

# Automation of pH/Redox Measurements *TopClean S CPC 30*

## Automatic Measuring and Cleaning System in Ex and Non-Ex areas



### Applications

The automatic pH/redox measuring and cleaning system TopClean S CPC 30 combines a very high degree of safety, highly precise measurement results and very low maintenance requirements. It is the optimum choice for heavily polluted and aggressive media as well as for high-accuracy measurement tasks, for e.g.

- Food industry
- Pharmaceutical industry
- Process industry
- Water treatment
- Ex applications

### Your benefits

- Very high degree of safety:
  - System status messages with feedback to the control desk
  - In-process electrode cleaning, no electrode removal necessary
  - Automatic cleaning on detection of electrode fouling
- High availability:
  - Long electrode life due to measuring cycle
  - Offline configuration: Very simple set-up on PC
  - DAT module: very simple copying of set-up to other devices
- Short amortisation times:
  - Low procurement price
  - Low maintenance costs through automatic cleaning of electrode
  - Low installation effort through modular design
- Approved for Ex applications
- Communication via PROFIBUS-PA and HART



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ISO 9001

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The Power of Know How



## Functions and system design

The cleaning system TopClean S CPC 30 consists of the following components:

- Control unit CPG 30
- Transmitter Mycom S CPM 153
- Injector CYR 10
- Multihose with assembly hose clip
- Power supply/control cable CPG 30 / Mycom S CPM 153 (5 m)
- Control lines CPG 30 / Injector CYR 10 (3 m).

### Control unit CPG 30

The control unit CPG 30 converts the commands of the CPM 153 into pneumatic signals and sends feedback signals such as assembly position and monitoring signals for compressed air and water. The injector CYR 10 doses water and cleaning agent to clean the electrode. The transmitter CPM 153 has five contacts and an alarm contact. Optionally, you can obtain an extra freely-configurable output contact for the control unit CPG 30. This can be used to control pneumatic valves in explosion hazardous zones or solenoid valves in non-hazardous zones to convey hot or aggressive media.

### Transmitter Mycom S CPM 153

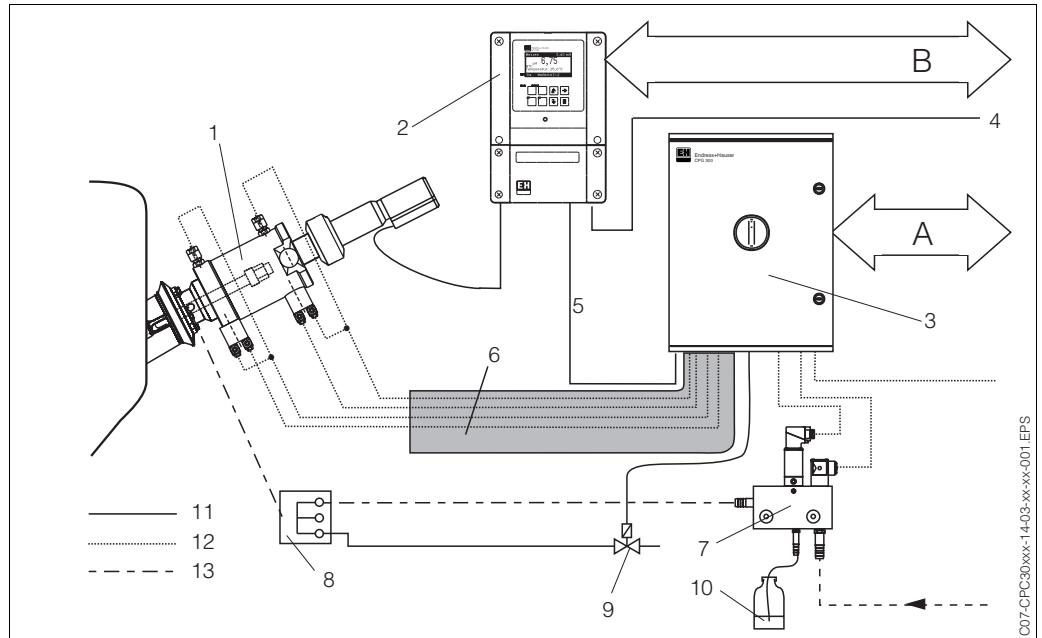
The CPM 153 is the central unit of the measuring point. It processes the measured variables, acts as communications centre and controls processes. The CPM 153 controls processes in the CPG 30 via an interface and processes its feedback signals.

