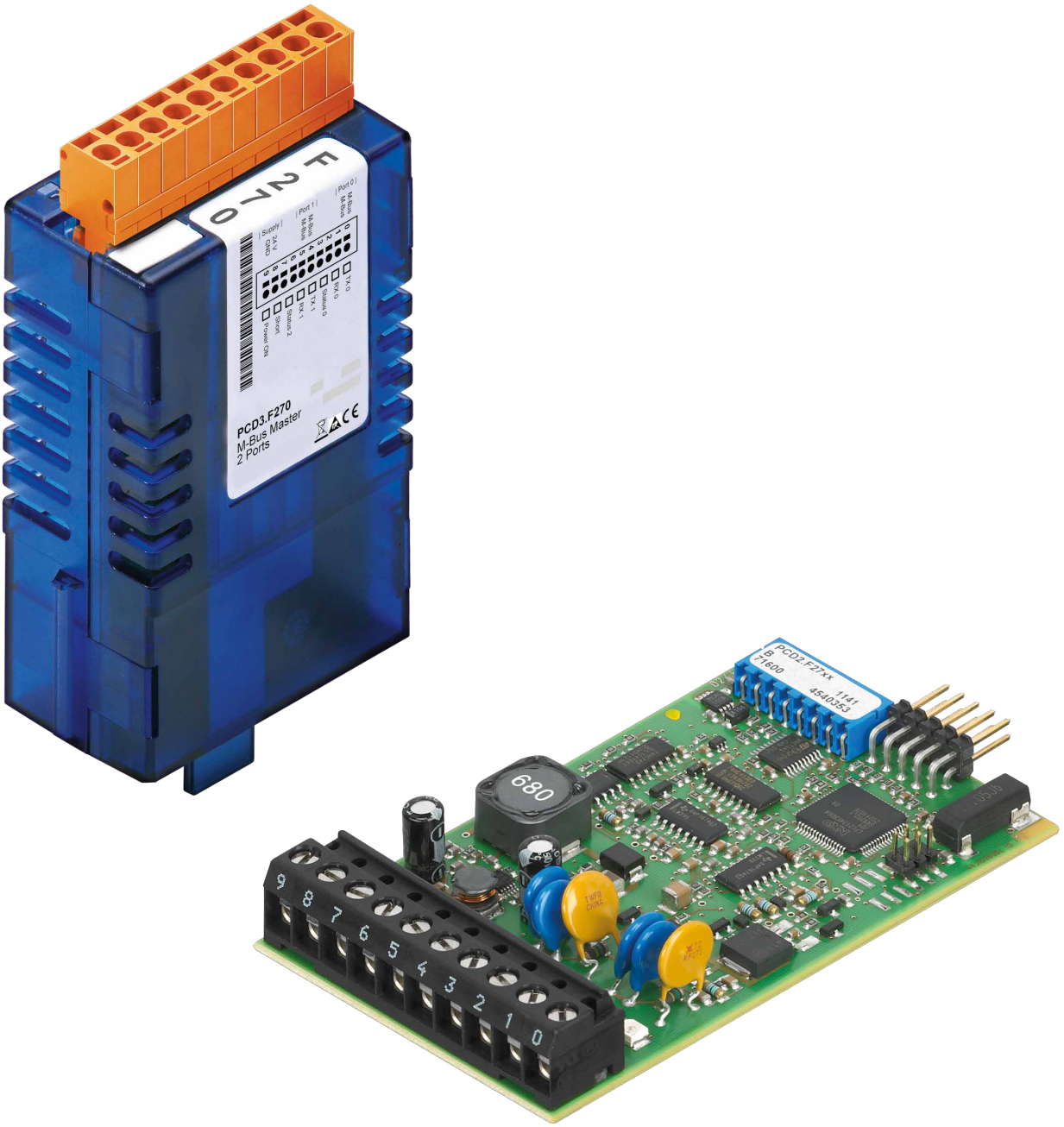
SAIA BURGESS CONTROLS



M-Bus Master Interface Module PCD2.F27x0 and PCD3.F27x

Document-No. 27/603; Version EN05; 2014-06-06

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0 Content

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0.1 Document-History

Version	Changed	Published	Remarks
EN01	2011-10-07 2011-10-24	2011-10-07 2011-10-24	First Edition Deleted the empty pages
EN02	2012-06-07	2012-06-07	Updating
EN03	2013-06-12	2013-08-21	Changend the logo and name
EN04	2013-10-29	2013-10-29	4.5.3 A «short on bus» warning has been added
EN05	2014-03-18 2014-06-06	2014-03-18 2014-06-06	4.5.4 A «external supply» warning has been added 1 German text translated afterwards

0.2 Trademarks

Saia PCD® and Saia PG5®
