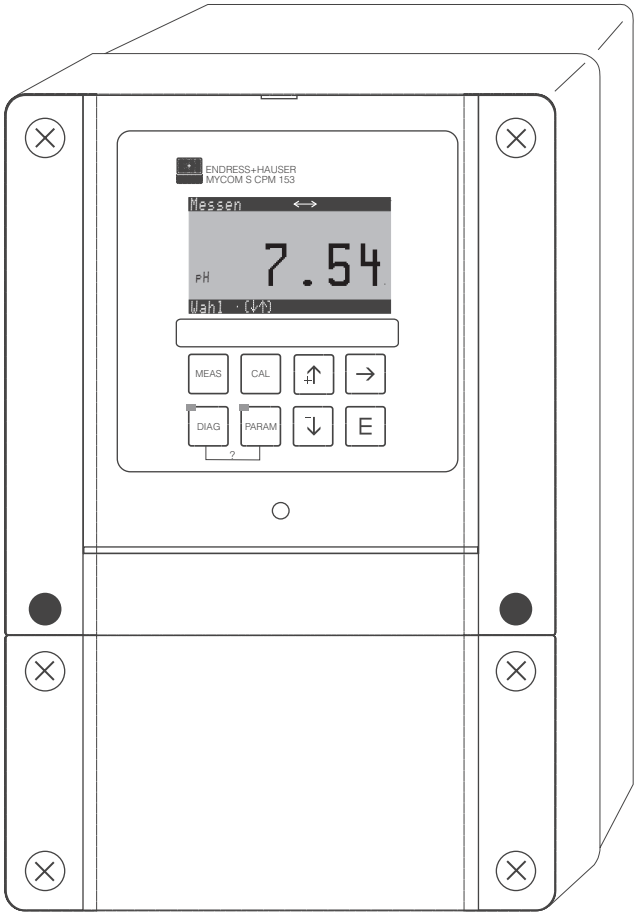
BA 298C/07/en/12.02
51507116
As of software version
CPM 153: 1.20
CLM 153id: 1.20
CLM 153cd: 1.20

PROFIBUS-PA
Field Communication with Mycom S CXM 153 TopCal S CPC 300 TopClean S CPC 30

Operating Instructions



Endress+Hauser
The Power of Know How

Table of contents

1 Safety instructions

1.1 Designated use

The Transmitter Mycom S CXM 153 PROFIBUS® is a device for measuring the pH value or the redox potential or the conductivity. The PROFIBUS® interface allows the device to be operated using the Operating program Commuwin II at the PC via a PROFIBUS interface.

Using the device for any application other than that described could call into question the safety of persons, and of the entire measuring system, and is therefore not permitted.

The manufacturer accepts no liability for damage resulting from incorrect use or use other than that designated.

1.2 Installation, commissioning and operation

Note the following points:

- Installation, electrical connection, commissioning, operation and maintenance of the measuring system must be carried out exclusively by specially trained technical personnel.
  This personnel must be authorised to perform such work by the system operator.
- Technical personnel must have read and understood these Operating Instructions and must adhere to them.
- Before commissioning the entire measuring point, check all the connections for correctness. Ensure that electrical cables and hose connections are not damaged.
- Do not commission damaged products. Protect them against inadvertent commissioning. Mark the damaged product as defective.
- Faults at the measuring point may only be rectified by authorised and specially trained personnel.
- If faults cannot be rectified, you must take the products out of operation and protect them against inadvertent commissioning.
- Repairs not described in these Operating Instructions may only be carried out directly at the manufacturer's or by the Endress+Hauser service organisation.

1.3 Operational safety

The transmitter has been designed and tested according to the state of the art and left the factory in perfect functioning order.
Appropriate regulations and European standards have been taken into consideration.

As the user, you are responsible for ensuring the following safety regulations are observed:

- Regulations on explosion protection
- Installation regulations
- Local standards and regulations

In addition, the separate Ex-documentation also applies to Ex-systems. This is an integral part of these Operating Instructions.

1.4 Return

If the device has to be repaired, please return it *cleaned* to your nearest Endress+Hauser sales centre.
Please use the original packaging if possible.

Please enclose a duly completed Dangerous Goods Sheet (copy second-last page of these Operating Instructions) with both the packaging and the transportation documents.

1.5 Notes on safety conventions and icons

Warnings

Warning!
This symbol alerts you to hazards which could cause serious injuries, as well as damage to the instrument, if ignored.

Caution!
This symbol alerts you to possible faults which could arise from incorrect operation. They could cause damage to the instrument if ignored.

Note!
This symbol indicates important items of information.

Electrical symbols

Direct current
A terminal at which DC voltage is applied or through which DC flows.

Alternating current
A terminal at which (sine-form) alternating voltage is applied or through which AC flows.

Ground connection
A grounded terminal, which, from the user's point of view, is already grounded using a grounding system.

Protective earth terminal
A terminal which must be grounded before other connections may be set up.

Equipotential connection
A connection which must be connected to the grounding system of the equipment. This can be, for example, a potential matching line or a star-shaped grounding system, depending on national or company practice.

Double insulation
The equipment is protected with double insulation.

Alarm relay

Input

Output

2 Identification

2.1 Device designation

2.1.1 Nameplate

Compare the order code on the nameplate with the product structure in the standard Operating Instructions and your order.

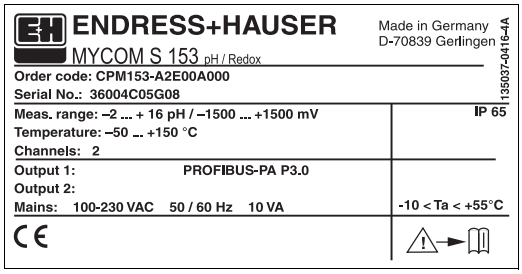


Fig. 1: Example of a nameplate for Mycom S PROFIBUS

2.2 Scope of delivery

The scope of delivery for Mycom S CXM 153 PROFIBUS comprises:
- 1 x transmitter Mycom S CXM 153 PROFIBUS
- 1 x standard Operating Instructions BA 233C/07/en (for CPM 153) or BA 234C/07/en (for CLM 153)
- In addition, the Ex Operating Instructions XA 233C/07/a3 for Ex devices
- 1 x Operating Instructions BA 298C/97/en “Field communication with PROFIBUS”

The scope of delivery for TopClean S CPC 30 PROFIBUS comprises:
- 1 x transmitter Mycom S CPM 153 PROFIBUS
- 1 x control unit CPG 30
- 1 x standard Operating Instructions BA 235C/07/en
- In addition, the Ex Operating Instructions XA 236C/07/a3 for Ex devices
- 1 x Operating Instructions BA 298C/97/en “Field communication with PROFIBUS”

The scope of delivery for TopCal S CPC 300 PROFIBUS comprises:
- 1 x transmitter Mycom S CPM 153 PROFIBUS
- 1 x control unit CPG 300
- 1 x standard Operating Instructions BA 236C/07/en
- In addition, the Ex Operating Instructions XA 236C/07/a3 for Ex devices
- 1 x Operating Instructions BA 298C/97/en “Field communication with PROFIBUS”

If you have any questions, please contact your supplier or your nearest Endress+Hauser sales centre (see the back page of these Operating Instructions).

2.3 Certificates and approvals

Declaration of conformity
The Transmitter fulfils the statutory requirements of the harmonised European standards. Endress+Hauser certifies the compliance with the standards by using the CE mark.

3 Installation

3.1 System setup

The complete system consists of the following components:

- Transmitter Mycom S CXM 153 PROFIBUS
- Segment coupler
- Programmable logic controller (PLC) or PC with Operating program Commuwin II
- PROFIBUS-PA terminating resistor
- Wiring incl. bus distributor

The maximum number of transmitters on one bus segment is determined by their current consumption, the power of the bus coupler and the required bus length.

Note!
More detailed information on planning and commissioning a PROFIBUS system can be found in the Operating Instructions BA 198F/00/en. This can be supplied by your nearest Endress+Hauser sales centre (see the back page of these Operating Instructions).

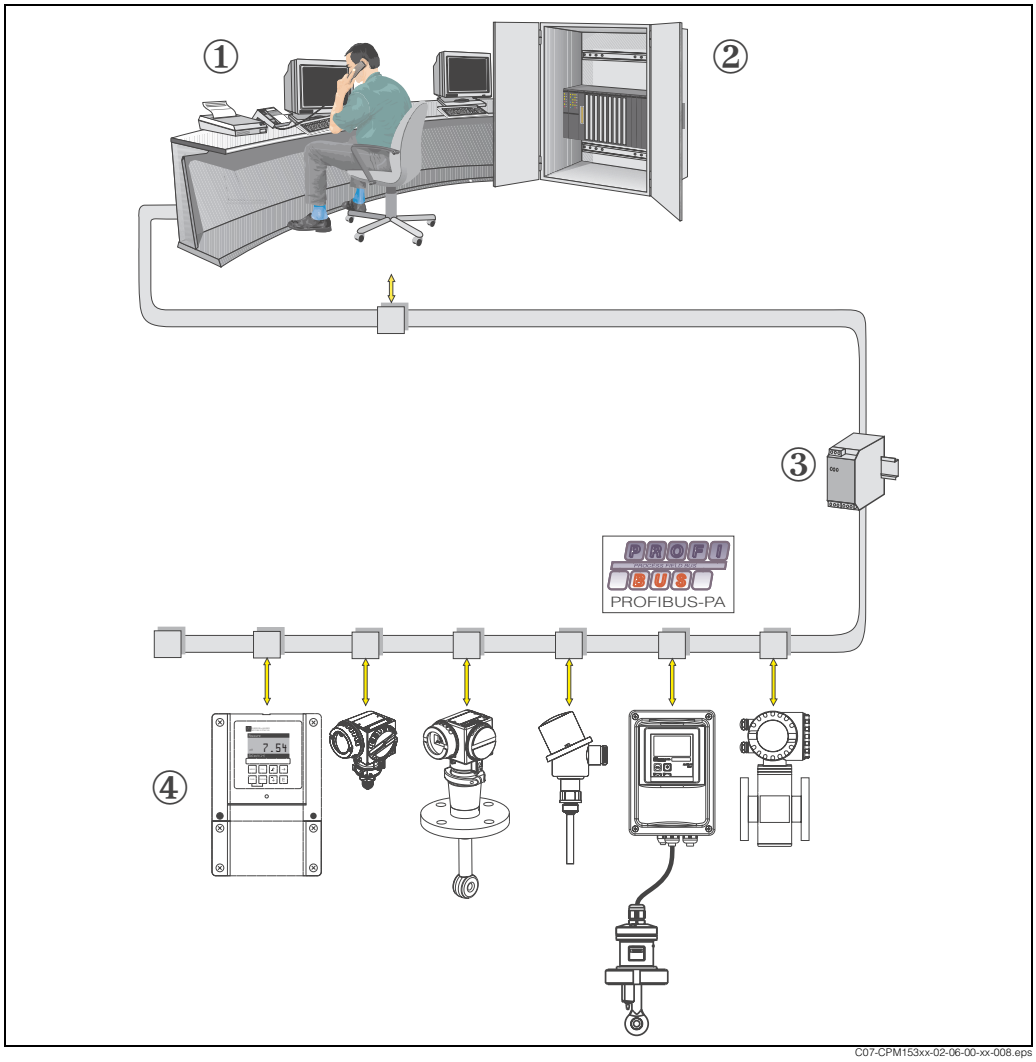


Fig. 2: Measuring systems with PROFIBUS interface

1 PC with operating program Commuwin II
2 PLC
3 Segment coupler
4 Mycom S CXM 153 PROFIBUS

3.2 Post-installation check

After installing the transmitter, carry out the following checks:

Device condition and specifications	**Note**
Is the transmitter undamaged?	Visual inspection
Installation	**Note**
Are the measuring point number and the labelling correct?	Visual inspection
Process environment / process conditions	**Note**
Is the measuring device protected against moisture and direct sunlight?	For outdoor installation, the weather protection cover CYY 101 is required (s. Accessories).

4 Wiring

4.1 Electrical connection

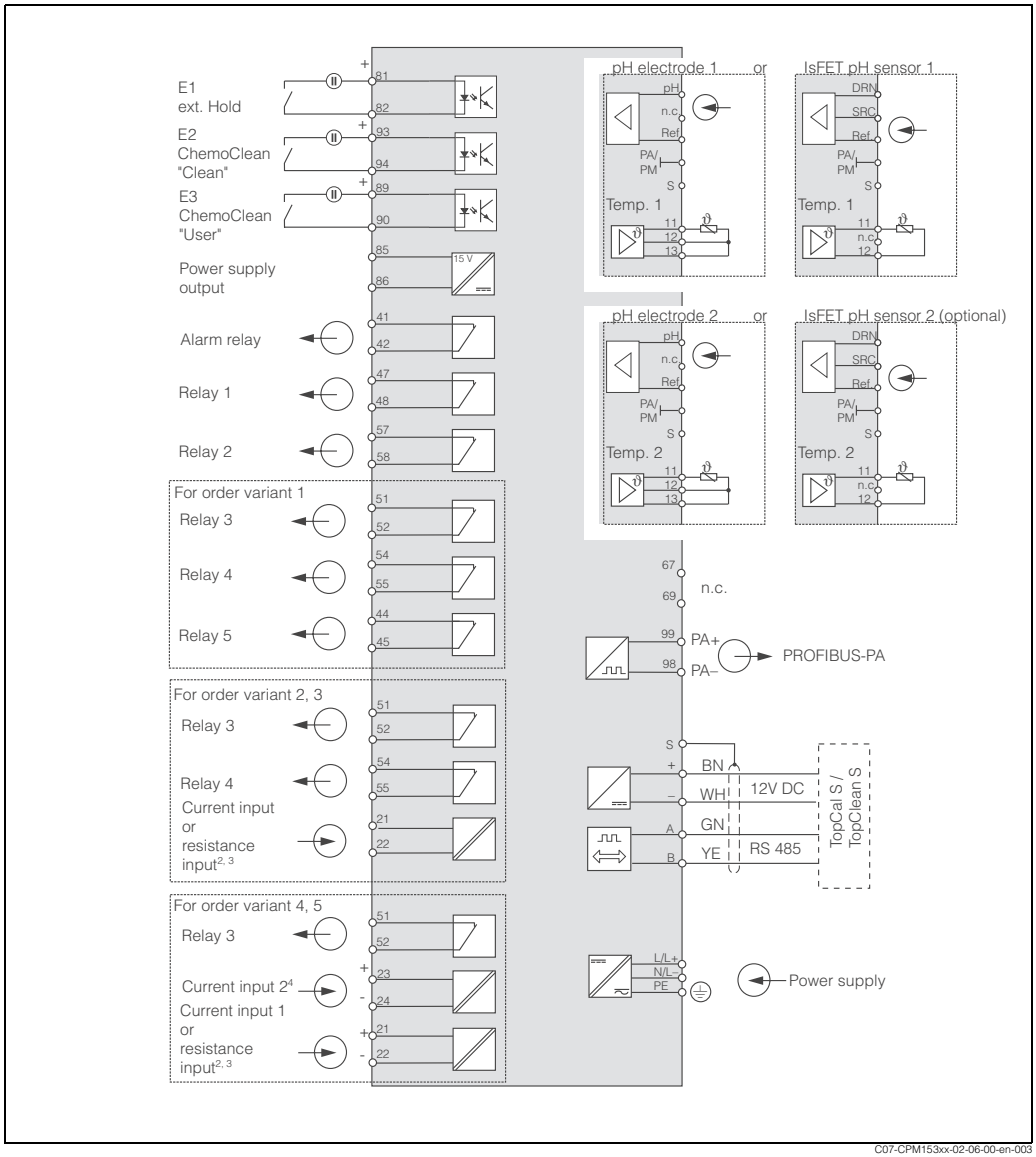


Fig. 3: Electrical connection Mycom S CXM 153 PROFIBUS-PA

4.1.1 Electrical connection PA-device

The bus cable can be connected to the transmitter with or without an M12 connector. The bus cable is connected as follows:

1. Loosen the four Phillips screws and remove the housing cover.
2. Guide the cable through the opened cable entry into the connection compartment.
3. Connect the cable cores of the bus cable to the terminal block as shown in Fig. 4. Reversing has no effect on operation.
4. Tighten the cable gland.

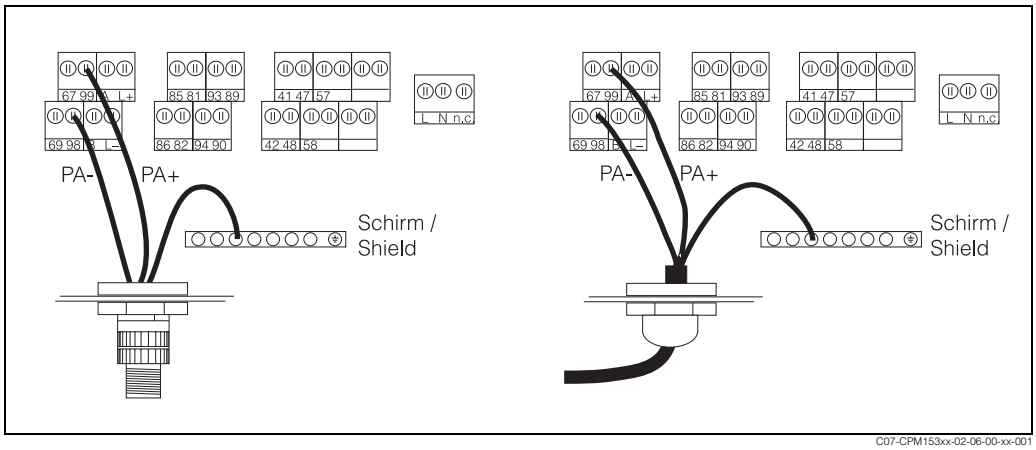


Fig. 4: Transmitter bus cable connection Mycom S-PA

Left: connection with M12 connector
Right: connection without M12 connector

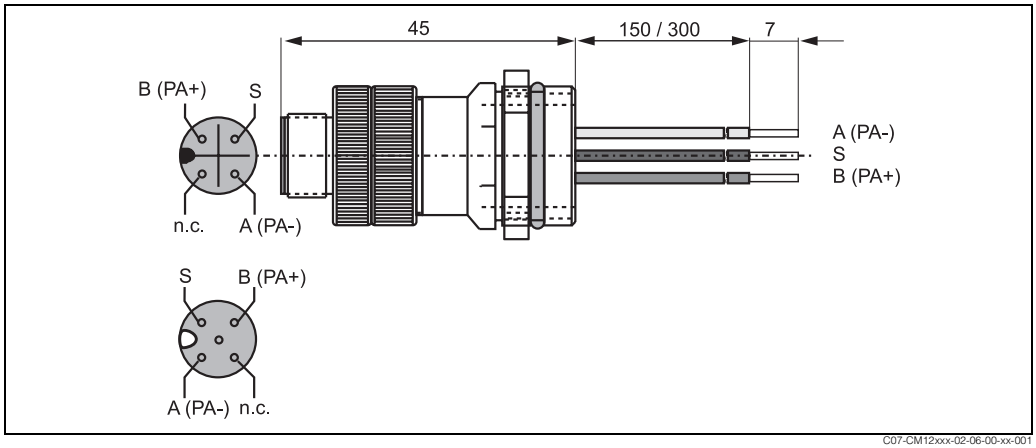


Fig. 5: M12 connector with socket

4.2 Post-connection check

Perform the following checks after completing electrical installation of the measuring device:

Device condition and specifications	**Note**
Is the measuring device or the cable damaged externally?	Visual inspection
Electrical connection	**Note**
Does the supply voltage match the specifications on the nameplate?	CXM 153: 100 V ... 230 V AC long-range 24 V AC / DC
Do the cables used fulfil the required specifications?	Use a genuine E+H cable for electrode/sensor connection, see “Accessories” section in the standard Operating Instructions
Are the mounted cables strain-relieved?	
Is the cable type route completely isolated?	Along the whole cable length, run the power supply and signal line cables separately to avoid any mutual influence. Separate cable channels are best.
No loops and cross-overs in the cable run?	
Are the power supply and signal cables correctly connected?	
Are all screw terminals firmly tightened?	
For connection with potential matching (PML): Is the PML connected to the medium or the buffer solution?	✎ Note! During calibration, insert the PML into the buffer solution.
Are all the cable entries installed, tightened and sealed? Cable run with “water trap”?	“Water trap”: cable circuit hanging down so that water can drip off.
Are all the housing covers installed and firmly tightened?	Check seals for damage.