In the Ex version, the CPC 30 is powered via the power supply/control cable from the CPM 153; in the non-Ex version, the CPC 30 has its own power supply connection.

## Measuring system

A complete measuring system consists of the following components:

- TopClean S CPC 30
- Pneumatically driven retractable assembly (e.g. CleanFit or ProbFit series) with pneumatic or inductive limit switches
- pH/redox electrode
- Electrode cable
- Cleaning agent with hoses
- RinseRinse block (for media which are controlled by additional valves)
- Hoses for injector CYR 10 / retractable assembly



Complete measuring system in non-Ex area

1: Retractable assembly CleanFit CPA 475 with pH / redox electrode

2: Transmitter Mycom S CPM 153

3: Control unit CPG 30

4: Power supply for Mycom S CPM 153

5: Power supply / control cable

6: Multihose

7: Injector CYR 10

8: RinseRinse block CPR 40 (optional)

A: Message and control signals: assembly position, program status, move assembly, program stop

B: Hold input, six relay contacts, two current outputs 0/4 ... 20 mA

Customer supplies:

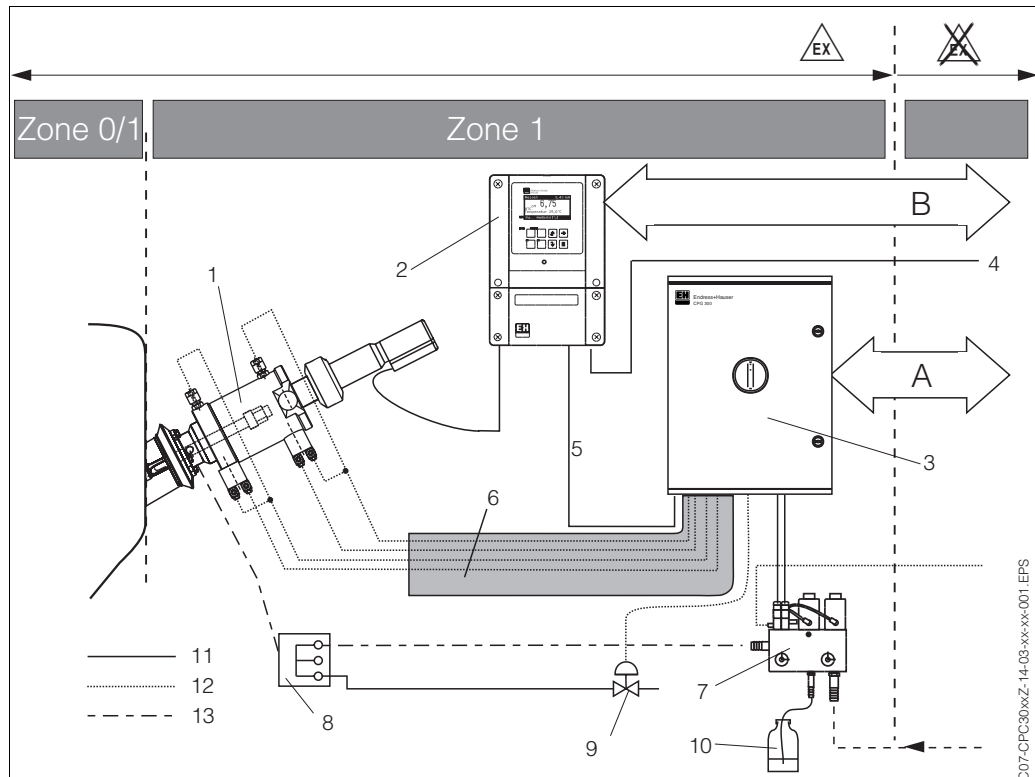
9: Additional valve

10: Cleaning solution

11: Electrical wiring

12: Compressed air

13: Liquids / cleaning mixture



Complete measuring system in Ex area

1: Retractable assembly CleanFit CPA 475 with pH / redox electrode

2: Transmitter Mycom S CPM 153

3: Control unit CPG 30

4: Power supply for Mycom S CPM 153

5: Power supply / control cable

6: Multihose

7: Injector CYR 10

8: Rinse block CPR 40 (optional)

A: Message and control signals: assembly position, program status, move assembly, program stop

B: Hold input, six relay contacts, two current outputs 0/4 ... 20 mA

Customer supplies:

9: Additional valve

10: Cleaning solution

11: Electrical wiring

12: Compressed air

13: Liquids / cleaning mixture

## Operating modes

For configuration, select the appropriate cleaning programme for your measuring point from the stored programmes in the instrument. You can freely adapt the cleaning programmes to your requirements or deactivate them as necessary.