are registered trademarks of Saia-Burgess Controls AG.

Technical changes are subject to the state of technology

Published in Switzerland.

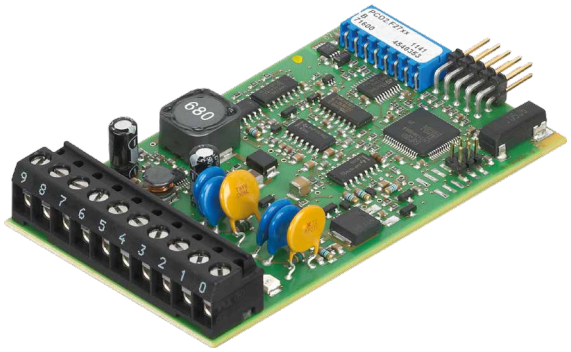
1 Communication ports

Additional communication interfaces can be installed on some IO slots of the CPU.

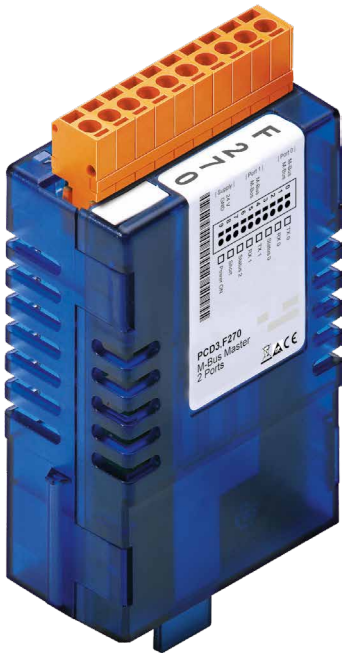
1.1 Port assignments on the communications interface

I/O slot 0:	Port 100 for the x.0 port Port 101 for the x.1 port	on the PCD3.F27x / PCD2.F27x0 module
I/O slot 1:	Port 110 for the x.0 port Port 111 for the x.1 port	on the PCD3.F27x / PCD2.F27x0 module
I/O slot 2:	Port 120 for the x.0 port Port 121 for the x.1 port	on the PCD3.F27x / PCD2.F27x0 module
I/O slot 3:	Port 130 for the x.0 port Port 131 for the x.1 port	on the PCD3.F27x / PCD2.F27x0 module

