

**PCD7.W600**

**User Manual**

## **0 Table of contents**

<b>0</b>	<b>Table of contents.....</b>	<b>1</b>
0.1	Document revisions.....	2
<b>1</b>	<b>PCD7.W600, 4 analog outputs with 12 bits resolution.....</b>	<b>3</b>
1.1	Module overview.....	3
1.2	Output connector.....	3
1.3	Analog outputs connections.....	4
1.4	Specifications.....	4
1.4.1	General data.....	4
<b>2</b>	<b>Module in PG5 environment.....</b>	<b>5</b>
2.1	Configuring the module.....	5
2.2	Outputs configuration.....	5
2.2.1	Status/ Diagnostic register.....	6
2.3	Data update with media mapping.....	6
2.4	Data update with direct access.....	6
2.5	Module detection.....	7
<b>3</b>	<b>Table of figures.....</b>	<b>8</b>
<b>4</b>	<b>Contact.....</b>	<b>9</b>

## 0.1 Document revisions

Revision	Modified	Published	Comments
EN01	2013-10-31	2013-10-31	New document
EN02	2014-01-06	2014-01-06	Figure 3 on page 4 corrected
EN03	2014-01-20	2014-06-20	White text in cover visible

# 1 PCD7.W600, 4 analog outputs with 12 bits resolution

This analog output module (0 to +10V) can be plugged on the socket A of a PCD1 instead of a communication interface.

The configuration of the outputs takes place in the Device Configurator like On-board I/O's

## 1.1 Module overview

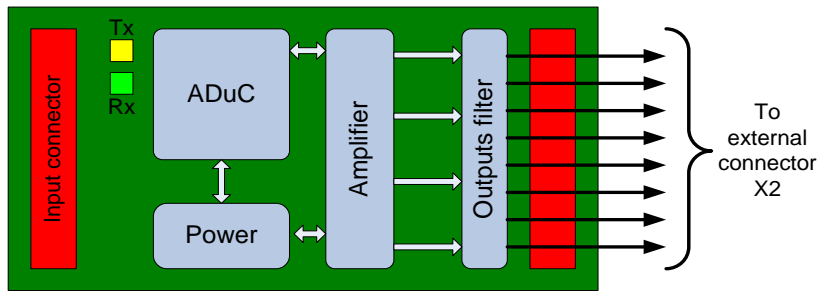
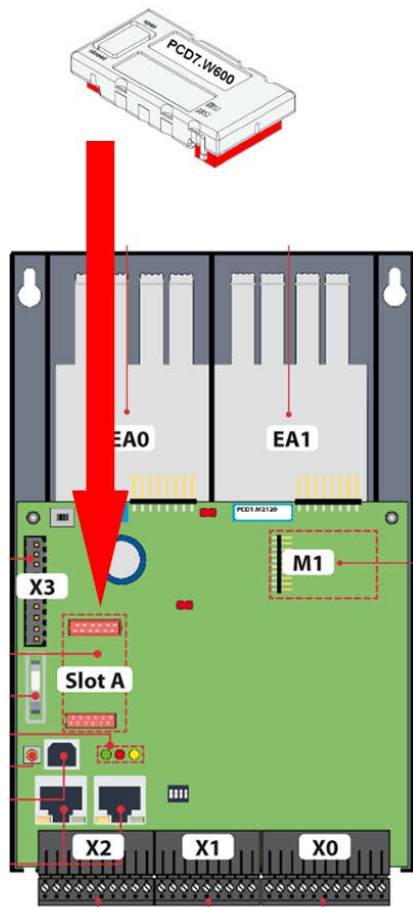


Figure 1: Module overview

Tx and Rx Leds are flashing when the module communicates with the PCD.

## 1.2 Output connector



X2  
29..20

Figure 2 : PCD1 output connector

X2 Connector	
20	PGND
21	A0+
22	A0-
23	A1+
24	A1-
25	PGND
26	A2+
27	A2-
28	A3+
29	A3-