You can choose between the following functions:

- **Automatic:** Freely programmeable weekly programme, separately for every week day with freely selectable interval lengths.
- **Cleaning:** Selection of cleaning programmes.
- **User programme:** Selection and configuration of customer-specific cleaning programme
- **Power failure programme:** In the event of a failure of the power supply or the communication, the system is automatically cleaned.
- **External control:** Programmes can be started via an external process control system.

## Cleaning programs

You have a choice of six programs in total.

- Programs Programme Clean, Clean S, Clean Int: These programs have a set procedure. The cleaning times or repeat cycles are freely selectable.
- Programs User 1 ... 3: User-definable. A simple way of programming is to copy predefined programs to user programs and adapt them.

Select the control for one external additional valve for your device under Order Code item **"External valve control"**. The "sterilisation" or "sealing water"\* functions are **only** enabled on devices fitted with a control function for additional external valves. You can freely use additional external valves as required in the freely definable user programs. For example, for pressurised media such as superheated steam, a second cleaner, cooling air, organic cleaner etc.

We recommend to use the rinse block CPR 40 for all the media, which shall be controlled by the additional valves. In any case, you have to convey hot and aggressive media via the additional valves and the rinse block (see "Materials").

Function → Program ↓	Cleaning	Sterilisation	Sealing water*
<b>Clean</b> (= cleaning)	✓	–	Control for 1 valve required
<b>Clean S</b> (= cleaning + sterilisation)	✓	Control for 1 valve required	–
<b>Clean Int</b> (= cleaning interval)	✓	–	Control for 1 valve required
<b>User 1</b>	✓	1 extra external valve can be used as required, e.g. for superheated steam or organic cleaner. Device control for 1 valve is required.	
<b>User 2</b>	✓		
<b>User 3</b>	✓		

### \*Sealing water

In processes with fibrous or adhesive media, assemblies with ball valves are fitted to block the medium, e.g. CleanFit CPA 473 or CleanFit CPA 475. To keep the rinse chamber free of medium, the sealing water valve opens automatically before the assembly emerges from the process. The counterpressure in the rinse chamber caused by the sealing water prevents the ingress of medium into the chamber. The sealing water pressure must then be greater than the pressure of the medium.

## Other functions

### Quick setup

This function configures the measuring point quickly and simply with the necessary basic settings, so that you can begin measuring immediately.

### SCC (= Sensor Condition Check)

This function monitors the state of the electrodes or the degree of electrode ageing. The status is displayed in the messages »good«, »medium« or »bad« . The electrode status is updated after each calibration. The »bad« message outputs an error message (maintenance requirement).

### SCS (= Sensor Check System)

The Sensor Check System informs you of deviations in pH glass resistance or the difference between the reference resistance and the normal range. It means that an incorrect measurement may be made due to blocking or damage to the pH electrode. Automatic cleaning can be triggered by such a signal.

### PCS (= Process Check System)

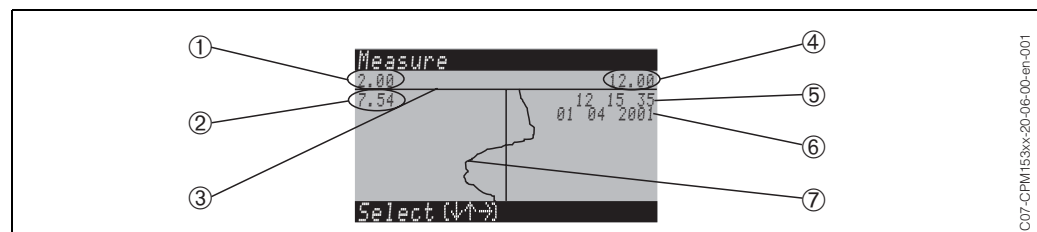
This function checks the measuring signal for deviations. If the measuring signal does not change over a specific period (1 hr, 2 hr, 4 hr), an alarm is triggered. This may be caused by soiling, blocking or similar.

### Logbooks

There are several logbooks available: The last 30 entries are saved to an error logbook, an operation logbook and a calibration logbook. You can retrieve the entries by specifying a date and time.