PCD1/2 modul



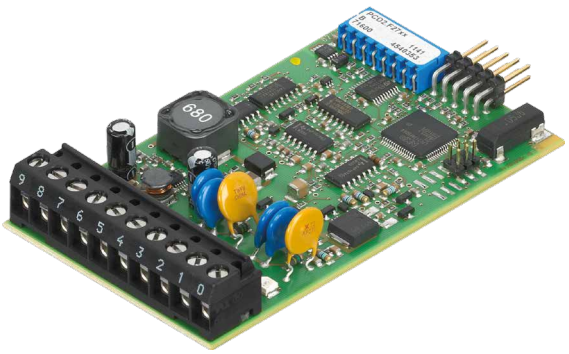
PCD3 modul

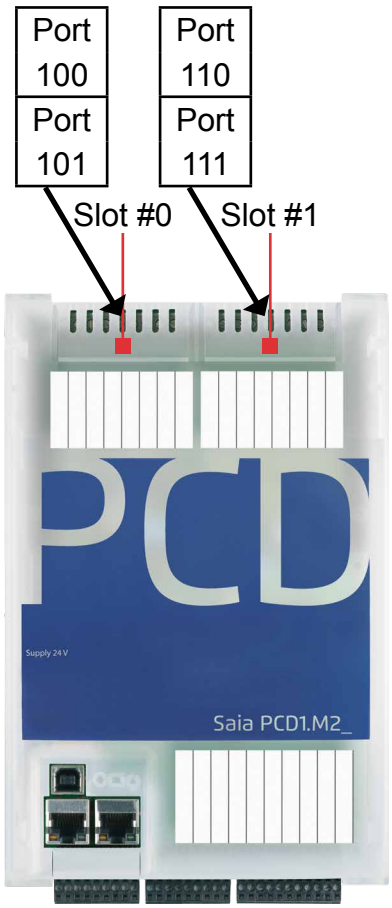


1.2 Communications interface PCD2.F27x0 for the PCD1.M2xxx and the PCD2.Mxxxx

1.2.1 PCD1.M2xxx

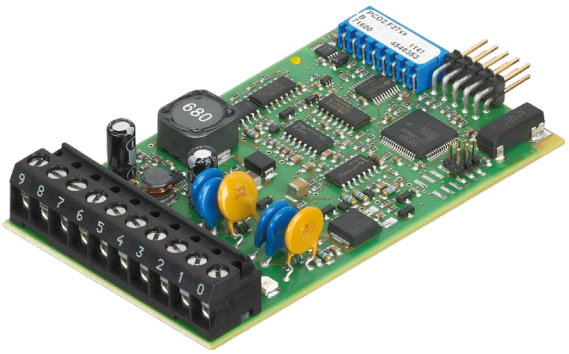
The M-Bus Master module PCD2.F27x0 is pluggable in the I/O slots 0 and 1 of the PCD1.M2xxx:

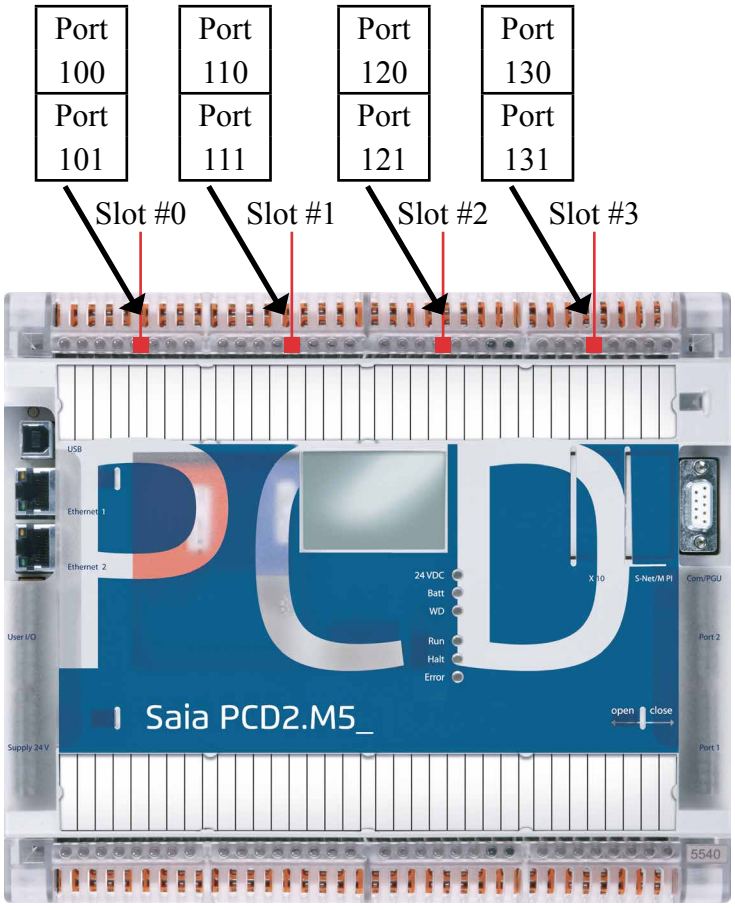




1.2.2 PCD2.Mxxxx

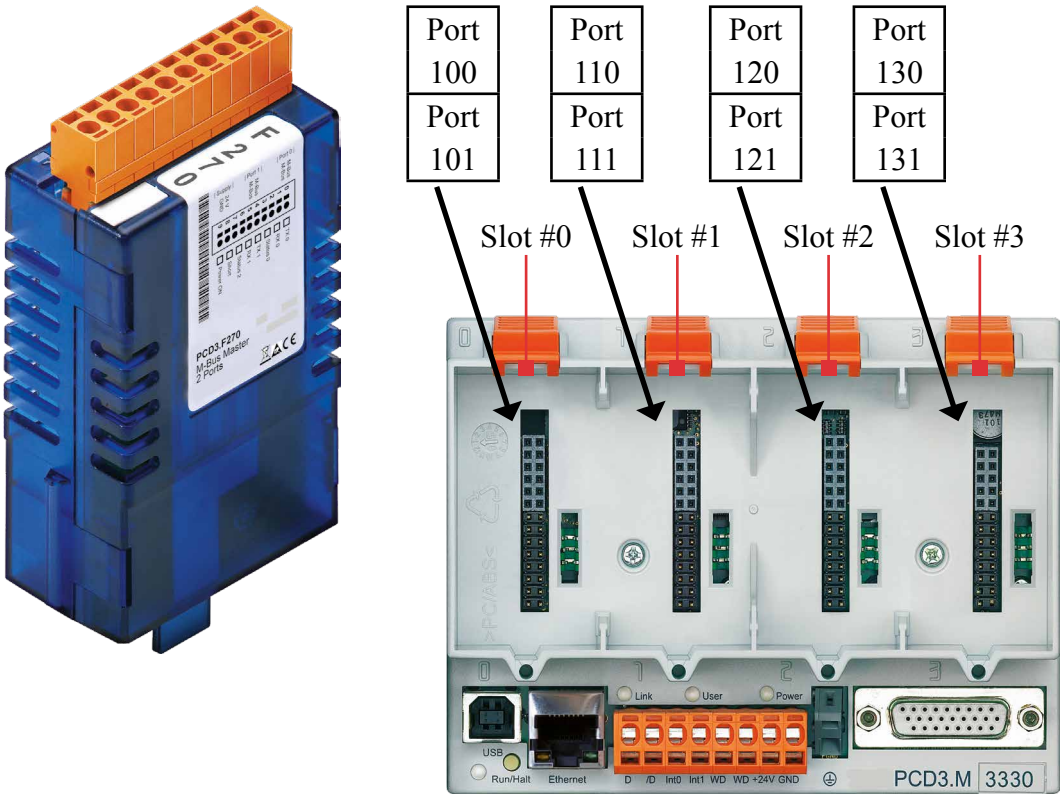
M-Bus Master module for PCD1.M2xxx and PCD2.Mxxxx, pluggable in I/O slots 0…3 (0…1 for the PCD1.M2xxx).