5 Operation

5.1 Display and operating elements

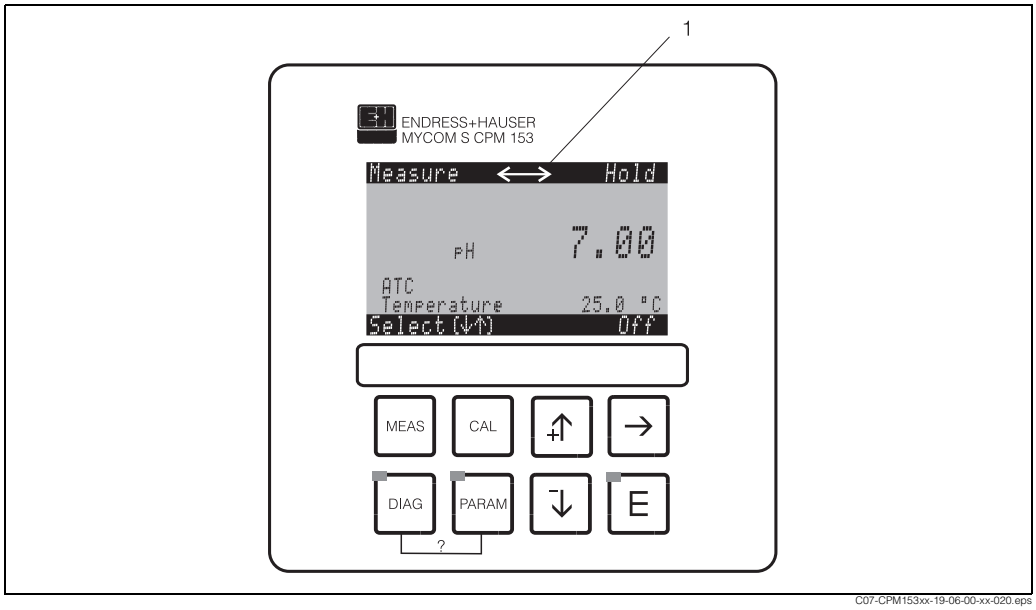


Fig. 6: User interface Mycom S CXM 153

1 Display symbol for active communication via PROFIBUS interface

Please refer to the standard Operating Instructions for an explanation of the key assignment and the other icons and symbols.

5.2 Local operation

In general, all control fields from the standard menu (see standard Operating Instructions BA 233C/07/en, BA 234C/07/en, BA 235C/07/en, BA236C/07en) can be accessed via local operation apart from the following:

- Current outputs 1 and 2
- Continuous controller (current output assignment)
- Error current
- Hold current
- Current simulation

5.3 Communication

5.3.1 Cyclic data exchange (Data_Exchange)

Block model of Mycom S CXM 153

In the PROFIBUS-PA configuration, all the device parameters are categorised according to their functional properties and tasks and are generally assigned to three different blocks. A block may be regarded as a container in which parameters and the associated functionalities are contained.

A PROFIBUS-PA device has the following block types (see also Fig. 7):

- *A Physical Block (device block)*
  The Physical Block contains all device-specific features of the unit.
- *One or more Transducer Blocks*
  The Transducer Block contains all the measuring and device-specific parameters of the device. The measuring principles (e.g. pH, temperature) are depicted in the Transducer Blocks in accordance with the PROFIBUS-PA Profile 3.0 Specification.
- *One or more function blocks*
  A function block contains the automation functions of the device. Mycom S contains Analog Input blocks by means of which the measured values can be scaled and examined for limit value overshoot.

A number of automation-related tasks can be implemented with these blocks. In addition to these blocks, a transmitter can have any number of additional blocks, for example several Analog Input function blocks if the transmitter makes more than one process variable available.

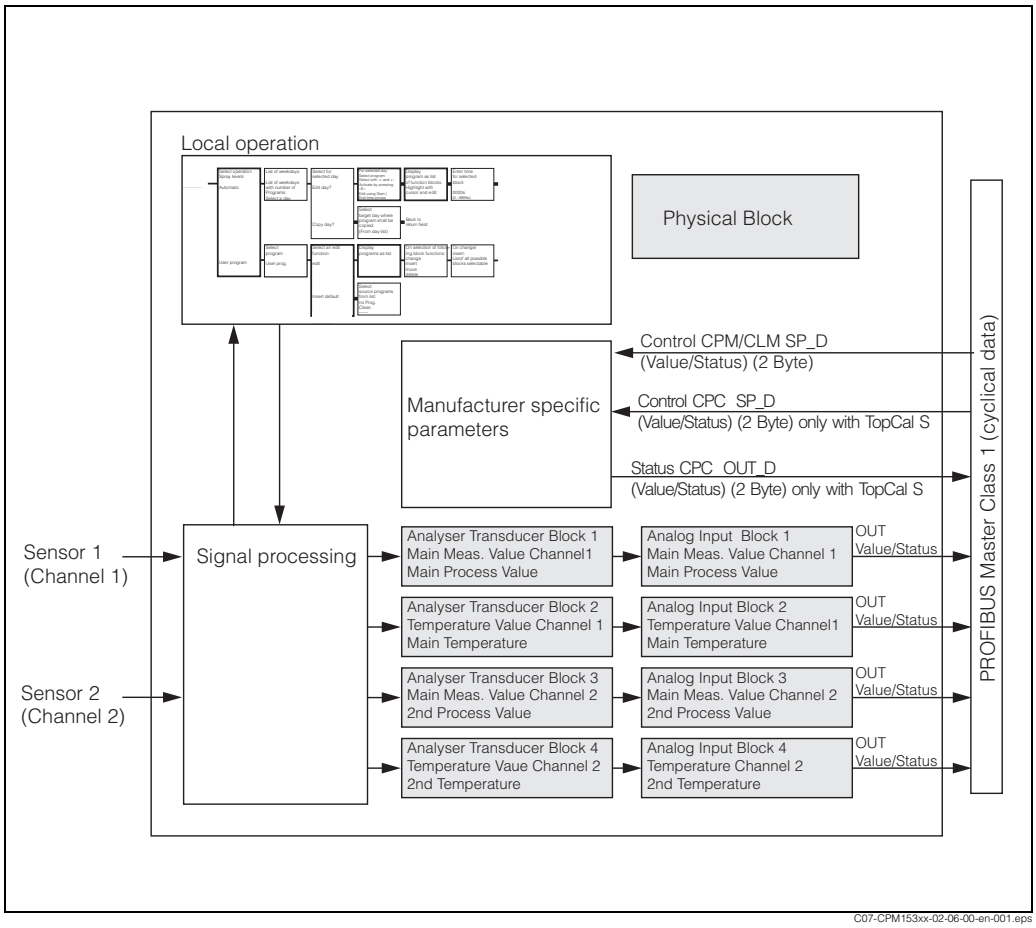


Fig. 7: Block model of Mycom S CXM 153. grey = profile blocks

Module for the cyclic data telegram

Mycom S CXM153 makes the following module available as input data (data from transmitter to PLC) for the cyclic data telegram (see also block model in Fig. 7):

1. Main Process Value
   This is the main measured value of channel 1
2. Main Temperature
   This is the temperature of channel 1
3. 2nd Process Value
   This is the process value of channel 2
4. 2nd Temperature
   This is the temperature of channel 2
5. Status CPC (only for TopCal S and TopClean S)
   This is the status information of a connected CPG
6. Control CPM / CLM
   With this parameter, the digital signals Ext. Hold, Chemoclean “Clean”, Chemoclean “User” and parameter set switching for CLM153 can be controlled by the PLC in Mycom S.
7. Control CPC (only for TopCal S and TopClean S)
   With this parameter, the digital signals can:
   – Move assembly to “Measure” position
   – Move assembly to “Service” position
   – Automatic start/stop
   – Cleaning program selection (bin.0)
   – Cleaning program selection (bin.1)
   – Cleaning program selection (bin.2)
   be transmitted from the PLC to Mycom S.

Maximum configuration of the input data of Mycom S to the PLC

Using the Data_Exchange service, a PLC can read the described input data as cyclic data from the transmitter Mycom S. The cyclic data telegram for the maximum configuration of Mycom S has the following structure:

Index input data	Data	Access	Data format / comments	Configuration data
0 ... 4	Analog Input block 1 “Main Process Value” (pH 1 / cond. 1)	read	Measured value (32-bit floating point number; IEEE-754) Status byte; encoding see status code table on Page 29	0x42, 0x84, 0x08, 0x05 or 0x42, 0x84, 0x81, 0x81 or 0x94
5 ... 9	Analog Input block 2 “Main Temperature” (Temperature 1)	read	Measured value (32-bit floating point number; IEEE-754) Status byte; encoding see status code table on Page 29	0x42, 0x84, 0x08, 0x05 or 0x42, 0x84, 0x81, 0x81 or 0x94
10 ... 14	Analog Input block 3 “2nd Process Value” (pH 2 / cond. 2)	read	Measured value (32-bit floating point number; IEEE-754) Status byte; encoding see status code table on Page 29	0x42, 0x84, 0x08, 0x05 or 0x42, 0x84, 0x81, 0x81 or 0x94
15 ... 19	Analog Input block 4 “2nd Temperature” (Temperature 2)	read	Measured value (32-bit floating point number; IEEE-754) Status byte; encoding see status code table on Page 29	0x42, 0x84, 0x08, 0x05 or 0x42, 0x84, 0x81, 0x81 or 0x94

Index input data	Data	Access	Data format / comments	Configuration data
20 ... 21	Status CPC (OUT_D) Value 0000 0001 0000 0010 0000 0100 0000 1000 0001 0000 0010 0000 0100 0000 1000 0000 (only for TopCal S and TopClean S) Status	read	 Byte (Bit coded) Assembly in “Measure” position Assembly in “Service” position reserved reserved Program running Cleaning program status (bin.0) Cleaning program status (bin.1) Cleaning program status (bin.2) (Function description see BA 235C/07/en and 236C/07/en) Status Byte (80h = OK)	0x42, 0x81, 0x05, 0x05 or 0x42, 0x81, 0x83, 0x81 or 0x91

IEEE 754 floating point number:

	Byte n			Byte n+1		Byte n+2		Byte n+3	
	Bit 7	Bit 6	Bit 0	Bit 7	Bit 6 Bit 0	Bit 7	Bit 0	Bit 7	Bit 0
	Sign	2^7 2^6 2^5 2^4 2^3 2^2 2^1		2^0	2^{-1} 2^{-2} 2^{-3} 2^{-4} 2^{-5} 2^{-6} 2^{-7}	2^{-8} 2^{-9} 2^{-10} 2^{-11} 2^{-12} 2^{-13} 2^{-14} 2^{-15}		2^{-16} 2^{-17} 2^{-18} 2^{-19} 2^{-20} 2^{-21} 2^{-22} 2^{-23}	
		Exponent			Mantissa	Mantissa		Mantissa	

Formula: Value $= (-1)^{sign} * 2^{(exponent - 127)} * (1 + mantissa)$
Example: 40 F0 00 00 h = 0100 0000 1111 0000 0000 0000 0000 0000 b
Value $= (-1)^0 * 2^{(129 - 127)} * (1 + 2^{-1} + 2^{-2} + 2^{-3})$
$= 1 * 2^2 * (1 + 0.5 + 0.25 + 0.125)$
$= 1 * 4 * 1.875$
$= 7.5$

Maximum configuration of the output data of the PLC to Mycom S

The data of the PLC to the transmitter (output data) have the following structure:

Index output data	Data	Access	Data format / comments	Configuration data
0 ... 1	Control CPM / CLM (SP_D) Value 0000 0001 E1 0000 0010 E2 0000 0100 E3 0000 1000 0001 0000 0010 0000 0100 0000 1000 0000 Status	write	 Byte Ext. Hold ChemoClean “Clean” ChemoClean “User” reserved reserved reserved reserved reserved Status Byte (80h = Good - OK: Value is adopted	0x82, 0x81, 0x05, 0x05 or 0x82, 0x81, 0x84, 0x82 or 0xA1
2 ... 3	Control CPC (SP_D) Value 0000 0001 0000 0010 0000 0100 0000 1000 0001 0000 0010 0000 0100 0000 1000 0000 (only for TopCal S and TopClean S) Status	write	 Byte Assembly in “Measure” position Assembly in “Service” position Automatic start/stop reserved reserved Cleaning program selection (bin.0) Cleaning program selection (bin.1) Cleaning program selection (bin.2) (Function description see BA 235C/07/en and 236C/07/en) Status Byte (80h = Good - OK: Value is adopted	0x82, 0x81, 0x05, 0x05 or 0x82, 0x81, 0x84, 0x82 or 0xA1

You can control the external hold and the ChemoClean functions in the device by means of the digital inputs (E1, E2, E3).

In addition, you can also switch the parameter sets for CLM 153 (see above: data under index 0 of the output data). In doing so, you can use the Commuwin matrix field V4H2 to select whether to control the digital inputs via the wires connected in the device or via a byte in the cyclic data telegram (PROFIBUS) (0: control via binary inputs (= default), 1: control via cyclic data telegram).

The control options depend on the set number of digital inputs (cf. Operating Instructions for Mycom S CLM 153, BA 234C/07/en under “parameter sets”).

Description Control CLM Value

Control CLM Value											Function
reserved	reserved	reserved	reserved		reserved	E3	E2	E1	Decimal	Hexadecimal	
Number of binary inputs = 0; E1, E2 and E3 active											
-	-	-	-		-	0	0	1	1	0x01	ext. Hold on
-	-	-	-		-	0	0	0	0	0x00	ext. Hold off
-	-	-	-		-	0	1	0	2	0x02	ChemoClean "Clean"
-	-	-	-		-	1	0	0	4	0x04	ChemoClean "User"
Number of binary inputs = 1; E1 and E2 active											
-	-	-	-		-	-	0	1	1	0x01	ext. Hold on
-	-	-	-		-	-	0	0	0	0x00	ext. Hold off
-	-	-	-		-	-	1	0	2	0x02	Parameter set 1
-	-	-	-		-	-	0	0	0	0x00	Parameter set 2
Number of binary inputs = 2; E1 and E2 active											
-	-	-	-		-	-	0	0	0	0x00	Parameter set 1
-	-	-	-			-	1	0	2	0x02	Parameter set 2
-	-	-	-		-	-	0	1	1	0x01	Parameter set 3
-	-	-	-		-	-	1	1	3	0x03	Parameter set 4

Description Control CPM Value

Control CPM Value											Function
reserved	reserved	reserved	reserved		reserved	E3	E2	E1	Decimal	Hexadecimal	
-	-	-	-		-	0	0	0	0	0x00	no action
-	-	-	-		-	0	0	1	1	0x01	ext. Hold on
-	-	-	-		-	0	1	0	2	0x02	ChemoClean "Clean"
-	-	-	-		-	1	0	0	4	0x04	ChemoClean "User"

Description Control CPC Value

Control CPC Value											Function
bin. 2	bin. 1	bin. 0	reserved		reserved	Auto Stop	Ass. Service	Ass. Meas.	Decimal	Hexadecimal	
0	0	0	0		0	0	0	0	0	0x00	no action
0	0	0	0		0	0	0	0	1	0x01	Put assembly in measuring position
0	0	0	0		0	0	1	0	2	0x02	Put assembly in service position

Control CPC Value											Function
bin. 2	bin. 1	bin. 0	reserved		reserved	Auto Stop	Ass. Service	Ass. Meas.	Decimal	Hexadecimal	
0	0	0	0		0	1	0	0	4	0x04	Automatic Stop Clean Int. is interrupted
0	0	1	0		0	0	0	0	32	0x20	Programme Clean
0	1	0	0		0	0	0	0	64	0x40	Programme Clean C
1	0	0	0		0	0	0	0	128	0x80	Programme Clean S (only if external valves are available)
0	1	1	0		0	0	0	0	96	0x60	Programme CS (only if external valves are available)
1	0	1	0		0	0	0	0	160	0xA0	Programme User 1
1	1	0	0		0	0	0	0	192	0xC0	Programme User 2
1	1	1	0		0	0	0	0	224	0xE0	Programme User 3

Description Status CPC Value

Status CPC Value											Function
bin. 2	bin. 1	bin. 0	Progr. running		reserved	reserved	Ass. Service	Ass. Meas.	Decimal	Hexadecimal	
0	0	0	0		0	0	0	0	0	0x00	Assembly has not reached end position
0	0	0	0		0	0	0	0	1	0x01	Assembly in measuring position
0	0	0	0		0	0	1	0	2	0x02	Assembly in service position
0	0	0	1		0	0	1	0	18	0x12	Programme Clean Int. running
0	0	1	1		0	0	1	0	50	0x32	Programme Clean running
0	1	0	1		0	0	1	0	82	0x52	Programme Clean C running
1	0	0	1		0	0	1	0	146	0x92	Programme Clean S running (only if external valves are available)
0	1	1	1		0	0	1	0	114	0x72	Programme CS running (only if external valves are available)
1	0	1	1		0	0	1	0	178	0xB2	Programme User 1 running
1	1	0	1		0	0	1	0	210	0xD2	Programme User 2 running
1	1	1	1		0	0	1	0	242	0xF2	Programme User 3 running

Customising the cyclic data telegram

You can customise the cyclic telegram to better meet the requirements of a process. The tables above represent the maximum contents of the cyclic data telegram.
If you do not want to use all the cyclic data of Mycom S, you can use the device configuration (Chk_Cfg) to eliminate individual data blocks from the cyclic telegram via the PLC software. Shortening the telegram improves the data throughput rate of a PROFIBUS-PA system. You should only keep those blocks active which you process further in the system. You can do this by means of a ”negative” selection in the configuration tool.
To achieve the correct structure of the cyclic data telegram, the PROFIBUS master must send the identification FREE_PLACE (00h) for the non-active blocks.

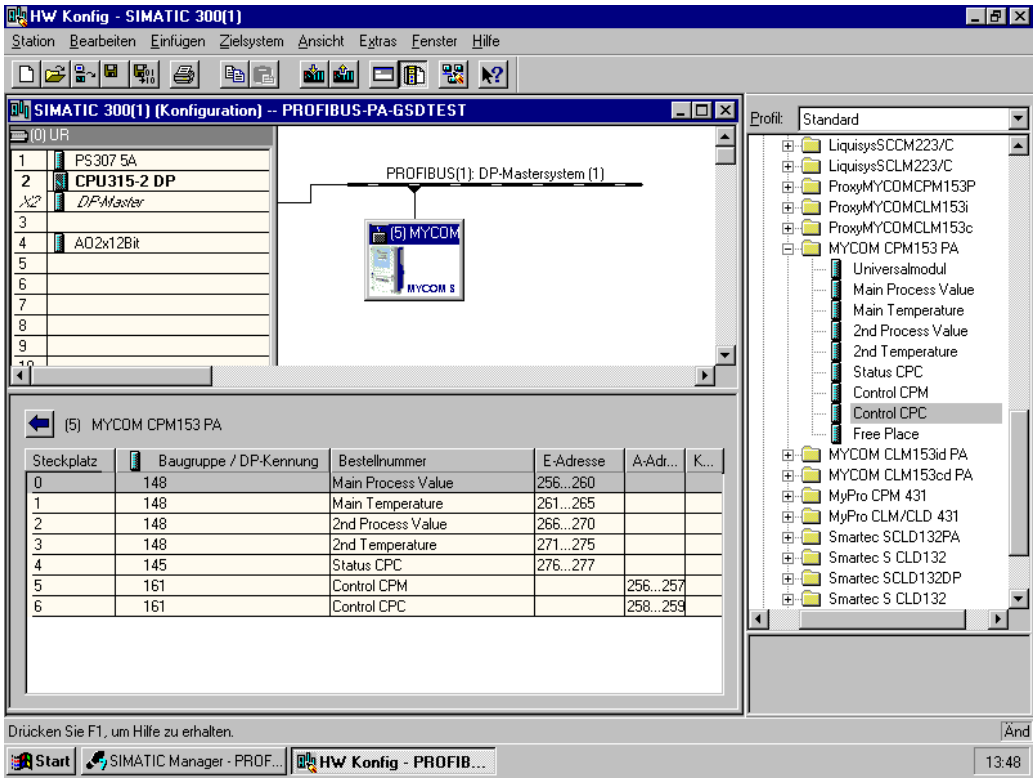
Configuration examples

The configuration of a PROFIBUS-DP system is normally effected in the following manner:

1. The field devices (Mycom S) which are to be configured are integrated into the configuration program of the automation system via the PROFIBUS-DP network. The GSD file is used here. Measured variables required can be configured off-line using the configuration software.
2. The automation system's user program will have to be programmed now. On the one hand, the input and output data are controlled in the user program and on the other hand the location of the measured variables is defined so that they can be processed further. An additional measured value configuration module may have to be used in the case of automation systems which do not support the IEEE-754 floating point format. It may also be necessary to change the byte sequence (byte swapping) depending on the type of data management employed in the automation system (little-endian format or big-endian format).
3. When configuration has been completed, this will be transferred to the automation.
4. The system can be started now. The automation system will establish a connection to the configured devices. The device parameters which are relevant for the process can now be set using a class 2 master, e.g. with Commuwin II.