### Data logger

You can record two freely selectable parameters using the integrated data loggers and then view the results graphically in real time. You can retrieve the last 500 measured values using date and time. In this way, you can graphically display the process flow. This is a quick way of checking the process and provides a good possibility of optimising pH control.



Example for data logger (for Parameter 1, pH is selected here)

1: Minimum display range (selectable to -2 pH)

2: The measured value which is found on the scroll bar (3)

3: Scroll bar

4: Maximum display range (selectable to +16 pH)

5: Time when this measured value was recorded

6: Date of this measured value

7: Measured value curve

### Simple to control

The follow control functions are used in the CPC 30 :

- Limit value contact
  - Two-point controller with hysteresis for simple temperature control, for example
- PID controller
  - for one and two-sided processes
  - with freely adjustable P, I and D components
  - Includes configurable range-dependent gain (kinked curve)
  - Distinction between batch and flow (in-line) processes.

- Manipulated variable output

The manipulated variable can be output as a binary signal via relays or as a continuous signal via the current output:

- binary signal via relay as PWM (pulse length proportional), PFM (pulse frequency proportional) or dynamic PWM
- Current output (0/4 ... 20 mA): Analogue signal to control the actuator (for one or two actuator drives / "single" or "split range")

### DAT module

The DAT module is a memory device (EEPROM) which is inserted in the terminal compartment of the transmitter. Using the DAT module, you can

- save complete settings, logbooks and the data loggers of the CPC 30 system and
- copy your settings to other CPM 153 transmitters which have identical hardware functionality.

This considerably reduces the effort to install or service several measuring points.

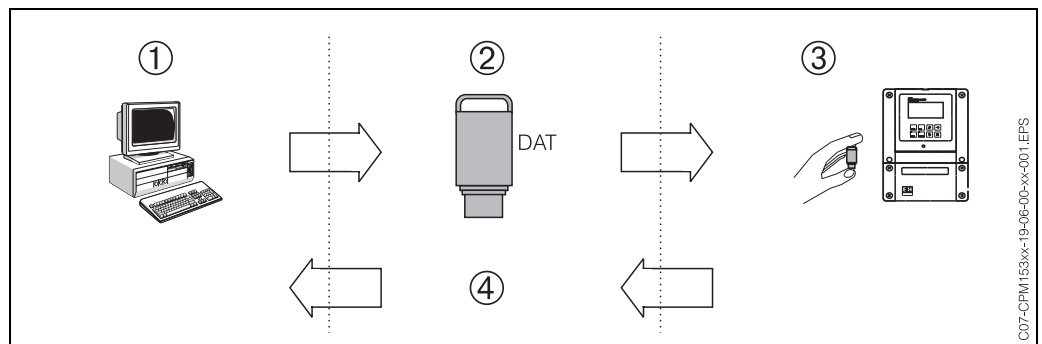
### Offline set-up using the PC tool Parawin (see "Accessories")

Using the PC tool Parawin, you can:

- ① Configure the whole measuring point on the PC in the familiar Windows environment and
- ② Save the settings to the DAT module.
- ③ Install the DAT module in a CPM 153 and transfer the entire configuration to the transmitter (= complete transmitter set-up).

Then you can set up other transmitters with the same configuration.

- ④ Similarly, you can use the DAT to read out logbooks and data loggers from the transmitter for documentation purposes and save them to your computer. You can then display the data logger data in graphic form on your PC.



Refer to the graphic on page 24 for information on the Parawin user interface.

## Calibration

### Accurate calibration

The instrument allows all field-tested calibration possibilities:

- Buffer self-recognition at manual calibration  
The buffer tables, e.g. to DIN, Endress+Hauser, Merck and Riedel de Haën/ Ingold, are saved in the instrument. Further buffer tables can also be programmed. During calibration, the instrument automatically recognises the buffer value.
- Manual calibration  
When calibrating manually, you can conduct either a two-point calibration (zero point and slope) or a single-point calibration, i.e. zero point calibration of the pH electrode.
- Numeric calibration (data input)  
The electrode data (zero point and slope) are entered using the keypad.
- Calibration logbook  
The data of the last 30 calibrations are saved to a list with date and time.

### Accurate measurement


- Medium temperature compensation (alpha value compensation)  
This allows high-accuracy measurement over wide temperature ranges. In this type of compensation, the temperature influence on the medium is self-compensated.
- Isothermic intersection compensation  
This allows high-accuracy measurement even at temperature fluctuations. Compensates the deviation between electrode zero point and isothermic intersection point.