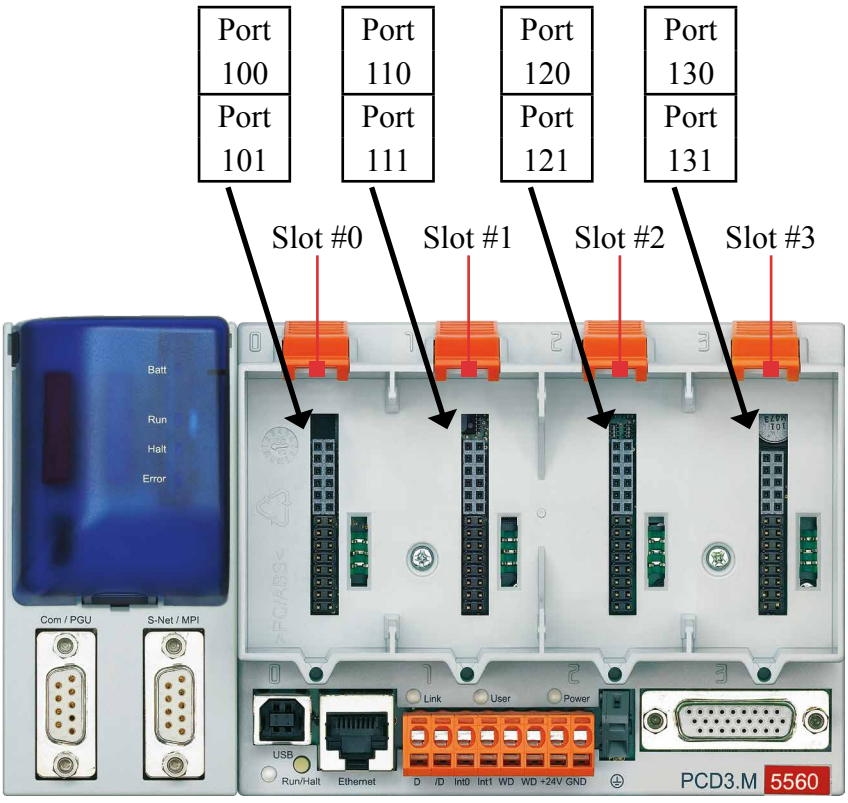




1.3 Communications interface PCD3.F27x for the PCD3.Mxxxx

The M-Bus Master module PCD3.F27x is pluggable in the I/O slots 0…3 of the PCD3.Mxxxx:

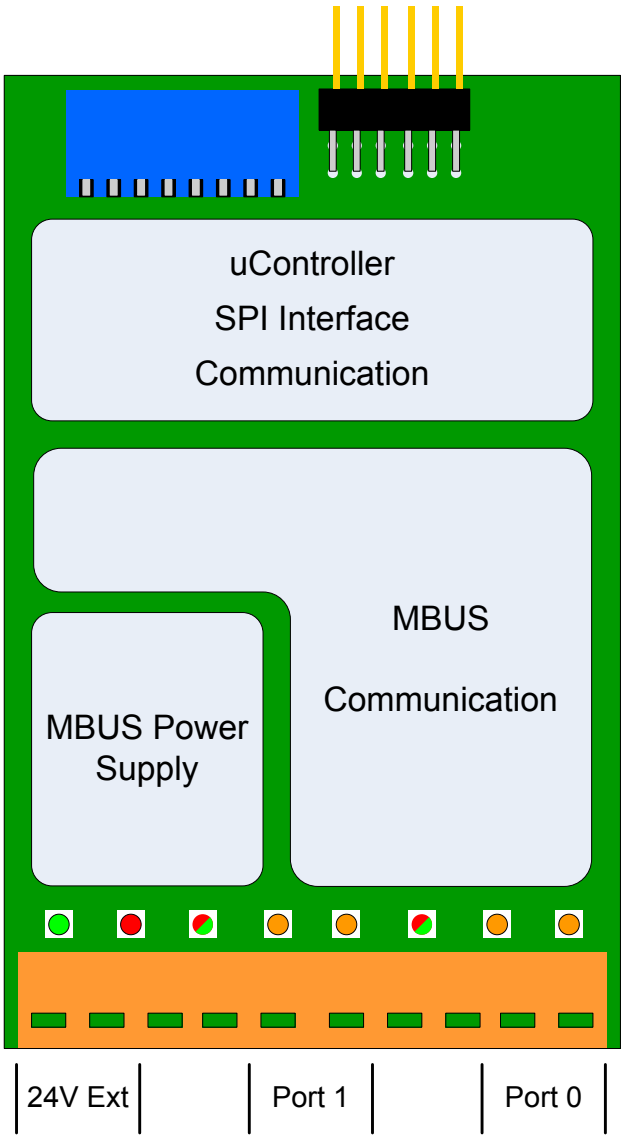




2 Module overview

The PCD3.F27x* M-Bus master modules are designed for the PCD3.Mxxxx systems. Each module has two M-Bus ports and can support up to 240 slaves (sum of the two ports) with the biggest version.