Table 1 : X2 Connections

### 1.3 Analog outputs connections

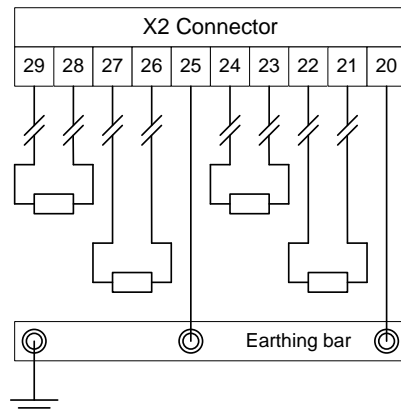


Figure 3 : Outputs connections

### 1.4 Specifications

#### 1.4.1 General data

<b>Technical data</b>	
<b>Module compatibility</b>	PCD1.M2xxx, PCD1.M0160E0, PCD1.M2110R1
<b>Module current consumption</b>	V+ 25 mA
	+5V 30 mA
<b>Number of outputs</b>	4
<b>Terminals</b>	1 plug-in screw terminal block, 10-pole, 3.5 mm for wiring up to 1 mm <sup>2</sup>
<b>Isolation</b>	No isolation between channels and/or PCD
<b>Output signal range &amp; Resolution</b>	With D/A converter 12 bits
	Nominal range: 0...+10 V Resolution 2.6 mV value of least significant bit (LSB)
<b>Monotonicity</b>	Yes
<b>Output impedance (max.)</b>	0.7 Ω
<b>Allowable load resistance</b>	≥3 KΩ
<b>Allowable capacitive load</b>	≤20 nF
<b>Allowed types of load</b>	Floating or grounded (the minus of the outputs is internally connected with the PCD ground)
<b>Short-circuit protection</b>	YES permanent
<b>Accuracy @25°C</b>	±0.2% of the full scale (10 V)
<b>Temperature coefficient</b>	±100ppm/K of the full scale (10 V)
<b>Accuracy over full temperature range (0...55°C)</b>	±0.5% of the full scale (10 V)
<b>Maximum temporary deviation during electrical interference test</b>	±0.2% of the full scale (10 V) for fast transient burst (EN 61000-4-4)
	±1% of the full scale (10 V) for Radiofrequency interference(EN 61000-4-6)
<b>Settling time for full-range change</b>	≤1ms
<b>Overshooting</b>	0.01% of the full range (10 V)
<b>Scaling (PG5)</b>	0...4095 , 0...10000 or User defined