Configuration examples with Simatic HW-Konfig

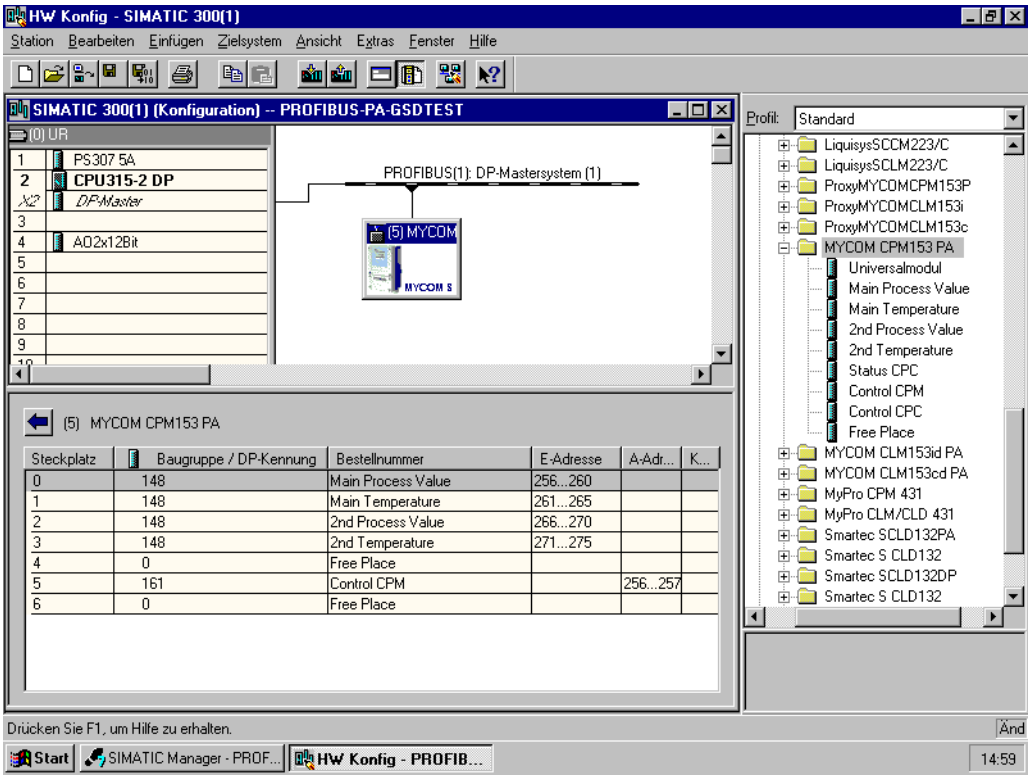
Total configuration Mycom S CPM 153 with TopCal S with manufacturer-specific GSD file



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (pH Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	0x94
5 ... 9	–	Analog Input Block 2 (Temperature Channel 1)	active	read	Main Temperature	0x42, 0x84, 0x08, 0x05	0x94
10 ... 14	–	Analog Input Block 3 (pH Channel 2)	active	read	2nd Process Value	0x42, 0x84, 0x08, 0x05	0x94
15 ... 19	–	Analog Input Block 4 (Temperature Channel 2)	active	read	2nd Temperature	0x42, 0x84, 0x08, 0x05	0x94
20 ... 21	–	Status CPC (OUT_D)	active	read	Status CPC	0x42, 0x81, 0x05, 0x05	0x91
	0 ... 1	Control CPM (SP_D)	active	write	Control CPM	0x82, 0x81, 0x05, 0x05	0xA1
	2 ... 3	Control CPC (SP_D)	active	write	Control CPC	0x82, 0x81, 0x05, 0x05	0xA1

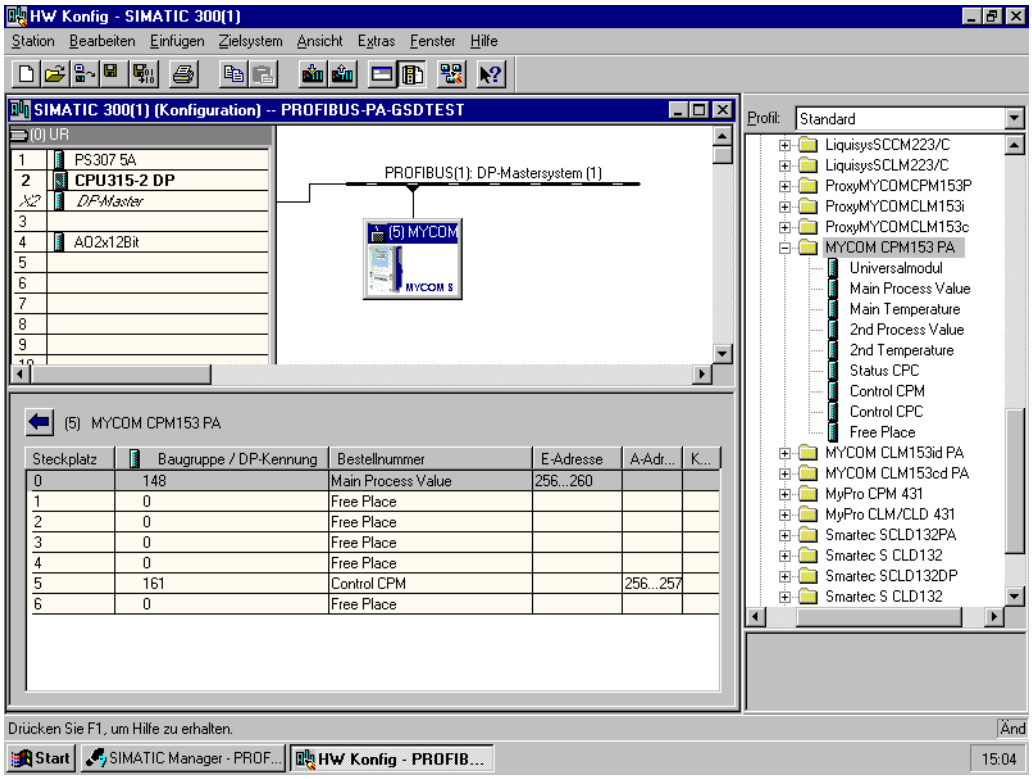
With this configuration, all data blocks supported by Mycom S CPM 153 with TopCal S are set active . Explanation to Status CPC, Control CPM and Control CPC → Page 14

Complete configuration of Mycom S CPM 153 without TopCal S
Replacement of measuring variable by blanks ("Free Place") via manufacturer-specific GSD file



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (pH Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	0x94
5 ... 9	–	Analog Input Block 2 (Temperature Channel 1)	active	read	Main Temperature	0x42, 0x84, 0x08, 0x05	0x94
10 ... 14	–	Analog Input Block 3 (pH Channel 2)	active	read	2nd Process Value	0x42, 0x84, 0x08, 0x05	0x94
15 ... 19	–	Analog Input Block 4 (Temperatur e Channel 2)	active	read	2nd Temperature	0x42, 0x84, 0x08, 0x05	0x94
–	–	Blank	inactive	–	Free Place	0x00	0x00
	0 ... 1	Control CPM (SP_D)	active	write	Control CPM	0x82, 0x81, 0x05, 0x05	0xA1
–	–	Blank	inactive	–	Free Place	0x00	0x00

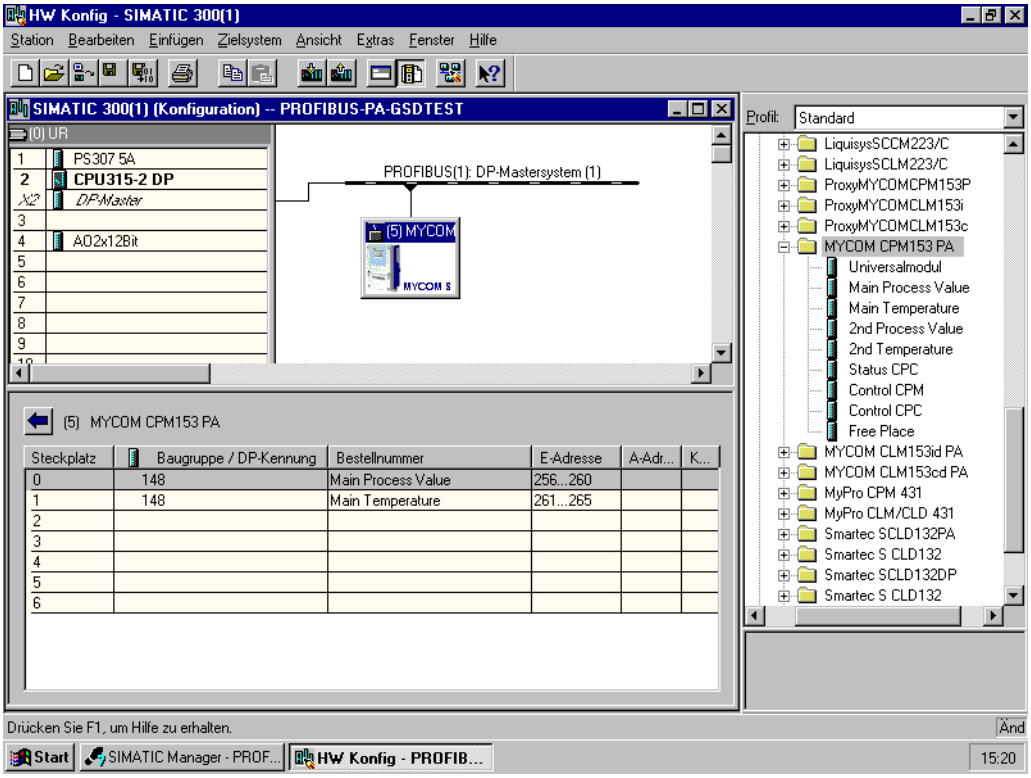
Partial configuration of Mycom S CPM 153
Replacement of measuring variables by blanks ("Free Place") via manufacturer-specific GSD file



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (pH Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	0x94
–	–	Blank	inactive	–	Free Place	0x00	0x00
–	–	Blank	inactive	–	Free Place	0x00	0x00
–	–	Blank	inactive	–	Free Place	0x00	0x00
–	–	Blank	inactive	–	Free Place	0x00	0x00
	0 ... 1	Control CPM (SP_D)	active	write	Control CPM	0x82, 0x81, 0x05, 0x05	0xA1
–	–	Blank	inactive	–	Free Place	0x00	0x00

With this configuration, only the main process value (pH Channel 1) and the manufacturer-specific control of Mycom S CPM 153 (Control CPM) are set active.

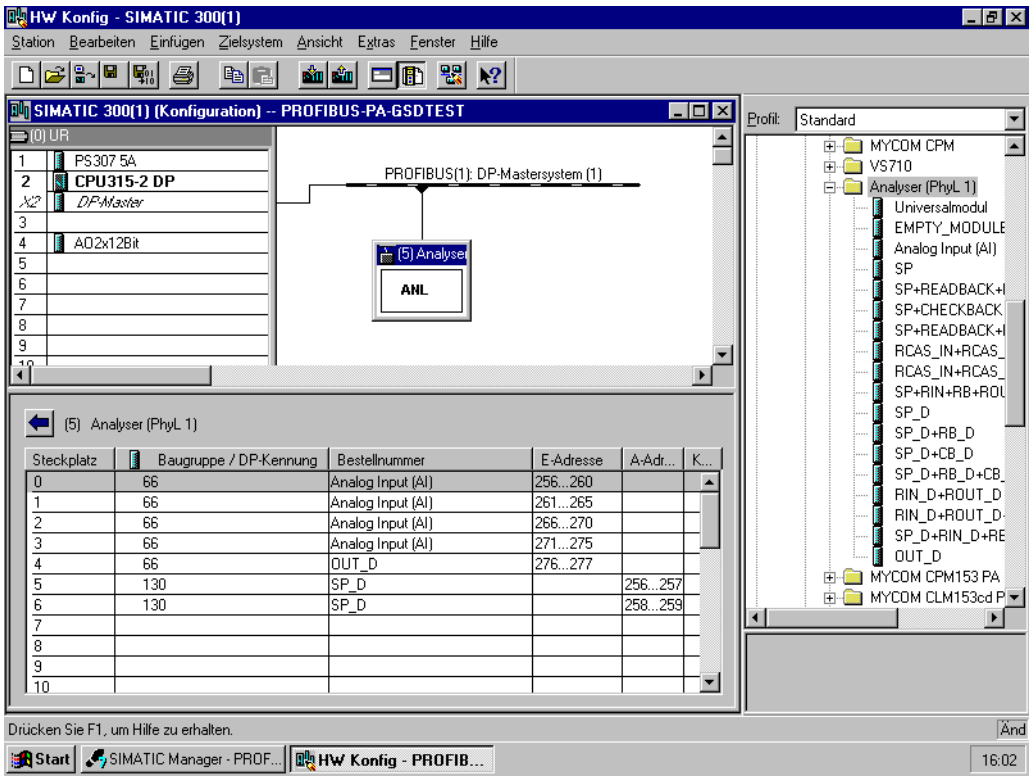
Partial configuration of Mycom S CPM 153
Replacement of measured variables without blanks via manfacturer-specific GSD file



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (pH Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	0x94
5 ... 9	–	Analog Input Block 2 (Temperature Channel 1)	active	read	Main Temperature	0x42, 0x84, 0x08, 0x05	0x94

With this configuration, the measuring values of Channel 1 (pH and temperature) are transmitted. If no other measured variables are required, the blanks are obsolete, but only in case that no manufacturer-specific control is used.

Complete configuration of Mycom S CPM 153 via profile GSD file PA139750.gsd

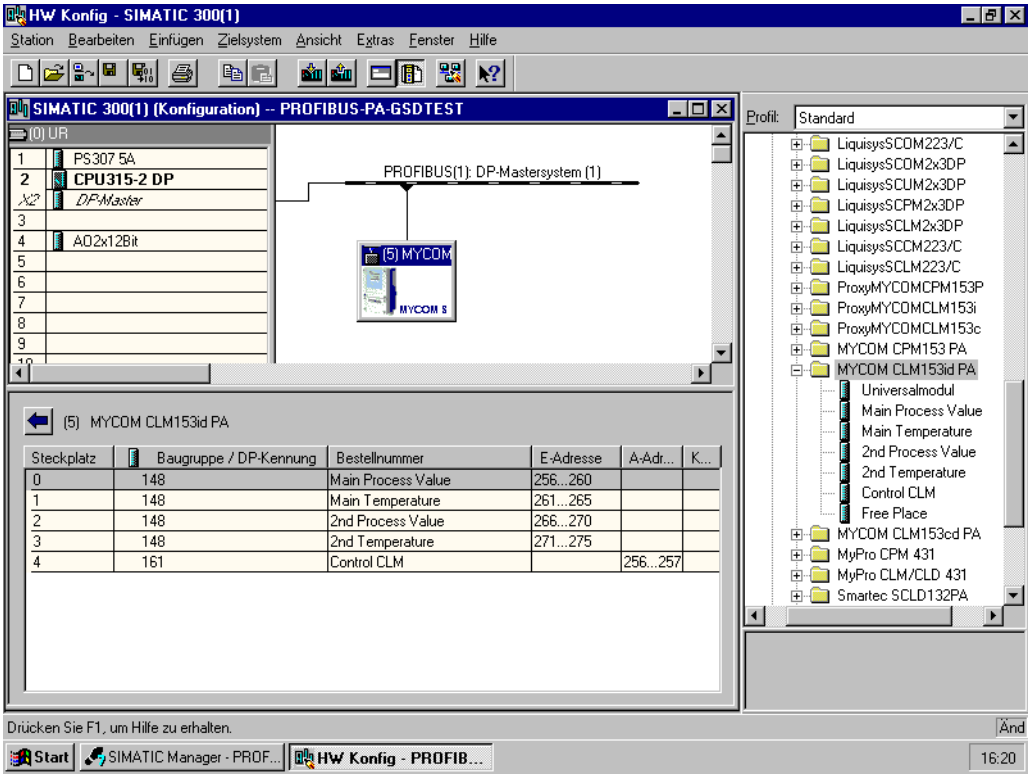


Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (pH Channel 1)	active	read	AI	0x42, 0x84, 0x08, 0x05	–
5 ... 9	–	Analog Input Block 2 (Temp. Channel 1)	active	read	AI	0x42, 0x84, 0x08, 0x05	–
10 ... 14	–	Analog Input Block 3 (pH Channel 2)	active	read	AI	0x42, 0x84, 0x08, 0x05	–
15 ... 19	–	Analog Input Block 4 (Temp. Channel 2)	active	read	AI	0x42, 0x84, 0x08, 0x05	–
20 ... 21	–	Status CPC	active	read	OUT_D	0x42, 0x81, 0x05, 0x05	–
	0 ... 1	Control CPM	active	write	SP_D	0x82, 0x81, 0x05, 0x05	–
	2 ... 3	Control CPC	active	write	SP_D	0x82, 0x81, 0x05, 0x05	–

With this configuration, all data blocks supported by Mycom S CPM 153 are set active.

Note!
With this GSD file, you can configurate a maximum range of 4 AI blocks, one parameter OUT_D and 2 parameters SP_D with Mycom S CPM 153. The AI blocks are always assigned to the following measured variables:
AI 1 = pH Channel 1
AI 2 = Temperature Channel 1
AI 3 = pH Channel 2
AI 4 = Temperature Channel 2
Thus the measuring variables agree with the configuration of field devices of other manufacturers.