**same for PCD2.F27x0 on PCD1.M2xxx and PCD2.Mxxxx*



PCD3.F270 and PCD2.F2700:

Serial communication module with two serial interfaces.

M-Bus master up to 240 slaves.

PCD3.F271 and PCD2.F2710:

Serial communication module with two serial interfaces.

M-Bus master up to 20 slaves.

PCD3.F272 und PCD2.F2720:

Serial communication module with two serial interfaces.

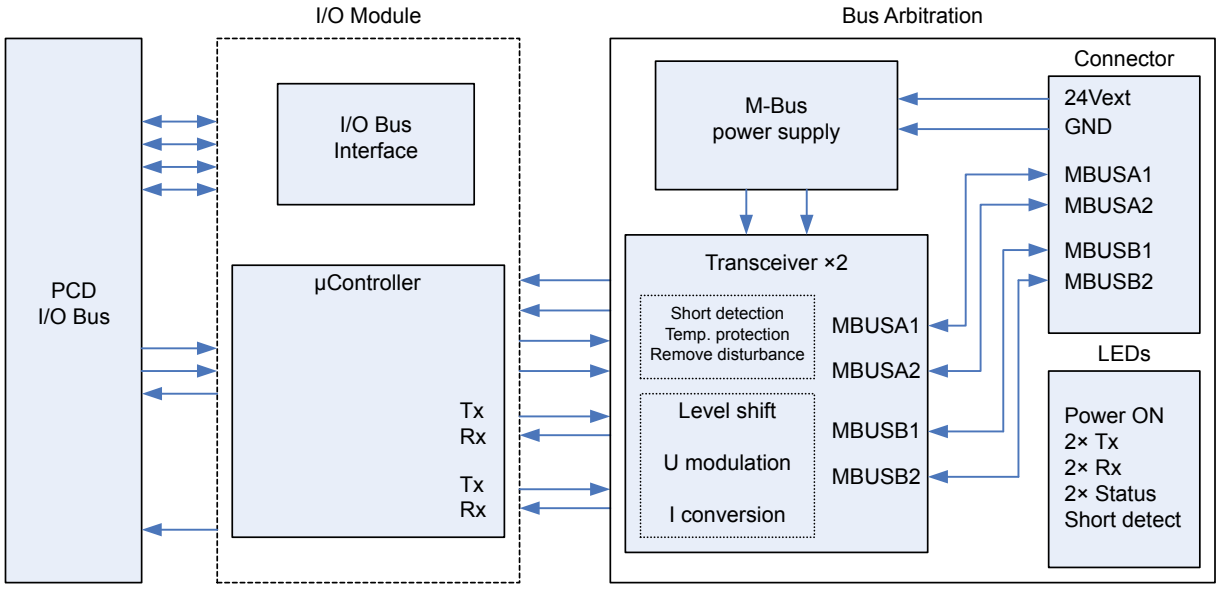
M-Bus master up to 60 slaves.

PCD3.F273 und PCD2.F2730:

Serial communication module with two serial interfaces.

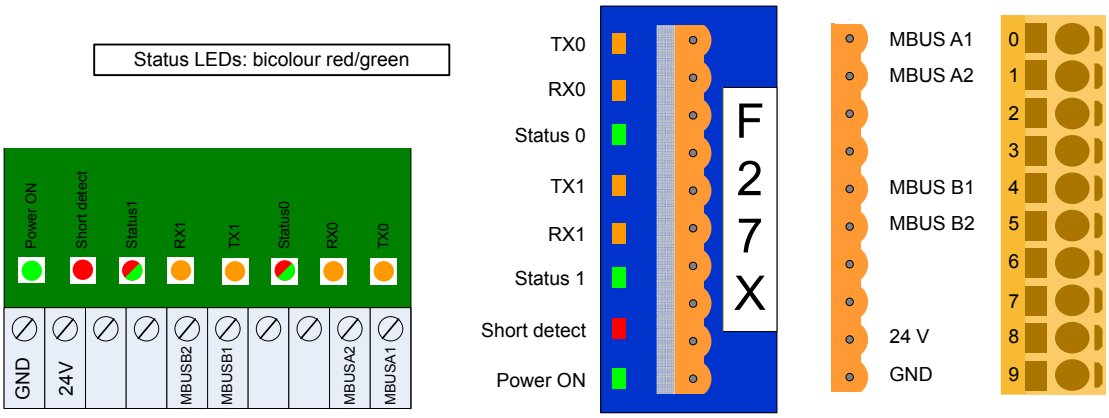
M-Bus master up to 120 slaves.