Table 2 : Technical data overview

## 2 Module in PG5 environment

### 2.1 Configuring the module

The module can only be configured with the PG5 device configurator

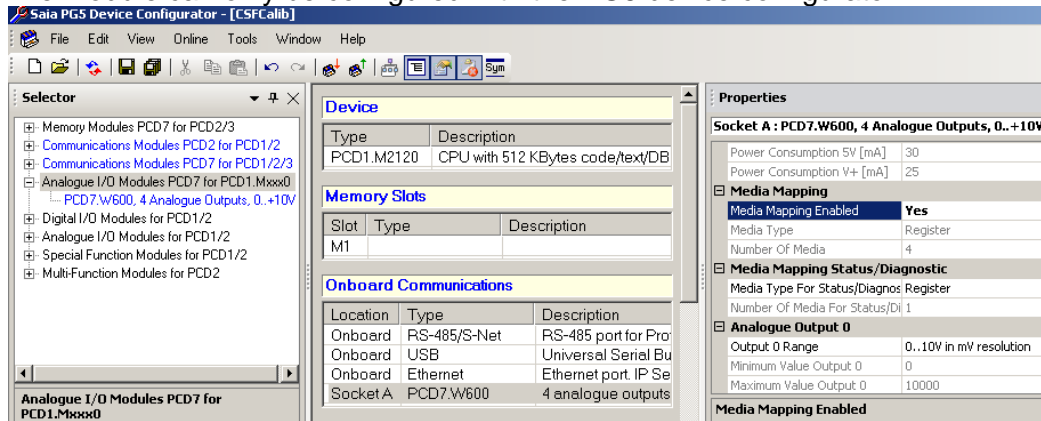


Figure 4 : Saia PG5 Device Configurator

### 2.2 Outputs configuration

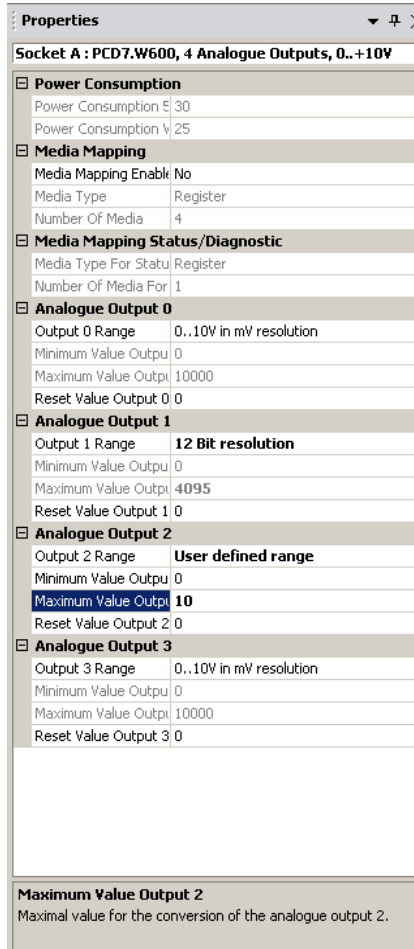


Figure 5 : Module properties

For the user defined range, the value can be set between -32768 to +32767.

The module can be used by two ways:

- With media mapping
- With direct access

The two possibilities are described in the next chapters.

### 2.2.1 Status/ Diagnostic register

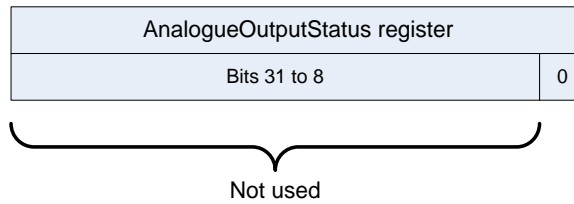


Figure 6 : Status register bits description

Bit0: ,1' if a communication error has been detected (between PCD and module)  
 This bit is automatically cleared when the status register is read.

### 2.3 Data update with media mapping

With the media mapping enabled, each module has these following registers:

Symbol Name	Type	Address/Value	Comment	Tags	Scope
All Publics	ROOT				
IO	GROUP				
IOAccess	GROUP				
SocketA	GROUP				
IOAccess	GROUP				
AnalogueOutput0	R	S.IO.SocketA.AnalogueOutput + 0	Analogue output 0	S_IO	Public
AnalogueOutput1	R	S.IO.SocketA.AnalogueOutput + 1	Analogue output 1	S_IO	Public
AnalogueOutput2	R	S.IO.SocketA.AnalogueOutput + 2	Analogue output 2	S_IO	Public
AnalogueOutput3	R	S.IO.SocketA.AnalogueOutput + 3	Analogue output 3	S_IO	Public
AnalogueOutputStatus	R	S.IO.SocketA.AnalogueOutputStatus + 0	Analogue output status	S_IO	Public

Figure 7 : media mapping symbols creation

The analog values shall be directly written in the AnalogueOutputx registers. Each channel will be updated after the last COB.

The status register is updated before the first COB is executed. When using media mapping it is not possible to know which channel has not been updated.

### 2.4 Data update with direct access

The module allows direct access with WRPW commands.

Symbol Name	Type	Address/Value	Comment	Tags	Scope
All Publics	ROOT				
IO	GROUP				
IOAccess	GROUP				
Slot0	GROUP				
SocketA	GROUP				
IOAccess	GROUP				
ANALOGUE_OUTPUT_0	CONST	2	Address of analogue output...		Public
ANALOGUE_OUTPUT_1	CONST	4	Address of analogue output...		Public
ANALOGUE_OUTPUT_2	CONST	6	Address of analogue output...		Public
ANALOGUE_OUTPUT_3	CONST	8	Address of analogue output...		Public
ANALOGUE_OUTPUT_STATUS	CONST	8	Address of analogue output...		Public

Figure 8 : Direct access symbols

Here an IL program example to write an analogue value to the output0 and to read the diagnose register