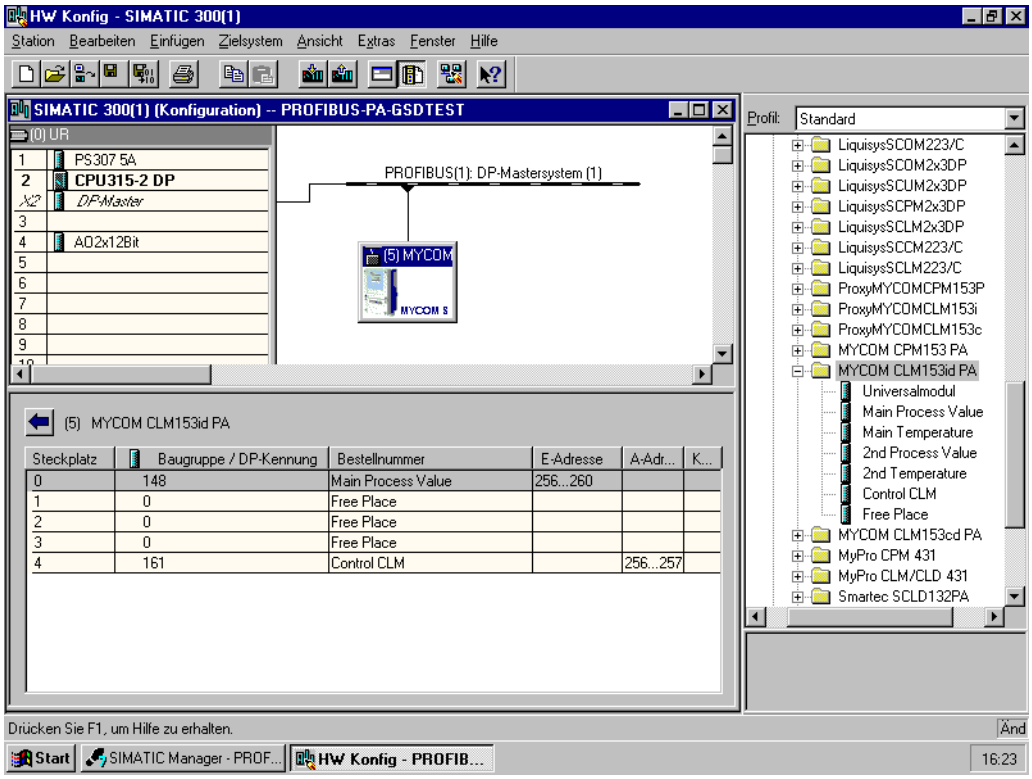
Complete configuration of Mycom S CLM 153
via manufacturer-specific GSD file



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (Lf Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	0x94
5 ... 9	–	Analog Input Block 2 (Temperature Channel 1)	active	read	Main Temperature	0x42, 0x84, 0x08, 0x05	0x94
10 ... 14	–	Analog Input Block 3 (Lf Channel 2)	active	read	2nd Process Value	0x42, 0x84, 0x08, 0x05	0x94
15 ... 19	–	Analog Input Block 4 (Temperature Channel 2)	active	read	2nd Temperature	0x42, 0x84, 0x08, 0x05	0x94
	0 ... 1	Control CLM (SP_D)	active	write	Control CLM	0x82, 0x81, 0x05, 0x05	0xA1

With this configuration, all data blocks supported by Mycom S CLM 153 are set active.
Explanation to Control CLM → Page 14

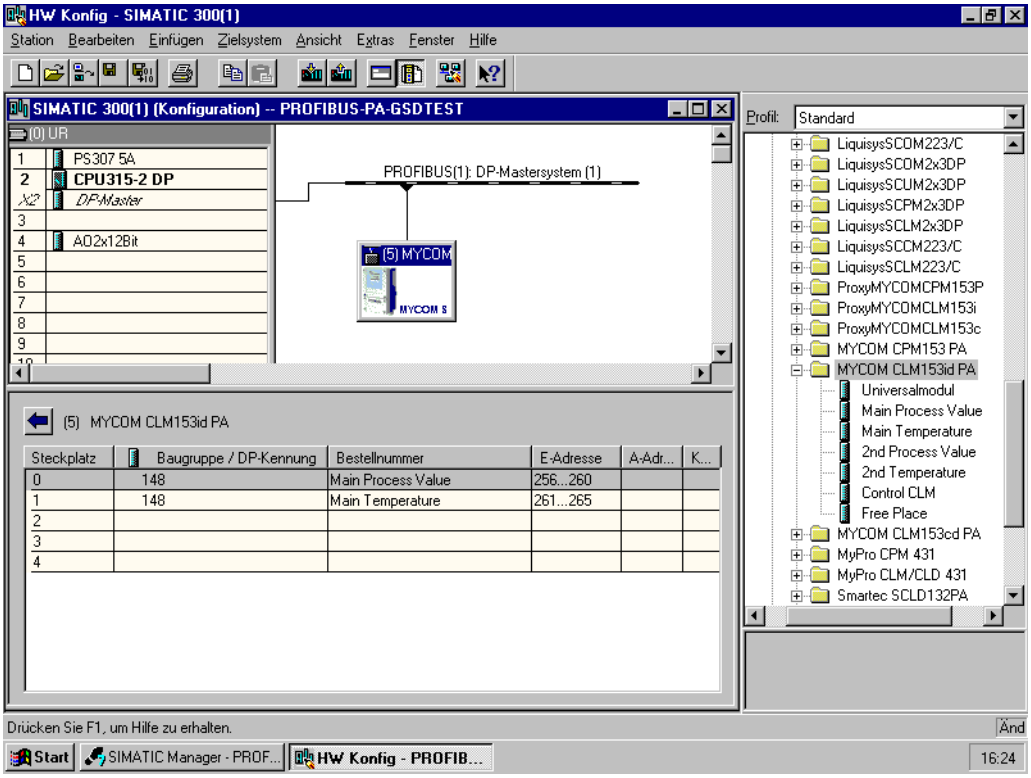
Partial configuration of Mycom S CLM 153
Replacement of measured variables by blanks ("Free Place") via manufacturer-specific GSD file



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (Cond. Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	0x94
–	–	Blank	inactive	–	Free Place	0x00	0x00
–	–	Blank	inactive	–	Free Place	0x00	0x00
–	–	Blank	inactive	–	Free Place	0x00	0x00
	0 ... 1	Control CLM (SP_D)	active	write	Control CLM	0x82, 0x81, 0x05, 0x05	0xA1

With this configuration, only the main process value (Cond. Channel 1) and the manufacturer-specific control of Mycom S CLM 153 (Control CLM) are set active.

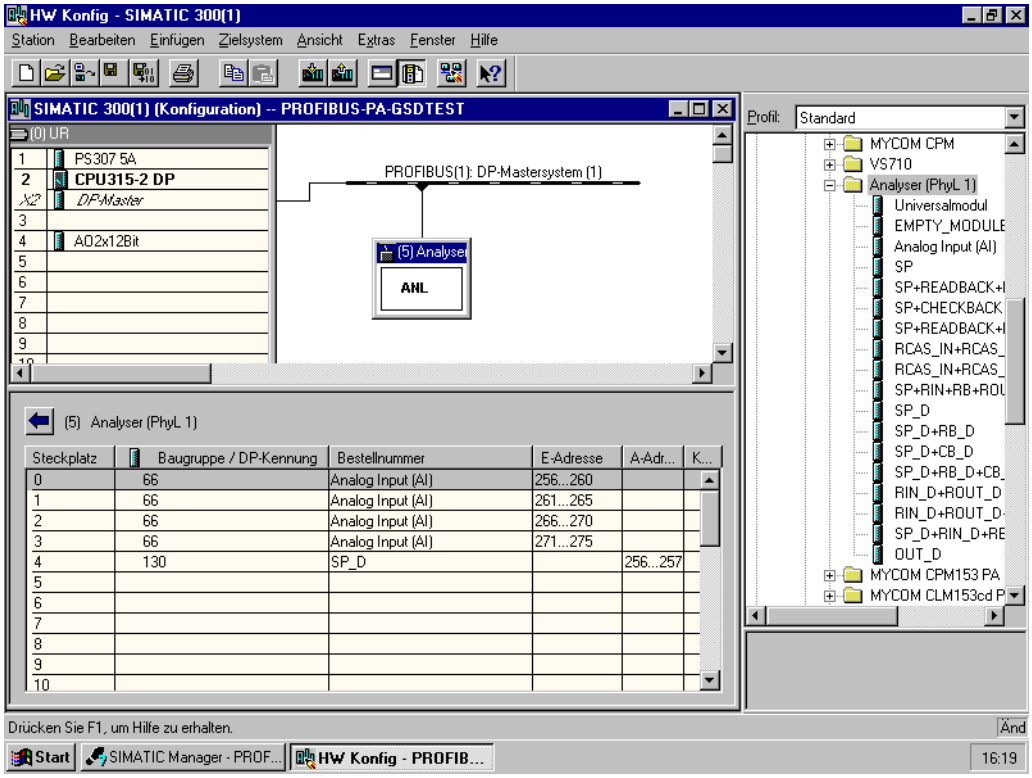
Partial configuration of Mycom S CLM 153
Replacement of measured variables without blank via manfacturer-specific GSD file



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (Cond. Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	0x94
5 ... 9	–	Analog Input Block 2 (Temperature Channel 1)	active	read	Main Temperature	0x42, 0x84, 0x08, 0x05	0x94

With this configuration, the measuring values of Channel 1 (Cond. and temperature) are transmitted. If no other measured variables are required, the blanks are obsolete, but only in case that no manufacturer-specific control is used.

Complete configuration of Mycom S CLM 153
via profile GSD file PA139750.gsd



Byte length (Input)	Byte length (Output)	Data blocks	Status	Access	GSD Block description	GSD Extended block code	GSD Standard block code
0 ... 4	–	Analog Input Block 1 (Cond. Channel 1)	active	read	Main Process Value	0x42, 0x84, 0x08, 0x05	–
5 ... 9	–	Analog Input Block 2 (Temperature Channel 1)	active	read	Main Temperature	0x42, 0x84, 0x08, 0x05	–
10 ... 14	–	Analog Input Block 3 (Cond. Channel 2)	active	read	2nd Process Value	0x42, 0x84, 0x08, 0x05	–
15 ... 19	–	Analog Input Block 4 (Temperature Channel 2)	active	read	2nd Temperature	0x42, 0x84, 0x08, 0x05	–
	0 ... 1	Control CLM (SP_D)	active	write	Control CLM	0x82, 0x81, 0x05, 0x05	–

With this configuration, all data blocks supported by Mycom S CLM 153 are set active.

Note!
With this GSD file, you can configurate a maximum range of 4 AI blocks and one parameter SP_D with Mycom S CLM 153. The AI blocks are always assigned to the following measured variables:
AI 1 = Cond. Channel 1
AI 2 = Temperature Channel 1
AI 3 = Cond. Channel 2
AI 4 = Temperature Channel 2
Thus the measuring variables agree with the configuration of field devices of other manufacturers.

Status codes for the OUT parameter of the Analog Input block

Status code	Device status	Meaning	Limits
0x00 0x01 0x02 0x03	BAD	non-specific	OK LOW_LIM HIGH_LIM CONST
0x04 0x05 0x06 0x07	BAD	configuration error	OK LOW_LIM HIGH_LIM CONST
0x08	BAD	not connected Block not connected (no meas. values available)	OK
0x0C 0x0D 0x0E 0x0F	BAD	device failure	OK LOW_LIM HIGH_LIM CONST
0x10 0x11 0x12 0x13	BAD	sensor failure	OK LOW_LIM HIGH_LIM CONST
0x1C 0x1D 0x1E 0x1F	BAD	Out of service (Target Mode of the AI block OUT OF SRVICE)	OK LOW_LIM HIGH_LIM CONST
0x40 0x41 0x42 0x43	UNCERTAIN	non-specific	OK LOW_LIM HIGH_LIM CONST
0x47	UNCERTAIN	last usable value	CONST
0x4B	UNCERTAIN	substitute set (substitute value of failsafe status)	CONST
0x4F	UNCERTAIN	initial value (initial value of failsafe status)	CONST
0x50 0x51 0x52 0x53	UNCERTAIN	sensor conversion not accurate (measured value of sensor too inaccurate)	OK LOW_LIM HIGH_LIM CONST
0x5C 0x5D 0x5E 0x5F	UNCERTAIN	configuration error	OK LOW_LIM HIGH_LIM CONST
0x60 0x61 0x62 0x63	UNCERTAIN	simulated value	OK LOW_LIM HIGH_LIM CONST

Status code	Device status	Meaning	Limits
0x64 0x65 0x66 0x67	UNCERTAIN	sensor calibration	OK LOW_LIM HIGH_LIM CONST
0x80 0x83	GOOD	ok (measuring system OK)	OK CONST
0x84 0x87	GOOD	update event (change of parameters)	OK CONST
0x89 0x8A	GOOD	active advisory alarm (priority < 8) (warning: early warning limit exceeded)	LOW_LIM HIGH_LIM
0x8D 0x8E	GOOD	active critical alarm (priority > 8) (critical alarm: alarm limit exceeded)	LOW_LIM HIGH_LIM
0xA4 0xA5 0xA6 0xA7	GOOD	maintenance required	OK LOW_LIM HIGH_LIM CONST

5.3.2 Acyclic data exchange

Acyclic data transmission is used to transfer parameters during commissioning, during maintenance or to display other measured variables that are not contained in the useful cyclic data traffic.
Generally, a distinction is made between Class 1 and Class 2 master connections. Depending on the implementation of the transmitter, it is possible to simultaneously establish several Class 2 connections.

- Two Class 2 masters are permitted with Mycom S. This means that two Class 2 masters can access Mycom S at the same time. However, you must make certain that they do not both attempt to *write* to the same data. Otherwise the data consistency can no longer be guaranteed.
- When a Class 2 master reads parameters, it sends a request telegram to the transmitter specifying the device address, the slot/index and the expected record length. The transmitter answers with the requested record if the record exists and is the correct length (byte).
- When a Class 2 master writes parameters, it transmits the address of the transmitter, the slot and index, length information (byte) and the record. The transmitter acknowledges this write job after completion. A Class 2 master can access the blocks that are shown in the illustration.

Slot/index tables

The device parameters (instructions) are listed in the following tables. You can access these parameters by means of the slot and index number.
The individual blocks each comprise standard parameters, block parameters and manufacturer-specific parameters to an extent.
In addition, the matrix positions for operation via Commuwin II are indicated.

Device management (CW II = Commuwin II)

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
DIR_OBJECT HEADER		1	0	12	Array of unsigned16	r	Cst.
COMP_LIST_DIR_ENTRIES		1	1	32	Array of unsigned16	r	Cst.
COMP_DIR_ENTRIES_CONTINUES		1	2	12	Array of unsigned16	r	Cst.

Physical Block

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Standard parameters							
BLOCK_OBJECT		1	160	20	DS-32*	r	C
ST_REV		1	161	2	Unsigned16	r	N
TAG_DESC	VAH0	1	162	32	Octetstring	r, w	S
STRATEGY		1	163	2	Unsigned16	r, w	S
ALERT_KEY		1	164	1	Unsigned8	r, w	S
TARGET_MODE		1	165	1	Unsigned8	r, w	S
MODE_BLK Actual Permitted Normal		1	166	3	DS-37* Unsigned8 Unsigned8 Unsigned8	r	 N Cst Cst
ALARM_SUM		1	167	8	DS-42*	r	D
Block parameters							
SOFTWARE_REVISION		1	168	16	Visible string	r	Cst
HARDWARE_REVISION		1	169	16	Visible string	r	Cst
DEVICE_MAN_ID		1	170	2	Unsigned16	r	Cst
DEVICE_ID		1	171	16	Visible string	r	Cst
DEVICE_SER_NUM		1	172	16	Visible string	r	Cst
DIAGNOSIS		1	173	4	Octetstring	r	D
DIAGNOSIS_EXTENSION		1	174	6	Octetstring	r	D
DIAGNOSIS_MASK		1	175	4	Octetstring	r	Cst
DIAGNOSIS_MASK_EXTENSION		1	176	6	Octetstring	r	Cst
DEVICE_CERTIFICATION		1	177	32	Visible string	r	N
WRITE_LOCKING		1	178	2	Unsigned16 0: acyclic refused 2457: writeable	r, w	N

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
FACTORY_RESET		1	179	2	Unsigned16 0x8000: Sensor reset Calibration data 0x8001: Set up data reset Setting data 0x0001: PNO defaults All data 2506: warm-start 2712: reset bus addr.	r, w	S
DESCRIPTOR		1	180	32	Octetstring	r, w	S
DEVICE_MESSAGE		1	181	32	Octetstring	r, w	S
DEVICE_INSTALL_DATE		1	182	16	Octetstring	r, w	S
LOCAL_OP_ENABLE		1	183	1	Unsigned8 0: disabled 1: enabled	r, w	N
IDENT_NUMBER_SELECTOR		1	184	1	Unsigned8 0: profile specific 1: manufacturer specific P 3.0 2: manufacturer specific P 2.0 128: manufacturer specific P 2.0 CLM152 ind/cond switchable	r, w	S
HW_WRITE_PROTECTION		1	185	1	Unsigned8 0: unprotected 1: protected	r	D
DEVICE_CONFIGURATION		1	196	32	Visible string	r	N
INIT_STATE		1	197	1	Unsigned8 2: run 5: maintenance	r, w	S
DEVICE_STATE		1	198	1	Unsigned8 2: run 5: maintenance	r, w	D
GLOBAL_STATUS		1	199	2	Unsigned16	r	D
Gap		1	200 - 207				
E+H parameters							
ACTUAL_ERROR	VAH2	1	208	2	Unsigned16	r	D
LAST_ERROR	VAH3	1	209	2	Unsigned16	r	D
UPDOWN_FEATURES_SUPP		1	210	1	Octetstring	r	C
DEVICE_BUS_ADRESS	VAH1	1	213	1	Signed8	r	N
SET_UNIT_TO_BUS	VAH9	1	214	1	Unsigned8 0: off 1: clear	r, w	D
CLEAR_LAST_ERROR	VAH4	1	215	1	Unsigned8 0: off 1: clear	r, w	D

Analyser Transducer Block

The Analyser Transducer Block appears twice in MYCOM S (four times with two-channel device). These are distributed to slots 1 – 4 in the following order:

1. Main measured value channel 1 (Main Process Value)
2. Temperature measured value channel 1 (Main Temperature)
3. Main measured value channel 2 (2nd Process Value)
4. Temperature measured value channel 2 (2nd Temperature)

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Standard parameters							
BLOCK_OBJECT		1 - 4	100	20	DS-32*	r	C
ST_REV		1 - 4	101	2	Unsigned16	r	N
TAG_DESC		1 - 4	102	32	Octetstring	r, w	S
STRATEGY		1 - 4	103	2	Unsigned16	r, w	S
ALERT_KEY		1 - 4	104	1	Unsigned8	r, w	S
TARGET_MODE		1 - 4	105	1	Unsigned8	r, w	S
MODE_BLK Actual Permitted Normal		1 - 4	106	3	DS-37* Unsigned8 Unsigned8 Unsigned8	r	 N Cst Cst
ALARM_SUM		1 - 4	107	8	DS-42*	r	D
Block parameters							
COMPONENT_NAME		1 - 4	108	32	Octetstring	r, w	S
PV		1 - 4	109	12	DS-60*	r	D
PV_UNIT		1 - 4	110	2	Unsigned16	r, w	S
PV_UNIT_TEXT		1 - 4	111	8	Visible string	r, w	S
ACTIVE_RANGE		1 - 4	112	1	Unsigned8 1: Range 1	r, w	S
AUTORANGE_ON		1 - 4	113	1	Boolean	r, w	S
SAMPLING_RATE		1 - 4	114	4	Time_difference	r, w	S
Gap reserved PNO		1 - 4	115 - 124				
NUMBER_OF_RANGES		1 - 4	125	1	Unsigned8	r	N
RANGE_1		1 - 4	126	8	DS-61*	r, w	N

Analog Input block

The Analog Input block appears twice in MYCOM S (four times with two-channel device). These are distributed to slots 1 – 4 in the following order:

1. Main measured value channel 1 (Main Process Value)
2. Temperature measured value channel 1 (Main Temperature)
3. Main measured value channel 2 (2nd Process Value)
4. Temperature measured value channel 2 (2nd Temperature)