2.1 Block diagram



3 Modul fonction

3.1 Connections and LEDs



TXD0: Send data detection (Port 0, yellow)
RXD0: Receive data detection (Port 0, yellow)

TXD1: Send data detection (Port 1, yellow)
RXD1: Receive data detection (Port 1, yellow)

Status0 and **Status1:** Displays the status of Port 0 and Port 1, green means that the port is working properly.

Both LEDs permanently red: F27xx not running

Both LEDs green 25 % / red 75 %: F27xx start-up procedure
Both LEDs green 50 % / red 50 %: F27xx running, but no communication with the PCD

Status**X** LED green 75 % / red 25 %: F27xx running, channel closed
Status**X** LED green 90 % / red 10 %: F27xx running, channel open with error
Status**X** LED green 100 %: F27xx running, channel open OK

Short detect: A short or abnormal consumption occurs on Port 0 or Port 1 (red)

Power ON: 24 VDC extern supply is OK (green)

4 Technical data

4.1 Minimum-firmware

PCD firmware version: 1.16.50 or higher

4.2 Wire recommended

A two-wire standard telephone cable (JYStY N*2*0.8 mm)
is used as the transmission standard medium for the M-Bus.

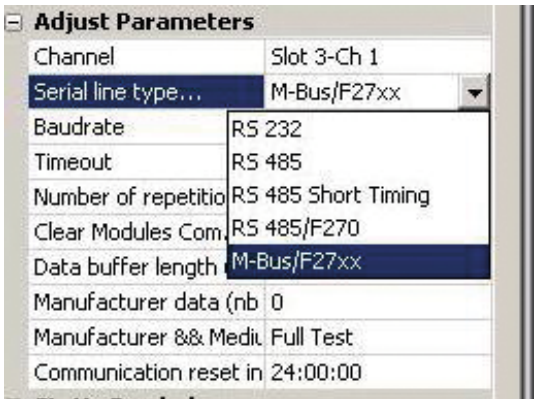
4.3 Communication modes supported

One of these two modes has to be configured to use the M-Bus Master modules with the FBoxes.

RS-485/F270: Only for the PCD2.F2700 and PCD3.F270

M-Bus/F27xx: For all the F27xx versions

	RS-485/F270	M-Bus/F27xx
PCD2/3.F270x	X	X
PCD2/3.F271x -	-	X
PCD2/3.F272x -	-	X
PCD2/3.F273x	-	X



4.4 Baud rates supported (bits/sec)

- 300 (only with M-Bus/F27xx, frame protocol)
- 2400
- 9600

4.5 Current

4.5.1 Current consumption

Module (same for PCD2)	+5V Bus [mA]	V+ [mA]	+24 Vext (18 V to 32 V) [mA]		
			at Vmin	at Vnominal	at Vmax
PCD3.F270 (1)	70	7.5	56	45	35
PCD3.F270 (2)			800	600	450

(1) tested with 2 slaves (Saia PCD® AWD3D5WM00C2A00)

(2) tested with 240 slaves (Saia PCD® AWD3D5WM00C2A00)

4.5.2 Current consumption (slaves)

The MBus norm specifies that each slave consumes 1.5 mA maximum when it is on “standby” state. During a communication the slave consumes 1.5 mA maximum for a “0” and when sending a “1”, the slave increases its current consumption by 11…20 mA.

The design of the supply M-Bus is based on these specifications and support up to 240 slaves.

4.5.3 Short on bus

If a short occurs, the port where short happened goes down to 0 V and current max is up to 5 mA.