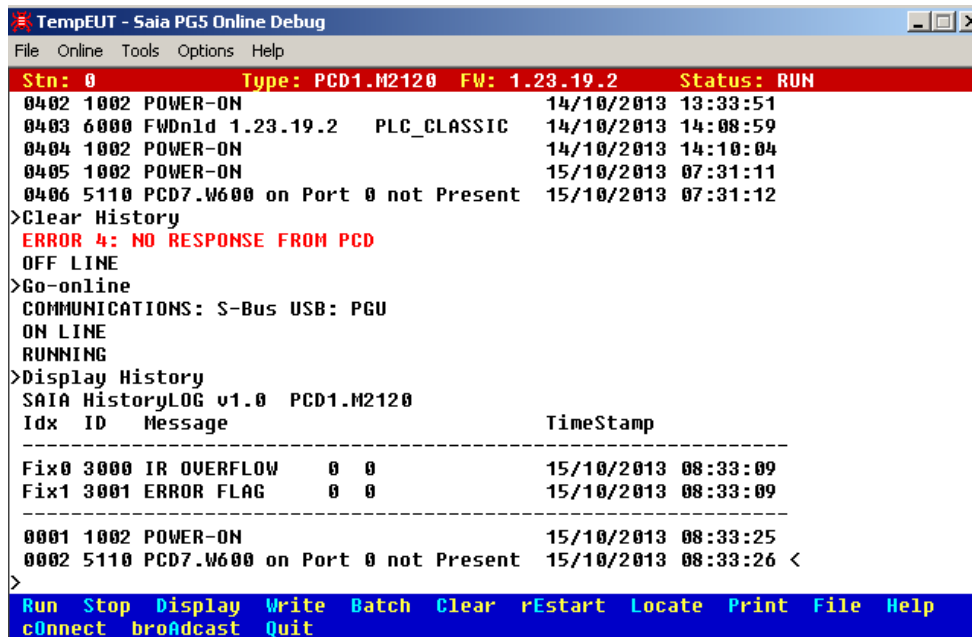
```
WRPW IO.SocketA.IOAccess.ANALOGUE_OUTPUT_0
R 99

RDPB IO.SocketA.IOAccess.ANALOGUE_OUTPUT_STATUS
R 100
```

With direct access, it is possible to know which channel has not been correctly updated if the status register is read direct after the Write command.

## 2.5 Module detection

If the module is not plugged, there is a history entry.



If you need to detect if the module is plugged or not in your program code, you can use the following function.

```

CSF      S.SF.SYS.Library      ;Library number
         S.SF.SYS.ReadDeviceInfo ;Read Device Information
         K 2                    ;1 R|K IN, Device Port (1 IO Bus 2 Extension)
         K 22                   ;2 R|K IN, Device ID
         K 0                     ;3 R|K IN, Slave ID
         RStatus                 ;4 R OUT, Status
         TASN                     ;5 TEXT OUT, ASN
         THWVers                 ;6 TEXT OUT, HW version
         RHWModif                ;7 R OUT, HW modif
         TFabDate                ;8 TEXT OUT, Fabrication Date (ww/yy)
         RSerNum                 ;9 R OUT, Serial Number
         TFWVersion              ;10 TEXT OUT, FW version
    
```

Figure 9 : CSF ReadDeviceInfo

If the module has been correctly plugged, the status value is a positive number and all device information can be read.

Symbol	Address	Value
RStatus	R 2002	65
TASN	TEXT 5000	"PCD7.W600<0> "
THWVers	TEXT 5003	"a<0> "
RHWModif	R 2000	000000FFH
TFabDate	TEXT 5001	"35/13<0> "
RSerNum	R 2001	00000014H
TFWVersion	TEXT 5002	"1.00.00<0> "

Figure 10 : Module correctly plugged

If the module has not been correctly plugged or simply not plugged, the returned value is negative.



### 3 Table of figures

<i>Figure 1: Module overview</i> .....	3
<i>Figure 2 : PCD1 output connector</i> .....	3
<i>Figure 3 : Outputs connections</i> .....	4
<i>Figure 5 : Saia PG5 Device Configurator</i> .....	5
<i>Figure 6 : Module properties</i> .....	5
<i>Figure 7 : Status register bits description</i> .....	6
<i>Figure 8 : media mapping symbols creation</i> .....	6
<i>Figure 9 : Direct access symbols</i> .....	6
<i>Figure 10 : CSF ReadDeviceInfo</i> .....	7
<i>Figure 11 : Module correctly plugged</i> .....	7
<i>Table 1 : X2 Connections</i> .....	3
<i>Table 2 : Technical data overview</i> .....	4

## 4 Contact

### **Saia-Burgess Controls AG**

Bahnhofstrasse 18

CH-3280 Murten / Switzerland

Telephon: ..... +41 26 672 72 72

Fax: ..... +41 26 672 74 99

E-Mail Support: ..... [support@saia-pcd.com](mailto:support@saia-pcd.com)

Supportseite: ..... [www.sbc-support.com](http://www.sbc-support.com)

SBC Seite: ..... [www.saia-pcd.com](http://www.saia-pcd.com)

Internationale Vertretungen &

SBC Verkaufsgesellschaften: ... [www.saia-pcd.com/contact](http://www.saia-pcd.com/contact)