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Standard parameters							
BLOCK_OBJECT		1 - 4	16	20	DS-32*	r	C
ST_REV		1 - 4	17	2	Unsigned16	r	N
TAG_DESC		1 - 4	18	32	Octetstring	r, w	S
STRATEGY		1 - 4	19	2	Unsigned16	r, w	S
ALERT_KEY		1 - 4	20	1	Unsigned8	r, w	S
TARGET_MODE		1 - 4	21	1	Unsigned8	r, w	S
MODE_BLK Actual Permitted Normal		1 - 4	22	3	DS-37* Unsigned8 Unsigned8 Unsigned8	r	 N Cst Cst
ALARM_SUM		1 - 4	23	8	DS-42*	r	D
BATCH		1 - 4	24	10	DS-67*	r, w	S
Gap		1 - 4	25				
Block parameters							
OUT		1 - 4	26	5	DS-33*	r	D
PV_SCALE		1 - 4	27	8	Float	r, w	S
OUT_SCALE		1 - 4	28	11	DS-36*	r, w	S
LIN_TYPE		1 - 4	29	1	Unsigned8	r, w	S
CHANNEL		1 - 4	30	2	Unsigned16	r, w	S
PV_FTIME		1 - 4	32	4	Float	r, w	S
FSAFE_TYPE		1 - 4	33	1	Unsigned8	r, w	S
FSAFE_VALUE		1 - 4	34	4	Float	r, w	S
ALARM_HYS		1 - 4	35	4	Float	r, w	S
HI_HI_LIM		1 - 4	37	4	Float	r, w	S
HI_LIM		1 - 4	39	4	Float	r, w	S
LO_LIM		1 - 4	41	4	Float	r, w	S
LO_LO_LIM		1 - 4	43	4	Float	r, w	S
HI_HI_ALM		1 - 4	46	16	DS-39*	r	D
HI_ALM		1 - 4	47	16	DS-39*	r	D
LO_ALM		1 - 4	48	16	DS-39*	r	D
LO_LO_ALM		1 - 4	49	16	DS-39*	r	D
SIMULATE		1 - 4	50	6	DS-50*	r, w	S
VIEW_1		1 - 4	61	18	Unsigned8	r	D

Manufacturer-specific parameters Mycom S CPM 153 and TopCal S CPC 300 (Commuwin II matrix)

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Main measured value channel 1	V0H0	5	100	4	Float	r	D
Temperature value channel 1	V0H1	5	101	4	Float	r	D
Hold status	V0H2	5	102	1	Unsigned8 0: off 1: on	r	D
Damping pH/redox	V0H3	5	103	1	Unsigned8 0 ... 30 sec	r, w	S
Unit channel 1	V0H4	5	104	1	Unsigned8 59: pH 36: mV 57: %	r	D
Main measured value channel 2	V0H5	5	105	4	Float	r	D
Temperature value channel 2	V0H6	5	106	4	Float	r	D
Damping temperature	V0H7	5	107	1	Unsigned8 0 ... 30 sec	r, w	S
Unit channel 2	V0H8	5	108	1	Unsigned8 59: pH 36: mV 57: %	r	D
Unit temperature	V0H9	5	109	1	Unsigned8 32: °C 33: °F	r	D
Current error	V2H0	5	110	4	Visible string	r	D
Manual hold	V2H1	5	111	1	Unsigned8 0: off 1: on	r, w	S
Version	V2H2	5	112	1	Unsigned8 0: TopCal 1: TopClean 2: Mycom153 3: Mycom153	r	D
Reset	V2H6	5	113	1	Unsigned8 0: off 1: on	r, w	D
Zero point channel 1	V3H0	5	114	4	Float	r	N
Slope channel 1	V3H1	5	115	4	Float	r	N
Time channel 1	V3H3	5	116	5	Visible string	r	N
Date channel 1	V3H4	5	117	8	Visible string	r	N
Zero point channel 2	V3H5	5	118	4	Float	r	N
Slope channel 2	V3H6	5	119	4	Float	r	N
Time channel 2	V3H8	5	120	5	Visible string	r	N
Date channel 2	V3H9	5	121	8	Visible string	r	N

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Active program TopCal / TopClean	V4H0	5	122	1	Unsigned8 TOPCAL: 0: NoSelection 1: Clean 2: CleanC 3: CleanS 4: CleanCS 6: UserProg1 7: UserProg2 8: UserProg3 TOPCLEAN: 0: NoSelection 1: Clean 3: CleanS 6: UserProg1 7: UserProg2 8: UserProg3	r, w	S
Automatic TopCal / TopClean	V4H1	5	123	1	Unsigned8 0: off 1: on	r, w	S
Ext. control TopCal / TopClean	V4H2	5	124	1	Unsigned8 0: off 1: on	r, w	S
Hold source	V4H3	5	125	1	Unsigned8 0: off 1: on	r, w	S
Assembly position	V4H4	5	126	1	Unsigned8 0: Measure 1: Service 2: NotDefined	r, w	S
Active program ChemoClean	V5H0	5	127	1	Unsigned8 0: NoSelection 1: CCleanProg 2: CCleanIntPrg 3: CCleanUser	r, w	S
Automatic ChemoClean	V5H1	5	128	1	Unsigned8 0: off 1: on	r, w	S
Ext. control ChemoClean	V5H2	5	129	1	Unsigned8 0: off 1: on	r, w	S
Controller on / off	V6H0	5	130	1	Unsigned8 0: off 1: on	r, w	S
Setpoint	V6H1	5	131	4	Float	r, w	S
Set value	V6H2	5	132	2	Unsigned16	r	D
Unit setpoint	V6H4	5	133	1	Unsigned8 59: pH 36: mV 57: % 32: °C 33: °F	r	N
Unit limit value (LV) 1	V6H5	5	134	1	Unsigned8 59: pH 36: mV 57: % 32: °C 33: °F	r	N

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Unit limit value (LV) 2	V6H6	5	135	1	Unsigned8 59: pH 36: mV 57: % 32: °C 33: °F	r	N
Unit limit value (LV) 3	V6H7	5	136	1	Unsigned8 59: pH 36: mV 57: % 32: °C 33: °F	r	N
Unit limit value (LV) 4	V6H8	5	137	1	Unsigned8 59: pH 36: mV 57: % 32: °C 33: °F	r	N
Unit limit value (LV) 5	V6H9	5	138	1	Unsigned8 59: pH 36: mV 57: % 32: °C 33: °F	r	N
Limit value 1 on / off	V7H0	5	139	1	Unsigned8 0: off 1: on	r, w	S
Limit value 2 on / off	V7H1	5	140	1	Unsigned8 0: off 1: on	r, w	S
Limit value 3 on / off	V7H2	5	141	1	Unsigned8 0: off 1: on	r, w	S
Limit value 4 on / off	V7H3	5	142	1	Unsigned8 0: off 1: on	r, w	S
Limit value 5 on / off	V7H4	5	143	1	Unsigned8 0: off 1: on	r, w	S
Limit 1 alarm threshold	V7H5	5	144	4	Float	r, w	S
Limit 2 alarm threshold	V7H6	5	145	4	Float	r, w	S
Limit 3 alarm threshold	V7H7	5	146	4	Float	r, w	S
Limit 4 alarm threshold	V7H8	5	147	4	Float	r, w	S
Limit 5 alarm threshold	V7H9	5	148	4	Float	r, w	S
Limit 1 switch-off point	V8H0	5	149	4	Float	r, w	S
Limit 2 switch-off point	V8H1	5	150	4	Float	r, w	S
Limit 3 switch-off point	V8H2	5	151	4	Float	r, w	S
Limit 4 switch-off point	V8H3	5	152	4	Float	r, w	S
Limit 5 switch-off point	V8H4	5	153	4	Float	r, w	S
Limit 1 switch-on point	V8H5	5	154	4	Float	r, w	S
Limit 2 switch-on point	V8H6	5	155	4	Float	r, w	S
Limit 3 switch-on point	V8H7	5	156	4	Float	r, w	S
Limit 4 switch-on point	V8H8	5	157	4	Float	r, w	S

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Limit 5 switch-on point	V8H9	5	158	4	Float	r, w	S
Serial number sensor	V9H0	5	159	4	Unsigned32	r	C
Lower limit sensor	V9H1	5	160	4	Float	r	C
Upper limit sensor	V9H2	5	161	4	Float	r	C
SW version	VAH5	5	162	2	Unsigned16	r	C
HW version	VAH6	5	163	2	Unsigned16	r	C
Unit zeropoint channel 1	V3H2	5	164	1	Unsigned8 59: K_unit_pH 36: K_unit_mV	r	D
Unit zeropoint channel 2	V3H7	5	165	1	Unsigned8 59: K_unit_pH 36: K_unit_mV	r	D
Setpoint buffer 1	–	5	166	4	Float	r	D
Actual value buffer 1	–	5	167	4	Float	r	D
Setpoint - actual value buffer 1	V9H4	5	168	4	Float	r	D
Temperature buffer 1	–	5	169	4	Float	r	D
Time buffer 1	V9H5	5	170	5	Visiblestring	r	D
Date buffer 1	V9H6	5	171	8	Visiblestring	r	D
Setpoint buffer 2	–	5	172	4	Float	r	D
Actual value buffer 2	–	5	173	4	Float	r	D
Setpoint - actual value buffer 2	V9H7	5	174	4	Float	r	D
Temperature buffer 2	–	5	175	4	Float	r	D
Time buffer 2	V9H8	5	176	5	Visiblestring	r	D
Date buffer 2	V9H9	5	177	8	Visiblestring	r	D

Manufacturer-specific parameters Mycom S CLM 153 (Commuwin II matrix)

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Main measured value channel 1	V0H0	5	100	4	Float	r	D
Temperature value channel 1	V0H1	5	101	4	Float	r	D
Hold status	V0H2	5	102	1	Unsigned8 0: off 1: on	r	D
Damping cond.	V0H3	5	103	1	Unsigned8 1 ... 30 sec	r, w	S
Unit channel 1	V0H4	5	104	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	D
Main measured value channel 2	V0H5	5	105	4	Float	r	D
Temperature value channel 2	V0H6	5	106	4	Float	r	D
Damping temperature	V0H7	5	107	1	Unsigned8 1 ... 30 sec	r, w	S

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Unit channel 2	V0H8	5	108	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	D
Unit temperature	V0H9	5	109	1	Unsigned8 32: °C 33: °F	r	D
Current error	V2H0	5	110	4	Visible string	r	D
Manual hold	V2H1	5	111	1	Unsigned8 0: off 1: on	r, w	S
Reset	V2H6	5	112	1	Unsigned8 0: off 1: on	r, w	D
Cell constant channel 1	V3H0	5	113	4	Float	r	N
Installation factor channel 1	V3H1	5	114	4	Float	r	N
Airset value channel 1	V3H2	5	115	4	Float	r	N
Time channel 1	V3H3	5	116	6	Visible string	r	N
Date channel 1	V3H4	5	117	8	Visible string	r	N
Cell constant channel 2	V3H5	5	118	4	Float	r	N
Installation factor channel 2	V3H6	5	119	4	Float	r	N
Airset value channel 2	V3H7	5	120	4	Float	r	N
Time channel 2	V3H8	5	121	6	Visible string	r	N
Date channel 2	V3H9	5	122	8	Visible string	r	N
Active parameter set	V4H0	5	123	1	Unsigned8 1 ... 4	r	S
Number of binary inputs	V4H1	5	124	1	Unsigned8 0: no binary inputs 1: 1 bin. input 2: 2 bin. inputs	r, w	S
Selection for control of binary inputs via device or via PROFIBUS	V4H2	5	125	1	Unsigned8 0: bin. inputs 1: PROFIBUS cycl. data	r, w	S
Active program ChemoClean	V5H0	5	126	1	Unsigned8 0: NoSelection 1: CCleanProg 2: CCleanIntPrg 3: CCleanUser	r, w	S
Automatic ChemoClean	V5H1	5	127	1	Unsigned8 0: off 1: on	r, w	S
Ext. control ChemoClean	V5H2	5	128	1	Unsigned8 0: off 1: on	r, w	S
Controller on / off	V6H0	5	129	1	Unsigned8 0: off 1: on	r, w	S
Setpoint	V6H1	5	130	4	Float	r, w	S
Set value	V6H2	5	131	2	Unsigned16	r	D

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Unit setpoint	V6H4	5	132	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	N
Unit limit value (LV) 1	V6H5	5	133	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	N
Unit limit value (LV) 2	V6H6	5	134	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	N
Unit limit value (LV) 3	V6H7	5	135	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	N
Unit limit value (LV) 4	V6H8	5	136	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	N
Unit limit value (LV) 5	V6H9	5	137	1	Unsigned8 57: % 66: mS/cm 67: µS/cm only cond: 241: kΩ/cm 242: MΩ/cm	r	N
Limit value 1 on / off	V7H0	5	138	1	Unsigned8 0: off 1: on	r, w	S
Limit value 2 on / off	V7H1	5	139	1	Unsigned8 0: off 1: on	r, w	S
Limit value 3 on / off	V7H2	5	140	1	Unsigned8 0: off 1: on	r, w	S
Limit value 4 on / off	V7H3	5	141	1	Unsigned8 0: off 1: on	r, w	S
Limit value 5 on / off	V7H4	5	142	1	Unsigned8 0: off 1: on	r, w	S
Limit 1 alarm threshold	V7H5	5	143	4	Float	r, w	S
Limit 2 alarm threshold	V7H6	5	144	4	Float	r, w	S

Parameter	E+H matrix (CW II)	Slot	Index	Size (bytes)	Type	Acc.	Store
Limit 3 alarm threshold	V7H7	5	145	4	Float	r, w	S
Limit 4 alarm threshold	V7H8	5	146	4	Float	r, w	S
Limit 5 alarm threshold	V7H9	5	147	4	Float	r, w	S
Limit 1 switch-off point	V8H0	5	148	4	Float	r, w	S
Limit 2 switch-off point	V8H1	5	149	4	Float	r, w	S
Limit 3 switch-off point	V8H2	5	150	4	Float	r, w	S
Limit 4 switch-off point	V8H3	5	151	4	Float	r, w	S
Limit 5 switch-off point	V8H4	5	152	4	Float	r, w	S
Limit 1 switch-on point	V8H5	5	153	4	Float	r, w	S
Limit 2 switch-on point	V8H6	5	154	4	Float	r, w	S
Limit 3 switch-on point	V8H7	5	155	4	Float	r, w	S
Limit 4 switch-on point	V8H8	5	156	4	Float	r, w	S
Limit 5 switch-on point	V8H9	5	157	4	Float	r, w	S
Serial number sensor	V9H0	5	158	4	Unsigned32	r	C
Lower limit sensor	V9H1	5	159	4	Float	r	C
Upper limit sensor	V9H2	5	160	4	Float	r	C
SW version	VAH5	5	161	2	Unsigned16	r	C
HW version	VAH6	5	162	2	Unsigned16	r	C
Sensor type	V9H3	5	163	1	Unsigned8 0 = inductive 1 = conductive	r	C

Data strings

Some data types (e.g. DS-33) are marked with an asterisk (*) in the slot/index table. These data types are data strings which are structured as per the PROFIBUS-PA Specification Part 1, Version 3.0. They consist of several elements which are additionally addressed via a sub-index, as shown in the following example.

Parameter type	Sub-index	Type	Size (byte)
DS-33	1	Float	4
	5	Unsigned8	1

5.3.3 Operation using Commuwin II

You can access the block parameters by means of a PROFIBUS-DP Class 2 master such as Commuwin II. Commuwin II is a graphic operating program with various communication protocols. Commuwin II runs on an IBM-compatible PC or laptop. The computer must be equipped with a PROFIBUS interface, i.e. PROFIBOARD for PCs and PROFICARD for laptops. During the system integration, the computer is registered as a Class 2 master.

Procedure:

1. Connection
   - Via Profiboard for connection to a PC
   - Via Proficard for connection to a laptop
2. Creation of live list
   - The PA-DPV1 server must be installed. The connection is made by selecting “PA-DPV1” in the “Connect” menu. The empty live list appears.
   - By means of the “Display with tag” checkbox, you can create the live list with tags.
   - There are two operating modes:
     – E+H standard operation is selected by clicking on the device name (the highlighted line in the graphic below).
     – Profile operation of the PROFIBUS standard blocks is selected by clicking on the appropriate tag (e.g. “AI: Main Process Value” for the Analog Input block of Mycom S).

Live list

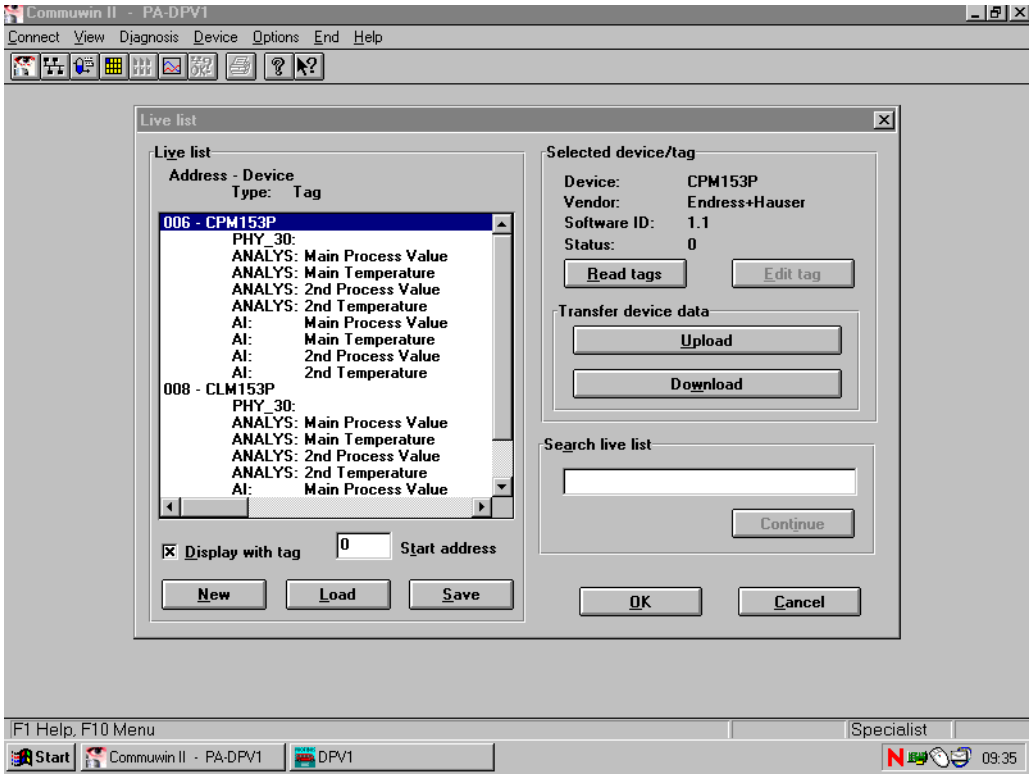


Fig. 8: Live list

3. Device menu
   You can use the “Device” menu to choose between operation via the matrix or via the graphic interface.
   - In the case of matrix operation, the device or profile parameters are loaded in a matrix. This is the E+H standard matrix in the case of standard operation. In the case of profile operation, it is the block matrix of the selected block. You can change a parameter when the corresponding matrix field is selected.
   - In the case of graphical operation, the operating sequence is shown in a series of graphics with parameters. For profile operation, the graphics “Diagnosis”, “Scaling”, “Simulation” and “Block” are of interest.

Note!
- Commuwin II supports the configuration of the transmitter in on-line mode only. Off-line configuration via Commuwin II is not possible.
- The entire Mycom S operating menu cannot be accessed via Commuwin II. The following diagrams illustrate the functions available.
- The matrix positions are marked as “V0...A” to indicate the vertical position and as “H0...9” to indicate the horizontal position.
- The device (incl. TopCal S and TopClean S) can be completely configured offline by means of the accessory Parawin.
  The configuration data can be saved to a DAT memory module. The DAT memory module can then be inserted into the device.