LED short is switched on (red). The other port is also disturbed, because the supply is the same for the two ports.

If the CPU is not powered, the bus is not protected against short circuits -
➜ risk of damage to the port.

4.5.4 Extern supply of the module (24 V Ext)

	Min.	Typ.	Max.
24 V Ext	18 V	24 V	32 V
24 V Ext (hysteresis)	<17 V	-	>18 V
	Ubus < 3 V		Ubus ≈ 36 V

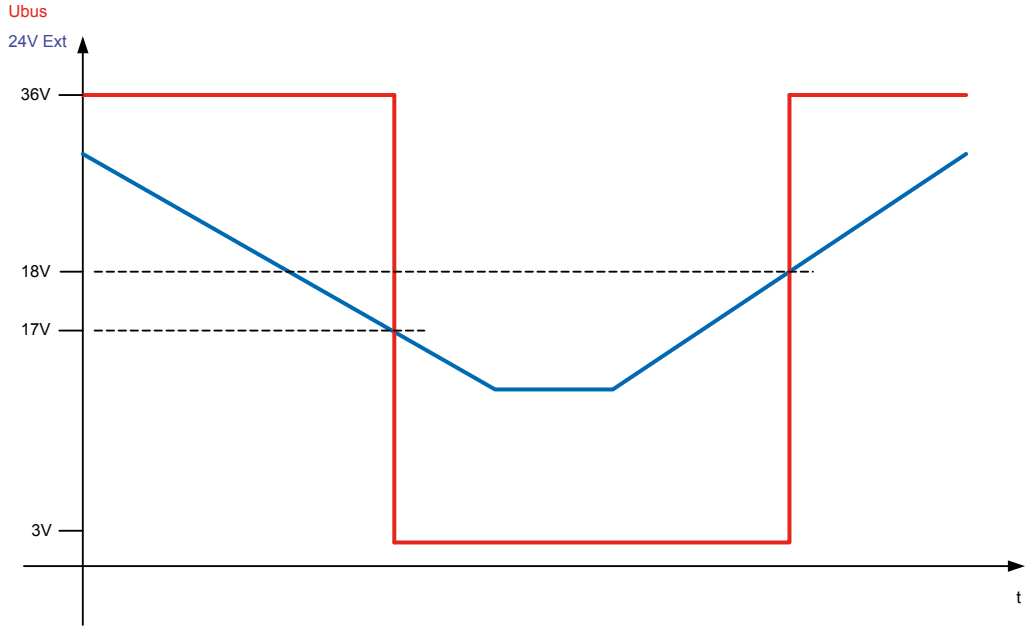
If the supply voltage to the CPU is switched off but the supply voltage to the interface card is not switched off and, in this state, the interface card is removed from the CPU, the interface may be destroyed (heavy smoke or even a fire).

4

To replace an interface card, we recommend the following procedure:

1. Switch off the supply voltage of the interface card
2. Switch off the supply voltage of the CPU
3. Remove plug-in screw terminal from interface card
4. Remove interface card from CPU
5. Insert the new interface card in the CPU
6. Insert plug-in screw terminal into interface card
7. Switch on the supply voltage of the CPU
8. Switch on the supply voltage of the interface card

4.5.5 Hysteresis on 24 V Ext



When the extern supply of the module goes under +17 VDC, the output voltage (bus voltage) falls under +3 VDC. To have a normal voltage on bus again, the extern supply must rise up to +18 VDC.

A Appendix

A.1 Icons

	In manuals, this symbol refers the reader to further information in this manual or other manuals or technical information documents. As a rule there is no direct link to such documents.
	This symbol warns the reader of the risk to components from electrostatic discharges caused by touch. Recommendation : at least touch the Minus of the system (cabinet of PGU connector) before coming in contact with the electronic parts. Better is to use a grounding wrist strap with its cable attached to the Minus of the system.
	This sign accompanies instructions that must always be followed.
	Explanations beside this sign are valid only for the Saia PCD® Classic series
	Explanations beside this sign are valid only for the Saia PCD® xx7 series.

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A.2 Address for Saia-Burgess Controls AG

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