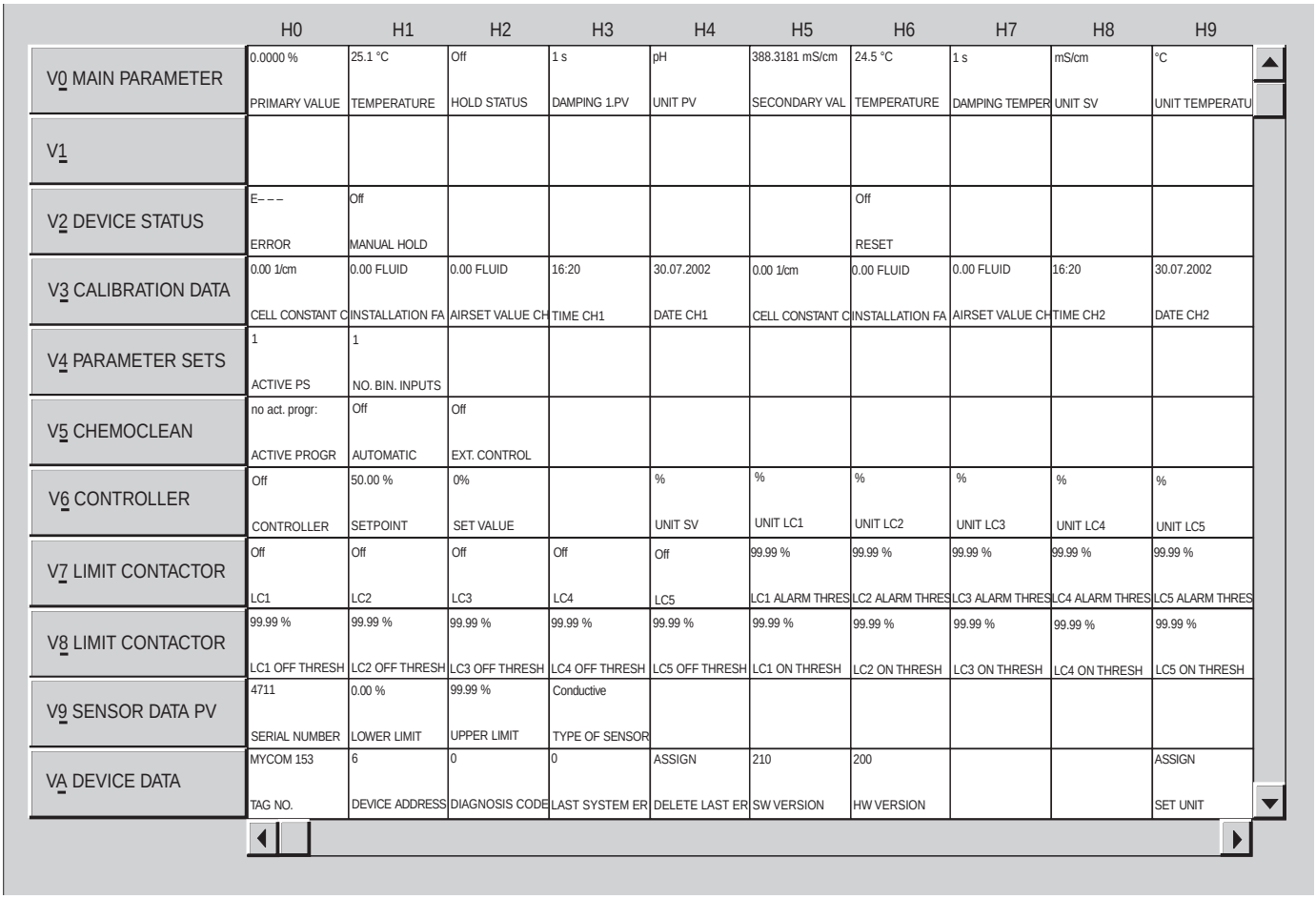
Commuwin II operating matrix

	H0	H1	H2	H3	H4	H5	H6	H7	H8	H9
V0 MAIN PARAMETER	0.00 pH PRIMARY VALUE	25.1 °C TEMPERATURE	Off HOLD STATUS	0 s DAMPING 1.PV	pH UNIT PV	2.00 pH SECONDARY VAL	0.0 °C TEMPERATURE	0 s DAMPING TEMPER	pH UNIT SV	°C UNIT TEMPERATU
V1										
V2 DEVICE STATUS	E– – – ERROR	Off MANUAL HOLD	TOPCAL VERSION				Off RESET			
V3 CALIBRATION DATA	59 mV ZERO POINT CH1	59.1 mV/pH SLOPE CH1	pH / mV UNIT ZERO CH1	16:20 TIME CH1	30.07.2002 DATE CH1	0.00 mV ZERO POINT CH2	0.00 mV/pH SLOPE CH2	pH / mV UNIT ZERO CH 2	16:20 TIME CH2	30.07.2002 DATE CH2
V4 TOPCAL/TOPCLEAN	no act. progr. ACTIVE PROGRA	Off AUTOMATIC	Off EXT. CONTROL	Off HOLD SOURCE	Service ASSEMBLY POSIT					
V5 CHEMOCLEAN	no act. progr. ACTIVE PROGRA	Off AUTOMATIC	Off EXT. CONTROL							
V6 CONTROLLER	Off CONTROLLER	9.00 pH SETPOINT	0% SET VALUE		pH UNIT SV	pH UNIT LC1	pH UNIT LC2	pH UNIT LC3	pH UNIT LC4	pH UNIT LC5
V7 LIMIT CONTACTOR	Off LC1	Off LC2	Off LC3	Off LC4	Off LC5	16.00 pH LC1 ALARM THRES	16.00 pH LC2 ALARM THRES	16.00 pH LC3 ALARM THRES	16.00 pH LC4 ALARM THRES	16.00 pH LC5 ALARM THRES
V8 LIMIT CONTACTOR	8.50 pH LC1 OFF THRESH	8.50 pH LC2 THRESH OFF	8.50 pH LC3 OFF THRESH	8.50 pH LC4 OFF THRESH	8.50 pH LC5 OFF THRESH	7.00 pH LC1 ON THRESH	7.00 pH LC2 ON THRESH	7.00 pH LC3 ON THRESH	7.00 pH LC4 ON THRESH	7.00 pH LC5 ON THRESH
V9 SENSOR DATA PV	4711 SERIAL NUMBER	–2.00 pH LOWER LIMIT	16.00 pH UPPER LIMIT		0.04 pH DELTA BUFFER 1	16:47 TIME BUFFER 1	25.10.02 DATE BUFFER 1	0.06 pH DELTA BUFFER 2	16:47 TIME BUFFER 2	25.10.02 DATE BUFFER 2
VA DEVICE DATA	MYCOM 153 TAG NO.	6 DEVICE ADDRESS	0 DIAGNOSIS CODE	0 LAST SYSTEM ER	ASSIGN DELETE LAST ER	210 SW VERSION	200 HW VERSION			ASSIGN SET UNIT

Fig. 9: CPM 153 operation via the operating program Commuwin II

Note!

- Re matrix position V4H0 and V5H0: You must first switch on the external control (V4H2 or V5H2) to make program activation via PROFIBUS possible. Programs already running cannot be cancelled via Commuwin II. Field V4H4 serves to monitor and remotely control the assembly. Remote control is only possible when the TopCal S service switch is in the “Measure” position.



	H0	H1	H2	H3	H4	H5	H6	H7	H8	H9
V0 MAIN PARAMETER	0.0000 % PRIMARY VALUE	25.1 °C TEMPERATURE	Off HOLD STATUS	1 s DAMPING 1.PV	pH UNIT PV	388.3181 mS/cm SECONDARY VAL	24.5 °C TEMPERATURE	1 s DAMPING TEMPER	mS/cm UNIT SV	°C UNIT TEMPERATU
V1										
V2 DEVICE STATUS	E– – – ERROR	Off MANUAL HOLD					Off RESET			
V3 CALIBRATION DATA	0.00 1/cm CELL CONSTANT C	0.00 FLUID INSTALLATION FA	0.00 FLUID AIRSET VALUE CH	16:20 TIME CH1	30.07.2002 DATE CH1	0.00 1/cm CELL CONSTANT C	0.00 FLUID INSTALLATION FA	0.00 FLUID AIRSET VALUE CH	16:20 TIME CH2	30.07.2002 DATE CH2
V4 PARAMETER SETS	1 ACTIVE PS	1 NO. BIN. INPUTS								
V5 CHEMOCLEAN	no act. progr: ACTIVE PROGR	Off AUTOMATIC	Off EXT. CONTROL							
V6 CONTROLLER	Off CONTROLLER	50.00 % SETPOINT	0% SET VALUE		% UNIT SV	% UNIT LC1	% UNIT LC2	% UNIT LC3	% UNIT LC4	% UNIT LC5
V7 LIMIT CONTACTOR	Off LC1	Off LC2	Off LC3	Off LC4	Off LC5	99.99 % LC1 ALARM THRES	99.99 % LC2 ALARM THRES	99.99 % LC3 ALARM THRES	99.99 % LC4 ALARM THRES	99.99 % LC5 ALARM THRES
V8 LIMIT CONTACTOR	99.99 % LC1 OFF THRESH	99.99 % LC2 OFF THRESH	99.99 % LC3 OFF THRESH	99.99 % LC4 OFF THRESH	99.99 % LC5 OFF THRESH	99.99 % LC1 ON THRESH	99.99 % LC2 ON THRESH	99.99 % LC3 ON THRESH	99.99 % LC4 ON THRESH	99.99 % LC5 ON THRESH
V9 SENSOR DATA PV	4711 SERIAL NUMBER	0.00 % LOWER LIMIT	99.99 % UPPER LIMIT	Conductive TYPE OF SENSOR						
VA DEVICE DATA	MYCOM 153 TAG NO.	6 DEVICE ADDRESS	0 DIAGNOSIS CODE	0 LAST SYSTEM ER	ASSIGN DELETE LAST ER	210 SW VERSION	200 HW VERSION			ASSIGN SET UNIT

Fig. 10: CLM 153 operation via the operating program Commuwin II

Note!

- Re matrix position V4H0: The number of binary inputs (V4H1) must be set to “0” in order to be able to switch the active parameter set.
- Re matrix position V5H0: You must first switch on the external control (V5H2) to make program activation via Commuwin II possible. Programs already running cannot be cancelled via Commuwin II
- Operation with Commuwin II is described in the Operating Instructions BA 124F/00/en.
- Off-line configuration via Commuwin II is not possible.
- The device (incl. TopCal S and TopClean S) can be completely configured offline by means of the accessory Parawin.
  The configuration data can be saved to a DAT memory module. The DAT memory module can then be inserted into the device.

5.3.4 Physical Block / device blocks

A Physical Block contains all the data that uniquely identify and characterise the transmitter. It is an electronic version of a nameplate on the transmitter. Parameters of the Physical Block include the device type, device name, manufacturer ID, serial number, etc.
A further task of the Physical Block is the management of general parameters and functions that have an influence on the execution of the remaining blocks in the transmitter. The Physical Block is thus the central unit that also checks the device status and thereby influences or controls the operability of the other blocks and thus also of the device.
The following section describes in greater detail some services/functions which are not self-explanatory.

Write protection

- *On-site hardware write protection*
  By pressing the “CAL” and “DIAG” keys simultaneously, you can lock the device for on-site configuration operations.
  Use the “MEAS” and “PARAM” keys to unlock again. More detailed information is provided in the Operating Instructions for Mycom S BA 233C/07/en under “Locking/Unlocking the hardware”.
- *Hardware write protection via PROFIBUS*
  The HW_WRITE_PROTECTION parameter (see Page 32) indicates the status of the hardware write protection. The following statuses are possible:
  1: Hardware write protection enabled, device data cannot be overwritten
  0: Hardware write protection disabled, device data can be overwritten
- *Software write protection*
  You can also set software write protection to prevent all parameters from being acyclically overwritten. You can do so by making an entry in the WRITE_LOCKING parameter, (see Page 31). The following entries are permitted:
  2457: Device data can be overwritten (factory setting)
  0: Device data cannot be overwritten

LOCAL_OP_ENABLE parameter

You can use the LOCAL_OP_ENABLE parameter to permit or lock local operation at the device (see Page 32). The following values are possible:

- 0: Deactivated.
  Local operation is locked. You can only change this status via the bus.
  The code 9998 is displayed in the local operation. The transmitter behaves just as with hardware write protection via the keyboard (see above).
- 1: Activated.
  Local operation is active. However, commands from the master have a higher priority than local commands.

Note!
Local operation is automatically activated if communication should fail for longer than 30 seconds.
If communication fails when local operation is locked, the device will immediately go to the locked status as soon as communication is functioning again.

PB_TAG_DESC parameter

You can set the 32-digit client-specific device number (tag number) via:

- Local operation in the menu field T22 or via
- PROFIBUS parameter TAG_DESC of the Physical Block.

If you change the tag number via one of the two options, the change can also be seen immediately at the other position.

FACTORY_RESET parameter

You can reset the following data via the FACTORY_RESET parameter:

1 all data to PNO default values,
2506 Mycom S warm start,
2712 bus address
32768 calibration data,
32769 setting data.

Via the local operation, you can reset the following data in the field YA1 (under DIAG → Service → factory settings):

CHOICE (default = bold)	INFO	Editor type / Code to help page
Cancel Setting data Calibration data All data Address data Service data Operation log Error log Calibration log	**Set Default** Here you select the data which you wish to reset to the factory settings. ✎ Note! Danger of data loss. Selecting a point and confirming with “Enter” deletes all the settings you made in this area! Pressing Cancel leaves this field without changing the values. Calibration data: All the data saved with calibrations such as zero point, slope, and offset. Setting data: The remaining data to be set. All data: Calibration data + setting data Address data: The PROFIBUS address is reset to 126. CPC data: All data for calibration, configuration Service data: All data + logs + reset counters. Service data / logs: Functions are only for authorised service personnel. The service code is required.	E1 ?: YA1

IDENT_NUMBER_SELECTOR parameter

You can use the IDENT_NUMBER_SELECTOR parameter to switch Mycom S between three operating modes which each have a different functionality in relation to the cyclic data:

IDENT_NUMBER_SELECTOR	Functionality
0	Cyclic communication only possible with Profile GSD. Only standard diagnosis in cyclic data.
1 (default)	Full functionality with Profile 3.0 and extended diagnosis in cyclic data. The manufacturer-specific GSD is required.
2	Backwards compatibility with Mycom 152. Only one measured value from the 1st channel and no diagnosis in cyclic data can be transmitted. The GSDs of Mycom 152 must be used.

(See also table on Device Master Files on Page 55).

DIAGNOSIS and DIAGNOSIS_EXTENSION parameters

The tables for the DIAGNOSIS and DIAGNOSIS_EXTENSION parameters (system error messages) can be found in section 9 “Trouble-shooting”.

5.3.5 Function blocks – Analog Input (AI) blocks

In the Analog Input function block, the process variables (pH, redox and temperature) coming from the Transducer Block are prepared for the subsequent automation functions, (e.g. scaling and limit value processing). Two Analog Input function blocks (and four in the case of a two-channel device) are available to Mycom S PROFIBUS-PA (see Page 34).
The following section describes in greater detail some services/functions which are not self-explanatory.

Signal processing

The Analog Input function block receives its input value from the Analyser Transducer Block. The input values are permanently assigned to each Analog Input function block:

- Main measured value channel 1 (Main Process Value) – Analog Input function block 1 (AI 1)
- Temperature measured value channel 1 (Main Temperature) – Analog Input function block 2 (AI 2)
- Main measured value channel 2 (2nd Process Value) – Analog Input function block 3 (AI 3)
- Temperature measured value channel 2 (2nd Temperature) – Analog Input function block 4 (AI 4)

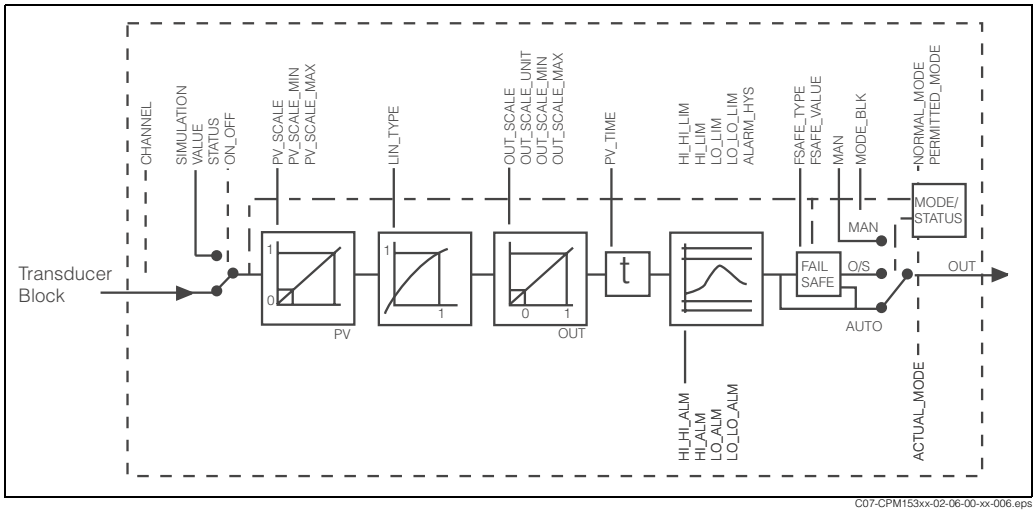


Fig. 11: Schematic internal structure of an Analog Input function block

SIMULATE

In the SIMULATE parameter group (see Page 34) you can replace the input value with a simulation value and activate simulation. By specifying the status and the simulation value you can test the reaction of the automation system.

PV_FTIME

In the PV_FTIME parameter (see Page 34) you can dampen the converted input value (primary value = PV) by specifying a filter time. If a time of 0 seconds is specified, the input value is not damped.

MODE_BLK

The MODE_BLK parameter group (see Page 34) is used to select the operating mode of the Analog Input function block. By selecting the MAN (manual) operating mode, you can directly specify the output value OUT and the OUT status (see page ??).

OUT

The output value OUT is compared with warning limits and alarm limits (e.g. HI_LIM, LO_LO_LIM, etc.; see Page 34) which you can enter via various parameters. If one of these limit values is violated then this triggers a limit value process alarm (e.g. HI_ALM, LO_LO_ALM, etc. see Page 34).

Selecting the operating mode

The operating mode is set by means of the MODE_BLK parameter group (see Page 34). The Analog Input function block supports the following operating modes:

- AUTO (automatic mode)
- MAN (manual mode)
- O/S (out of service)

Selecting the units

You can change the system unit for one of the measured values by means of the local operation.
Another way of changing the unit is to use the PV_SCALE and OUT_SCALE parameters (see Page 34 “Rescaling the input value”).

Status of the output value OUT

The status of the Analog Input function block and the validity of the OUT output value are relayed to the downstream function blocks by means of the status of the OUT parameter group. The following status values can be displayed:

- GOOD_NON_CASCADE
  The output value OUT is valid and can be used for further processing.
- UNCERTAIN
  The output value OUT can only be used for further processing to a limited extent.
- BAD
  The output value OUT is invalid. Occurs when the Analog Input function block is switched to the operating mode O/S (out of service) or in the event of serious errors (see status codes P. 29 and error messages in the Operating Instructions for Mycom S).

Simulation of input/output

You can simulate the input and output of the function block by means of various parameters of the Analog Input function block:

1. Simulating the input of the Analog Input function block:
   The SIMULATION parameter group (see Page 34) can be used to specify the input value (measured value and status). Since the simulation value runs through the entire function block, you can check all the parameter settings of the block.
2. Simulating the output of the Analog Input function block:
   Set the operating mode in the MODE_BLK parameter group (see Page 34) to MAN and directly specify the desired output value in the OUT parameter (see Page 34).

Measured value simulation in local operation

In the case of measured value simulation in local operation, the status UNCERTAIN – simulated value is relayed to the function blocks. This triggers the failsafe mechanism in the AI blocks.

Error response (FSAFE_TYPE)

If an input or simulation value has the status BAD, the Analog Input function block uses the error response defined in the FSAFE_TYPE parameter.The FSAFE_TYPE parameter (see Page 34) offers the following error response options:

- FSAFE_VALUE

The value specified in the FSAFE_VALUE parameter (see Page 34) is used for further processing.

- LAST_GOOD_VALUE
  The last good value is used for further processing.
- WRONG_VALUE
  The current value is used for further processing, despite the BAD status.
  The default is the setting (FSAFE_VALUE) with value “0”.

Note!
Error response is also activated if the Analog Input function block is set to the “OUT OF SERVICE” operating mode.

Rescaling the input value

In the Analog Input function block, the input value or input range can be scaled in accordance with the automation requirements.

Example:

- The system unit in the Transducer Block is °C.
- The measurement range of the device is –50 .. 150 °C.
- The output range to the automation system should be –58 °F ... 302 °F.
- The measured value from the Transducer Block (input value) is rescaled linearly via the input scaling PV_SCALE to the desired output range OUT_SCALE.
- Parameter group PV_SCALE (see Page 34)
  PV_SCALE_MIN (V1H0) –50
  PV_SCALE_MAX (V1H1) 150
- Parameter group OUT_SCALE (see Page 34)
  OUT_SCALE_MIN (V1H3) -58
  OUT_SCALE_MAX (V1H4) 302
  OUT_UNIT (V1H5) [°F]

The result is that with an input value of 25 °C, for example, a value of 77 °F is output via the OUT parameter (see Fig. 12 below).

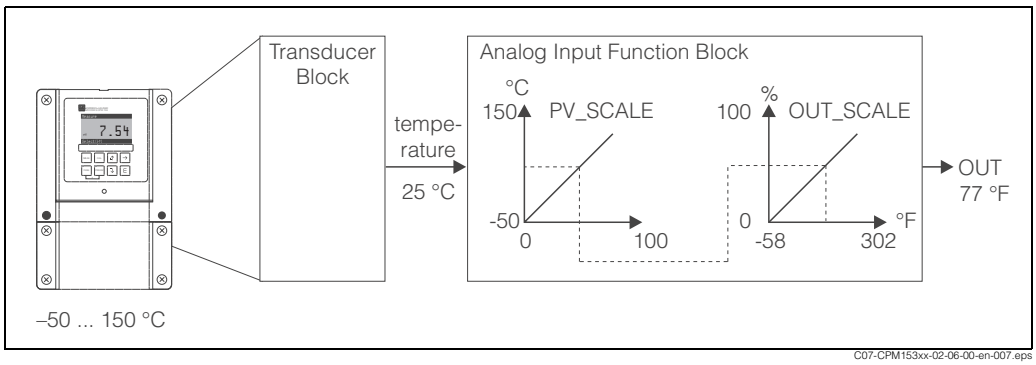


Fig. 12: Scaling the input value for the Analog Input function block

Limit values

You can set two warning limits and two alarm limits for monitoring your process. The status of the measured value and the parameters of the limit-value alarms are indicative of the measured value's relative position. You also have the option of defining an alarm hysteresis in order to avoid frequent changes of the limit-value flags and frequent enabling/disabling of alarms.
The limit values are based on the output value OUT. If the output value OUT exceeds or undershoots the defined limit values, the automation system is alarmed via the limit value process alarms (see below).
The following limit values can be defined:
– HI_HI_LIM – HI_LIM (see Page 34)
– LO_LO_LIM – LO_LIM (see Page 34)

Alarm detection and processing

Limit value process alarms are generated by the Analog Input function block. The status of the limit value process alarms is communicated to the automation system by means of the following parameters:
– HI_HI_ALM – HI_ALM (see Page 34)
– LO_LO_ALM – LO_ALM (see Page 34)

6 Commissioning

6.1 Function check

Caution!
- Before power-up, check all the connections again for correctness.
- Make sure also that the post-connection check (section 4.2) has been carried out.

Warning!
- Before power-up, make sure there is no danger to the measuring point. Uncontrolled actuated pumps, valves or similar could lead to damage to instruments.

6.2 Setting the device address

The address must always be set in the case of a PROFIBUS-PA device. The process control system does not recognise the transmitter if the address is not set correctly.

All devices have the address 126 on leaving the factory. You can use this address for device function checking and for connecting to a PROFIBUS-PA network. You must change this address to be able to integrate additional devices.
The device address can be set via:

- Local operation,
- The PROFIBUS service Set_Slave_Add or
- The DIL switch in the device.

Note! Device addresses
- Valid device addresses are in the range 0... 126.
- Each address may only be given once in a PROFIBUS-PA network.
- The double arrow in the display indicates active communication with PROFIBUS.

Position of the DIL switch

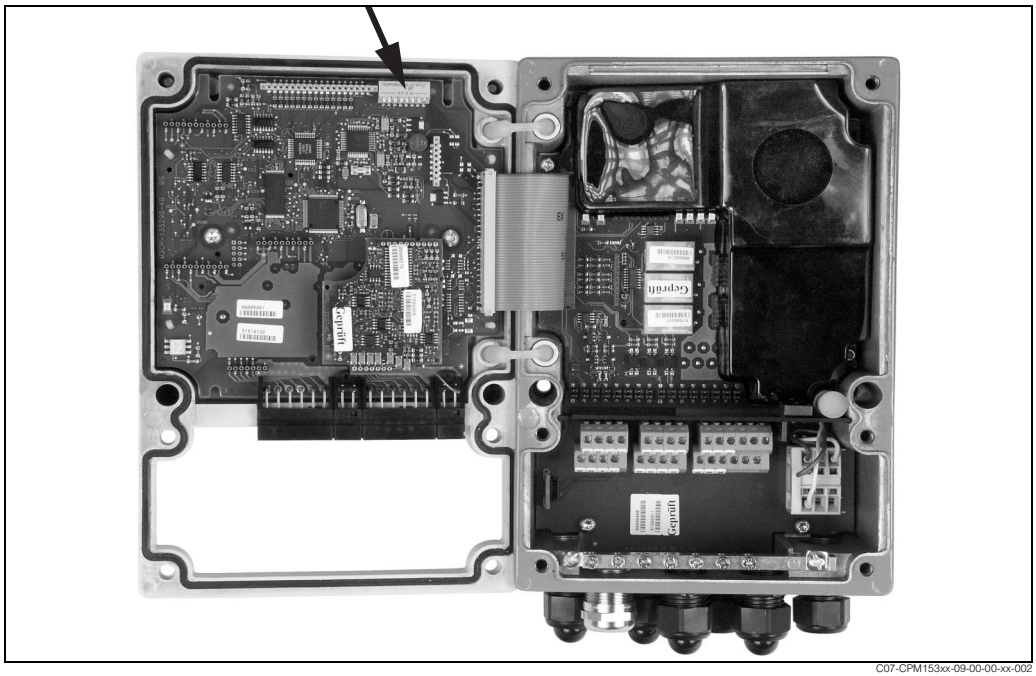


Fig. 13: Position of the DIL switch in the Mycom transmitter (arrow).

6.2.1 Setting the device address via the Mycom S operating menu

Note!
You can only set the address via the software if DIL switch 8 is set to the software position. On leaving the factory, switch 8 is already set to software as shown in Fig. 14 (information on the DIL switch is provided in Section 6.2.3).

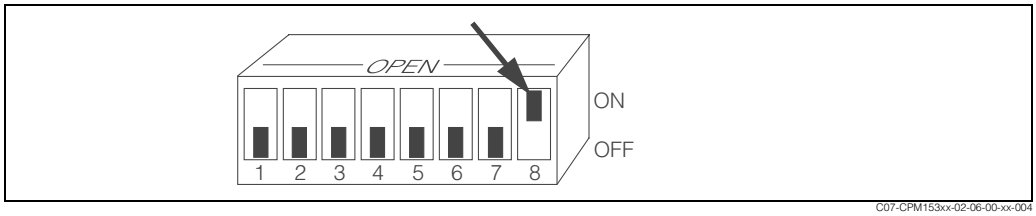
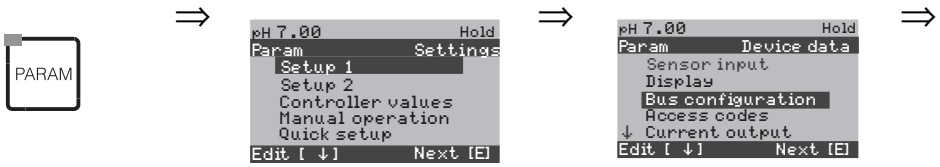
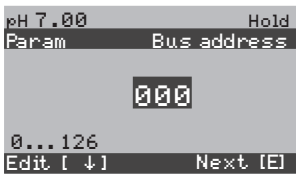


Fig. 14: DIL switch 8 must be set to "ON" to make operation via software possible.



CODE	DISPLAY	CHOICE (default = bold)	INFO	User settings
C1		**0** 0 ... 126	**Entry of bus address** Each address may only be given once in a network.	
C2			**Tag name** Here display only; cannot be edited.	

6.2.2 Setting the device address via PROFIBUS communication

The address is set via the Set_Slave_Add service.

6.2.3 Setting the device address via DIL switch (hardware setting)

Please proceed as follows to set the device address:

Loosen the six Phillips screws and remove the housing cover. The electronic module with the DIL switch is located in the top right of the housing cover.

- Set the device address (from 0 ... 126) at switches 1 to 7.
  (example: 18 = 2 + 16)
- You must set switch 8 to OFF when entering the device address via DIL switch.

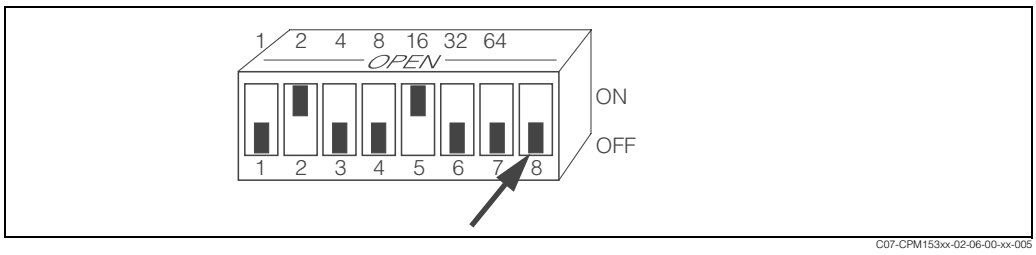


Fig. 15: Example for device address 18.
Switch 8 must be set to OFF if you are entering the address via DIL switch.

Then close the housing cover again.

6.3 Configuration with PROFIBUS

6.3.1 Device Master Files and type files

The device is ready for system integration once commissioning has been effected via the local display or the Class 2 master (Commuwin II). The PROFIBUS-PA system requires a description of the device parameters, e.g. output data, input data, data format, data volume and supported transmission rate, so that it can integrate the field devices into the bus system.
These data are contained in a Device Master File (GSD file) which is placed at the disposal of the PROFIBUS-PA master while the communication system is being commissioned.
Device bitmaps can also be integrated. These appear as icons in the network tree.
The Profile 3.0 Device Master File (GSD) allows field devices from various manufacturers to be exchanged without having to reconfigure.

The following three Device Master Files with different functionalities are available:

- **Manufacturer-specific GSD with Profile 3.0 functionality:**
  This GSD guarantees the unlimited functionality of the field device. Device-specific process parameters and functions are therefore available.
- **Manufacturer-specific GSD backward compatible with Mycom 152 (Profile 2.0):**
  With this GSD, the cyclic data are compatible with Mycom 152. In this way, Mycom S 153 can also be used in systems with Mycom 152 without the need to reconfigure the automation system.
- **Profile GSD:**
  If a system is configured with profile GSDs, it is possible to exchange devices that are supplied by various manufacturers. It is, however, essential that the cyclic process values follow the same sequence.

Example:
Mycom S supports the profile *PA GSD 139750.gsd* (IEC 61158-2). This GSD comprises AI blocks. The AI blocks are always assigned to the following measured variables:

AI 1 = Main Process Value,
AI 2 = Main Temperature,
AI 3 = 2nd Process Value,
AI 4 = 2nd Temperature.

This guarantees that the first measured variable agrees with the field devices of other manufacturers.

Note!
- Prior to configuration, decide which GSD you want to use to operate the system.
- You can change the setting by means of a Class 2 master (under Physical Block - Parameter Ident_Number_Selector).

Mycom S supports the following GSD files

Device name	Ident_number_ Selector	ID number	GSD	Type file	Bitmaps
Mycom S – backward compatible with Mycom 152:					
Mycom S-PA CPM153 (functionality like CPM 152)	2	1508 Hex	EH__1508.gsd	EH_1508x.200	EH1508_d.bmp EH1508_n.bmp EH1508_s.bmp
Mycom S-PA CLM153-ind. (functionality like CLM 152-ind.)	2	1509 Hex	EH__1509.gsd	EH_1509x.200	EH1509_d.bmp EH1509_n.bmp EH1509_s.bmp
Mycom S-PA CLM153-cond. (functionality like CLM 152-cond.)	2	150B Hex	EH__150B.gsd	EH_150Bx.200	EH150B_d.bmp EH150B_n.bmp EH150B_s.bmp
Mycom S-PA CLM 153-cond. / ind. (functionality like CLM 152-cond./ind. switchable)	128	1513 Hex	EH__1513.gsd	EH_1513x.200	EH1513_d.bmp EH1513_n.bmp EH1513_s.bmp
Mycom S – only Profile 3.0 functionality:					
Mycom S-PA CPM153, CLM153-ind/cond. (only profile functionality)	0	9750 Hex	PA139750.gsd	---	PA_9750n.bmp
Mycom S – manufacturer-specific functions with Profile 3.0 functionality:					
Mycom S-PA CPM153 additional cyclic data for digital I/O (TopCal S, ext. hold, Clean)	1	1539 Hex	EH3x1539.gsd	EH31539x.200	EH1539_d.bmp EH1539_n.bmp EH1539_s.bmp
Mycom S-PA CLM153-ind. additional cyclic data for digital I/O (parameter set switching)	1	1537 Hex	EH3x1537.gsd	EH31537.200	EH1537_d.bmp EH1537_n.bmp EH1537_s.bmp
Mycom S-PA CLM153-cond. additional cyclic data for digital I/O (parameter set switching)	1	1535 Hex	EH3x1535.gsd	EH31535x.200	EH1535_d.bmp EH1535_n.bmp EH1535_s.bmp

Note!
Each device is assigned an identification number (ID No.) by the Profibus User Organisation (PNO). The name of the Device Master File is derived from this. For Endress+Hauser, this ID No. starts with the manufacturer ID 15xx. In order to ensure clarity, the GSD names (with the exception of type files) at Endress+Hauser are as follows:

EH3_15xx
EH = Endress + Hauser
3 = Profile 3.0
_ = Standard identification
15xx = ID No.

EH3x15xx
EH = Endress + Hauser
3 = Profile 3.0
x = Advanced identification
15xx = ID No.

The GSDs for all Endress+Hauser devices can be acquired via:
- Internet (E+H): http://www.endress.com
  Products / Process Solutions / PROFIBUS / GSD files
- Internet (PNO): http://www.profibus.com
  GSD library
- On CD-ROM from E+H: order number 56003894

Contents structure of GSD files from Endress+Hauser

For the E+H transmitter with PROFIBUS interface, you receive all the data needed for configuration with one exe-file. Once unpacked, this file automatically creates the following structure:

At the top level, you have the measuring parameters available for the transmitter. Beneath this, you can find:

- "Revision x.xx" folder:
  This ID stands for the special device version. Device-specific bitmaps can be found in the "BMP" and "DIB" subdirectories.
- "Info" folder:
  Information relating to the transmitter and any dependencies in the device software. *Please read this information carefully before configuring.*
- "GSD" folder:
  The GSDs are located in the "Extended" and "Standard" subdirectories (see also note below).
- "TypDat" folder:
  The type files with the extension ".200" can be found here.

Standard and extended formats

The modules of some GSDs are transmitted with an extended identification (e.g. 0x42, 0x84, 0x08, 0x05). These GSDs can be found in the "Extended" folder.
The GSDs that have a standard identification (e.g. 0x94) can be found in the "Standard" folder.

Note!
When integrating transmitters, always use the GSDs with the extended identification first. However, if integration fails with these GSDs use the standard GSD. This distinction is a result of a specific implementation in the master systems.

Working with GSD / type files

The GSDs must be integrated into the automation system. Depending on the software that is being used, the GSD files can be copied to the program-specific directory or can be read into the database using the import function within the configuration software.
Example 1:
In the case of the configuration software Siemens STEP 7 (Siemens PLC S7-300 / 400), copy the files to the subdirectory
...\ siemens \ step7 \ s7data \ gsd.
The bitmap files also belong to the GSDs. These bitmap files are used to display the measuring points in image form. Load the bitmap files to the directory ...\ siemens \ step7 \ s7data \ nsbmp.
Example 2:
If you have a PLC Siemens S5 where the PROFIBUS-DP network is configured with the configuration software COM ET 200, you will have to use the type files (extension "x.200").
If you are using configuration software other than that referred to above, ask your PLC manufacturer which directory you should use.

Compatibility of Profile version 2.0 and 3.0 devices

It is possible to operate Profile 2.0 and 3.0 devices with different GSDs in one system using one master as the cyclic data for the automation system in both profile versions are compatible.

7 Maintenance

Please refer to the standard Operating Instructions BA 233C/07/en, BA 234/07/en, BA 235C/07/en or BA 236C/07/en for information on maintenance of the measuring point.

8 Accessories

Mycom S on-line Operating program Commuwin II

Graphic PC Operating program for intelligent devices.
System Information SI 003S/04/en
Order No.: 5600394

Mycom S off-line Operating program Parawin

Graphic PC Operating program and DAT interface for off-line configuration of Mycom S, TopCal S, TopClean S via DAT memory module.
Order No.: 51507133 (Mycom S)
Order No.: 51507563 (TopCal S, TopClean S, Mycom)

9 Troubleshooting

9.1 System error messages

DIAGNOSIS and DIAGNOSIS_EXTENSION parameters

MYCOM S CPM 153 PROFIBUS diagnosis

Mapping of internal E+H error numbers to Physical Block Diagnosis

NAMUR class	Error no.	Description	DIAGNOSIS	DIAGNOSIS_ EXTENSION	Measured value status		
					Quality	Sub-status	
Failure	E001	Memory error	01 00 00 80 - DIA_HW_ELECTR	01 00 00 00 00 00	BAD	device failure	0C
Failure	E002	Data error in EEPROM	10 00 00 80 - DIA_MEM_CHKSUM	02 00 00 00 00 00	BAD	device failure	0C
Failure	E003	Invalid configuration	00 04 00 80 - DIA_CONF_INVAL	04 00 00 00 00 00	BAD	device failure	0C
Failure	E004	Invalid hardware ID	00 00 00 80 - EXTENSION_AVAILABLE	08 00 00 00 00 00	BAD	device failure	0C
Failure	E005	CPC not compatible	00 00 00 80 - EXTENSION_AVAILABLE	08 00 00 00 00 00	BAD	device failure	0C
Failure	E006	Transmitter 2 faulty	20 00 00 80 - DIA_MEASUREMENT	10 00 00 00 00 00	BAD	device failure	0C
Failure	E007	Transmitter 1 faulty	20 00 00 80 - DIA_MEASUREMENT	10 00 00 00 00 00	BAD	device failure	0C
Failure	E008	Sensor or sensor connection 1 faulty	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E009	Sensor or sensor connection 2 faulty	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E010	Temperature sensor 1 defective	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E011	Temperature sensor 2 defective	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E012	CPC communication failure	00 00 00 80 - EXTENSION_AVAILABLE	40 00 00 00 00 00	BAD	device failure	0C
Failure	E013	Assembly has not reached maintenance position	02 00 00 80 - DIA_HW_MECH	80 00 00 00 00 00	BAD	device failure	0C
Failure	E014	Assembly has not reached measuring position	02 00 00 80 - DIA_HW_MECH	80 00 00 00 00 00	BAD	device failure	0C
Failure	E015	Revolver does not turn	02 00 00 80 - DIA_HW_MECH	00 01 00 00 00 00	BAD	device failure	0C
Failure	E016	Revolver end position recognition defective	02 00 00 80 - DIA_HW_MECH	00 01 00 00 00 00	BAD	device failure	0C
Failure	E017	Data error in CPC 300 EEPROM	10 00 00 80 - DIA_MEM_CHKSUM	02 00 00 00 00 00	BAD	device failure	0C
Failure	E019	Delta limit exceeded	20 00 00 80 - DIA_MEASUREMENT	00 02 00 00 00 00	BAD	device failure	0C
Failure	E024	CPC 300 program aborted	00 00 00 80 - EXTENSION_AVAILABLE	00 04 00 00 00 00	BAD	device failure	0C
Failure	E027	Compressed air failure	00 02 00 80 - DIA_SUPPLY	00 08 00 00 00 00	BAD	device failure	0C
Failure	E030	SCS message reference electrode 1	20 00 00 80 - DIA_MEASUREMENT	00 10 00 00 00 00	BAD	sensor failure	10
Failure	E031	SCS message reference electrode 2	20 00 00 80 - DIA_MEASUREMENT	00 10 00 00 00 00	BAD	sensor failure	10
Failure	E032	Outside set slope range for sensor 1	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04

NAMUR class	Error no.	Description	DIAGNOSIS	DIAGNOSIS_ EXTENSION	Measured value status		
					Quality	Sub-status	
Failure	E033	Outside set zero point range for sensor 1	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Failure	E034	Outside set offset range for sensor 1	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Failure	E035	Outside set slope range for sensor 2	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Failure	E036	Outside set zero point range for sensor 2	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Failure	E037	Outside set offset range for sensor 2	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Maintenance	E038	Delta limit exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 01 00 00	UNCERTAIN	non-specific	40
Maintenance	E040	SCC / electrode status of sensor 1 bad	00 20 00 80 - DIA_MAINTENANCE	00 00 00 02 00 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E041	SCC / electrode status of sensor 2 bad	00 20 00 80 - DIA_MAINTENANCE	00 00 00 02 00 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E043	Buffer difference of channel 1 too small	00 20 00 80 - DIA_MAINTENANCE	00 00 00 04 00 00	UNCERTAIN	configuration error	5C
Maintenance	E044	Measured value channel 1 unstable	00 20 00 80 - DIA_MAINTENANCE	00 00 00 08 00 00	UNCERTAIN	configuration error	5C
Failure	E045	Calibration aborted	20 00 00 80 - DIA_MEASUREMENT	00 40 00 00 00 00	BAD	configuration error	04
Maintenance	E048	Buffer difference of channel 2 too small	00 20 00 80 - DIA_MAINTENANCE	00 00 00 04 00 00	UNCERTAIN	configuration error	5C
Maintenance	E049	Measured value channel 2 unstable	00 20 00 80 - DIA_MAINTENANCE	00 00 00 08 00 00	UNCERTAIN	configuration error	5C
Maintenance	E050	Cleaner almost empty	00 20 00 80 - DIA_MAINTENANCE	00 00 00 10 00 00	GOOD	maintenance required	A4
Maintenance	E051	Buffer 1 almost empty	00 20 00 80 - DIA_MAINTENANCE	00 00 00 10 00 00	GOOD	maintenance required	A4
Maintenance	E052	Buffer 2 almost empty	00 20 00 80 - DIA_MAINTENANCE	00 00 00 10 00 00	GOOD	maintenance required	A4
Failure	E053	Three-point step controller	00 00 00 80 - EXTENSION_AVAILABLE	00 80 00 00 00 00	BAD	non-specific	00
Maintenance	E054	Dosing time alarm	00 20 00 80 - DIA_MAINTENANCE	00 00 00 20 00 00	UNCERTAIN	configuration error	5C
Failure	E055	Display range of main parameter 1 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E056	Display range of main parameter 2 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E057	Display range of main parameter 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E058	Display range of main parameter 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E059	Temperature range 1 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50

NAMUR class	Error no.	Description	DIAGNOSIS	DIAGNOSIS_ EXTENSION	Measured value status		
					Quality	Sub-status	
Failure	E060	Temperature range 2 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E061	Temperature range 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E062	Temperature range 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E067	Set point controller/limit value 1 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E068	Set point controller/limit value 2 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E069	Set point controller/limit value 3 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E070	Set point controller/limit value 4 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E071	Set point controller/limit value 5 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Failure	E073	Temperature 1, table value undershot	00 04 00 80 - DIA_CONF_INVAL	00 00 04 00 00 00	BAD	configuration error	04
Failure	E074	Temperature 2, table value undershot	00 04 00 80 - DIA_CONF_INVAL	00 00 04 00 00 00	BAD	configuration error	04
Failure	E075	Temperature 1, table value exceeded	00 04 00 80 - DIA_CONF_INVAL	00 00 04 00 00 00	BAD	configuration error	04
Failure	E076	Temperature 2, table value exceeded	00 04 00 80 - DIA_CONF_INVAL	00 00 04 00 00 00	BAD	configuration error	04
Maintenance	E086	Delta limit buffer 1 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 08 00	GOOD	maintenance required	A4
Maintenance	E087	Delta limit buffer 2 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 08 00	GOOD	maintenance required	A4
Function check	E090	CPG 300 service switch active	00 00 00 80 - EXTENSION_AVAILABLE	00 00 00 00 00 40	UNCERTAIN	sensor conversion not accurate	50
Funct. check	E100	Simulation active	00 00 00 80 - EXTENSION_AVAILABLE	00 00 00 00 00 80	UNCERTAIN	simulated value	60
Funct. check	E101	Service function active			–	–	
Funct. check	E106	Download active					
Failure	E116	Download error	00 04 00 80 - DIA_CONF_INVAL	00 00 08 00 00 00	BAD	configuration error	04
Failure	E117	DAT memory module data error	00 04 00 80 - DIA_CONF_INVAL	00 00 08 00 00 00	BAD	configuration error	04
Maintenance	E152	PCS channel 1 alarm	00 20 00 80 - DIA_MAINTENANCE	00 00 00 80 00 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E153	PCS channel 2 alarm	00 20 00 80 - DIA_MAINTENANCE	00 00 00 80 00 00	UNCERTAIN	sensor conversion not accurate	50
Funct. check	E156	Calibration timer run out					

NAMUR class	Error no.	Description	DIAGNOSIS	DIAGNOSIS_ EXTENSION	Measured value status		
					Quality	Sub-status	
Failure	E164	Dynamic range of pH convertor channel 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 10 00 00 00	BAD	sensor failure	10
Failure	E165	Dynamic range of pH convertor channel 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 10 00 00 00	BAD	sensor failure	10
Failure	E166	Dynamic range of reference convertor channel 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 20 00 00 00	BAD	sensor failure	10
Failure	E167	Dynamic range of reference convertor channel 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 20 00 00 00	BAD	sensor failure	10
Maintenance	E168	SCS message IsFET sensor 1	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 01 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E169	SCS message IsFET sensor 2	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 01 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E171	Current/resistance input 1 below range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 02 00	UNCERTAIN	non-specific	40
Maintenance	E172	Current/resistance input 1 above range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 02 00	UNCERTAIN	non-specific	40
Maintenance	E173	Current input 2 below range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 04 00	UNCERTAIN	non-specific	40
Maintenance	E174	Current input 2 above range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 04 00	UNCERTAIN	non-specific	40

Mapping of Physical Block Diagnosis to internal E+H error codes

Mode	Bit No.	Description	DIAGNOSIS_EXTENSION number
Physical Block Diagnosis	16	Error appears	
	17	Error disappears	
	24	Hardware failure electronics	56
	25	Hardware failure mechanics	63, 64
	28	Memory error	57
	29	Measurement failure	60, 61, 65, 68, 69, 72, 73, 76, 77
	33	Power supply failed	67
	34	Configuration invalid	58, 74, 75
	35	Restart	
	36	Coldstart	
	37	Maintenance required	70, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90
	55	Extension available	each error number sets "Extension available"

Mode	Bit No.	Description	Instrument error code
Physical Block Diagnosis_Extension	56	A: Memory error	001
	57	A: Data error in EEPROM	002, 017
	58	A: Invalid configuration	003
	59	A: Incompatible hardware	004, 005
	60	A: Error transmitter	006, 007
	61	A: Error sensor	008, 009, 010, 011
	62	A: Communication error CPC	012
	63	A: Assembly did not reach end position	013, 014
	64	A: Revolver error	015, 016
	65	A: Delta limit exceeded	019
	66	A: CPC program aborted	024
	67	A: Error air supply	027
	68	A: SCS error reference	030, 031
	69	A: Calibration error	032, 033, 034, 035, 036, 037
	70	A: Calibration aborted	045
	71	A: Actuator failure	053
	72	A: pH/mV out of range	055, 056, 057, 058
	73	A: Temperature out of range	059, 060, 061, 062
	74	A: Temperature out of table	073, 074, 075, 076
	75	A: Download error	116, 117
	76	A: pH input range over range	164, 165
	77	A: Ref input range over range	166, 167
	80	W: Delta value exceeded	038
	81	W: SCS condition bad	040, 041
	82	W: Distance of buffers too small	043, 048
	83	W: Input not stable	044, 049
	84	W: Cleaner of buffer low	050, 051, 052
	85	W: Dose time alarm	054
	86	W: Set point exceeded GWG	067, 068, 069, 070, 071
	87	W: CS alarm	152, 153
	88	W: IsFET leakage current > 200 nA	168, 169
	89	W: Current input 1 out of range	171, 172
	90	W: Current input 2 out of range	173, 174
	102	F: CPC service switch on	090
	103	F: Simulation active	100

MYCOM S CLM 153 PROFIBUS diagnosis

Mapping of internal E+H error numbers to Physical Block Diagnosis

NAMUR class	Error no.	Description	DIAGNOSIS	DIAGNOSIS_ EXTENSION	Measured value status		
					Quality	Sub-status	
Failure	E001	Memory error	01 00 00 80 - DIA_HW_ELECTR	01 00 00 00 00 00	BAD	device failure	0C
Failure	E002	Data error in EEPROM	10 00 00 80 - DIA_MEM_CHKSUM	02 00 00 00 00 00	BAD	device failure	0C
Failure	E003	Invalid configuration	00 04 00 80 - DIA_CONF_INVAL	04 00 00 00 00 00	BAD	device failure	0C
Failure	E004	Invalid hardware ID	00 00 00 80 - EXTENSION_AVAILABLE	08 00 00 00 00 00	BAD	device failure	0C
Failure	E006	Transmitter 2 faulty	20 00 00 80 - DIA_MEASUREMENT	10 00 00 00 00 00	BAD	device failure	0C
Failure	E007	Transmitter 1 faulty	20 00 00 80 - DIA_MEASUREMENT	10 00 00 00 00 00	BAD	device failure	0C
Failure	E008	Sensor or sensor connection 1 faulty	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E009	Sensor or sensor connection 2 faulty	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E010	Temperature sensor 1 defective	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E011	Temperature sensor 2 defective	20 00 00 80 - DIA_MEASUREMENT	20 00 00 00 00 00	BAD	sensor failure	10
Failure	E019	Characteristic number limit exceeded	20 00 00 80 - DIA_MEASUREMENT	00 02 00 00 00 00	BAD	device failure	0C
Failure	E025	Limit value for airset offset channel 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 10 00 00 00 00	BAD	configuration error	04
Failure	E026	Limit value for airset offset channel 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 10 00 00 00 00	BAD	configuration error	04
Failure	E034	Cell constant sensor 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Failure	E035	Cell constant sensor 1 undershot	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Failure	E036	Cell constant sensor 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Failure	E037	Cell constant sensor 2 undershot	20 00 00 80 - DIA_MEASUREMENT	00 20 00 00 00 00	BAD	configuration error	04
Mainte-nance	E038	Characteristic number limit exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 01 00 00	UNCERTAIN	non-specific	40
Failure	E046	Installation factor channel 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 40 00 00 00 00	BAD	configuration error	04
Failure	E047	Installation factor channel 1 undershot	20 00 00 80 - DIA_MEASUREMENT	00 40 00 00 00 00	BAD	configuration error	04
Mainte-nance	E048	Installation factor channel 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 40 00 00 00 00	BAD	configuration error	04
Mainte-nance	E049	Installation factor channel 2 undershot	20 00 00 80 - DIA_MEASUREMENT	00 40 00 00 00 00	BAD	configuration error	04
Failure	E053	Actuator failure	00 00 00 80 - EXTENSION_AVAILABLE	00 80 00 00 00 00	BAD	non-specific	00
Mainte-nance	E054	Dosing time alarm	00 20 00 80 - DIA_MAINTENANCE	00 00 00 20 00 00	UNCERTAIN	configuration error	5C
Failure	E055	Display range of main parameter 1 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E056	Display range of main parameter 2 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50

NAMUR class	Error no.	Description	DIAGNOSIS	DIAGNOSIS_ EXTENSION	Measured value status		
					Quality	Sub-status	
Failure	E057	Display range of main parameter 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E058	Display range of main parameter 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 01 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E059	Temperature range 1 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E060	Temperature range 2 undershot	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E061	Temperature range 1 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Failure	E062	Temperature range 2 exceeded	20 00 00 80 - DIA_MEASUREMENT	00 00 02 00 00 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E067	Set point controller/limit value 1 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E068	Set point controller/limit value 2 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E069	Set point controller/limit value 3 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E070	Set point controller/limit value 4 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Maintenance	E071	Set point controller/limit value 5 exceeded	00 20 00 80 - DIA_MAINTENANCE	00 00 00 40 00 00	UNCERTAIN	non-specific	40
Failure	E072	Polarisation error channel 1	20 00 00 80 - DIA_MEASUREMENT	00 00 10 00 00 00	BAD	sensor failure	10
Failure	E073	Polarisation error channel 2	20 00 00 80 - DIA_MEASUREMENT	00 00 10 00 00 00	BAD	sensor failure	10
Failure	E074	Temperature 1 outside α-value table	00 04 00 80 - DIA_CONF_INVAL	00 00 04 00 00 00	BAD	configuration error	04
Failure	E075	Temperature 1 outside concentration table	00 04 00 80 - DIA_CONF_INVAL	00 00 20 00 00 00	BAD	configuration error	04
Failure	E076	Conductivity 1 outside concentration table	00 04 00 80 - DIA_CONF_INVAL	00 00 20 00 00 00	BAD	configuration error	04
Failure	E077	Temperature 2 outside α-value table	00 04 00 80 - DIA_CONF_INVAL	00 00 04 00 00 00	BAD	configuration error	04
Failure	E078	Temperature 2 outside concentration table	00 04 00 80 - DIA_CONF_INVAL	00 00 20 00 00 00	BAD	configuration error	04
Failure	E079	Conductivity 2 outside concentration table	00 04 00 80 - DIA_CONF_INVAL	00 00 20 00 00 00	BAD	configuration error	04
Funct. check	E100	Simulation active	00 00 00 80 - EXTENSION_AVAILABLE	00 00 00 00 00 80	UNCERTAIN	simulated value	60
Funct. check	E101	Service function active			–	–	
Funct. check	E106	Download active					
Failure	E116	Download error	00 04 00 80 - DIA_CONF_INVAL	00 00 08 00 00 00	BAD	configuration error	04

NAMUR class	Error no.	Description	DIAGNOSIS	DIAGNOSIS_ EXTENSION	Measured value status		
					Quality	Sub-status	
Failure	E117	DAT memory module data error	00 04 00 80 - DIA_CONF_INVAL	00 00 08 00 00 00	BAD	configuration error	04
Maintenance	E152	PCS channel 1 alarm	00 20 00 80 - DIA_MAINTENANCE	00 00 00 80 00 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E153	PCS channel 2 alarm	00 20 00 80 - DIA_MAINTENANCE	00 00 00 80 00 00	UNCERTAIN	sensor conversion not accurate	50
Maintenance	E154	USP error channel 1	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 01 00	GOOD	maintenance required	A4
Maintenance	E155	USP temperature error channel 1	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 01 00	GOOD	maintenance required	A4
Maintenance	E156	USP error channel 2	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 01 00	GOOD	maintenance required	A4
Maintenance	E157	USP temperature error channel 2	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 01 00	GOOD	maintenance required	A4
Maintenance	E171	Current/resistance input 1 below range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 02 00	UNCERTAIN	non-specific	40
Maintenance	E172	Current/resistance input 1 above range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 02 00	UNCERTAIN	non-specific	40
Maintenance	E173	Current input 2 below range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 04 00	UNCERTAIN	non-specific	40
Maintenance	E174	Current input 2 above range	00 20 00 80 - DIA_MAINTENANCE	00 00 00 00 04 00	UNCERTAIN	non-specific	40

Mapping of Physical Block Diagnosis to internal E+H error codes

Mode	Bit No.	Description	DIAGNOSIS_EXTENSION number
Physical Block Diagnosis	16	Error appears	
	17	Error disappears	
	24	Hardware failure electronics	56
	28	Memory error	57
	29	Measurement failure	60, 61, 65, 68, 69, 72, 73, 76, 77
	34	Configuration invalid	58, 74, 75
	35	Restart	
	36	Coldstart	
	37	Maintenance required	70, 80, 85, 86, 87, 88, 89, 90
	55	Extension available	each error number sets "Extension available"

Mode	Bit No.	Description	Instrument error code
Physical Block Diagnosis_Extension	56	A: Memory error	001
	57	A: Data error in EEPROM	002
	58	A: Invalid configuration	003
	59	A: Incompatible hardware	004
	60	A: Error transmitter	006, 007
	61	A: Error sensor	008, 009, 010, 011
	65	A: Delta limit exceeded	019
	68	A: Limit Airset Offset exceeded	025, 026
	69	A: Calibration out of range	034, 035, 036, 037
	70	A: Adapt. factor out of range	046, 047, 048, 049
	71	A: Actuator failure	053
	72	A: Main PV out of range	055, 056, 057, 058
	73	A: Temperature out of range	059, 060, 061, 062
	74	A: Temp. out of alpha table	074, 077
	75	A: Download error	116, 117
	76	A: Polarisation error	072, 073
	77	A: Meas. value out of conc. table	075, 076, 078, 079
	80	W: Delta limit exceeded	038
	85	W: Dos. time alert	054
	86	W: Set point exceeded GWG	067, 068, 069, 070, 071
	87	W: PCS alarm	152, 153
	88	W: USP error	154, 155, 156, 157
	89	W: Current input 1 out of range	171, 172
	90	W: Current input 2 out of range	173, 174
	103	F: Simulation active	100

10 Technical data

10.1 Output PROFIBUS-PA

Output signal	PROFIBUS-PA in accordance with EN 50170 Part 4, IEC 1158-2, Profile Version 3.0
PA function	Slave
Transmission rate	31.25 kBit/s
Signal coding	Manchester II
Response time slave	Approx. 20 ms
Signal on alarm	Status and alarm messages in accordance with PROFIBUS-PA, Profile Version 3.0. Display: error code
Physical layer	IEC 1158-2
Bus voltage	9 ... 32 V
Bus current consumption	10 mA ± 1 mA

10.2 Human interface

Local operation	Via keyboard
Bus address	Set via • DIL switch or • Operating menu or • Set_Slave_Adr service
Communication interface	PROFIBUS-PA

10.3 Documentation

System Information Commuwin II SI 003F/04/en	Order No.: 56003946
Operating Instructions Commuwin II BA 124F/00/a2	Order No.: 52000549
Technical Information Commuwin II TI 237F/00/en	Order No.: 016735-0000

Index

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Dear customer,
Because of legal determinations and for the safety of our employes and operating equipment we need this "Declaration of contamination" with your signature before your order can be handled. Please put the completely filled in declaration to the instrument and to the shipping documents in any case. Add also safety sheets and/or specific handling instructions if necessary.

type of instrument / sensor: _____ serial number: _____

medium / concentration: _____ temperature: _____ pressure: _____

cleaned with: _____ conductivity: _____ viscosity: _____

Warning hints for medium used:

☐ radioactive ☐ explosive ☐ caustic ☐ poisonous ☐ harmful of health ☐ biological hazardous ☐ inflammable ☐ safe

Please mark the appropriate warning hints.

Reason for return:

_____

_____

Company data:

company: _____ contact person: _____

_____ _____

_____ department: _____

address: _____ phone number: _____

_____ Fax/E-Mail: _____

_____ your order no.: _____

I hereby certify that the returned equipment has been cleaned and decontaminated acc. to good industrial practices and is in compliance with all regulations. This equipment poses no health or safety risks due to contamination.

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