# Input



Note!

The limit values for Ex version are specified separately, marked with  and displayed in *italics*.

Measured variables	pH, redox, temperature	
<b>pH</b>	Measuring range	–2.00 ... +16.00
	Measured value resolution	pH 0.01
	Zero point offset range	pH –2 ... +16
	Range of automatic temperature compensation	–50 ... +150°C
	Reference temperature	25°C (settable with medium temperature compensation)
	Slope adjustment	25 ... 65 mV / pH
	Input resistance under nominal operating conditions	$> 1 \cdot 10^{12} \Omega$
	Input current under nominal operating conditions	$< 1.6 \cdot 10^{-12} \text{ A}$
<b>Redox</b>	Measuring range	–1500 ... +1500 mV –3000 ... +3000%
	Measured value resolution	0.1 mV
	Zero point offset range	+200 ... –200 mV
	Assignment with % display	Settable, $\Delta$ for 100% = 150 ... 2000 mV
	Electrode offset	$\pm 120 \text{ mV}$
	Input resistance under nominal operating conditions	$> 1 \cdot 10^{12} \Omega$
	Input current under nominal operating conditions	$< 1.6 \cdot 10^{-12} \text{ A}$
	 <i>Sensor output circuit with type of protection EEx ia IIC. This circuit can be connected to sensors of category 1G (zone 0) as well.</i>	
	<i>Maximum output voltage <math>U_0</math></i>	DC 12.6 V
	<i>Maximum output current <math>I_0</math></i>	130 mA
	<i>Maximum output <math>P_0</math></i>	198 mW
	<i>Maximum outer capacity <math>C_0</math></i>	50 nF (with pH sensor CPS 401 IsFET: 150 nF)
	<i>Maximum outer inductivity <math>L_0</math></i>	100 $\mu\text{H}$
<b>Temperature</b>	Temperature sensor	Pt 100 (three-wire circuit) Pt 1000 NTC 30
	Measuring range (can also be displayed in °F)	–50 ... +150 °C NTC: –20 ... +100 °C
	Measured value resolution	0.1 K
	Temperature Offset	$\pm 5 \text{ K}$




<b>Current inputs 1 / 2</b> (passive, optional, terminals 21/22, 23/24)	Signal range	4 ... 20 mA
	Measured error <sup>1</sup>	max. 1% of measuring range
	Input voltage range	6 ... 30 V
	 <i>Intrinsically safe current inputs for connection with intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC.</i>	
	Maximum input voltage $U_i$	DC 30 V
	Maximum input current $I_i$	100 mA
	Maximum input power $P_i$	3 W
	Maximum inner capacity $C_i$	1.1 nF
	Maximum inner inductivity $L_i$	24 µH
<b>Resistance input</b> (active, optional, only with non-Ex)	Resistance ranges (switchable using software)	0 ... 1 kΩ 0 ... 10 kΩ
	Measured error <sup>1</sup>	max. 1% of measuring range
<b>Digital inputs</b> <b>E1-E3</b>	Input voltage	10 ... 40 V
	Internal resistance	$R_i = 5 \text{ k}\Omega$
	 <i>Intrinsically safe optoelectronic coupler for connection with intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC.</i>	
	Maximum input voltage $U_i$	DC 30 V
	Maximum inner capacity $C_i$	negligible
	Maximum inner inductivity $L_i$	negligible

<sup>1</sup>: acc. to IEC 746-1, under nominal operating conditions

#### CPG 30:

<b>Digital inputs</b>	Input voltage	10 ... 40 V
	Internal resistance	$R_i = 5 \text{ k}\Omega$
	Minimum duration of start signal	500 ms

## Output

Output signal	pH, redox, temperature	
<b>Current outputs (terminals 31/32, 33/34)</b>	Current range	0 / 4 ... 20 mA
	Error current	2.4 mA or 22 mA
	Measured error <sup>1</sup>	max. 0.2 % of current range end value
	Output distribution, settable	pH: $\Delta 1.8 \dots 18$ pH Redox: $\Delta 300 \dots 3000$ mV Temperature: $\Delta 17 \dots 170$ K
	Active current output (only non-Ex): Load	max. 600 $\Omega$
	Passive current output: Input voltage range	6 ... 30 V
	 <i>Intrinsically safe current circuits for connection with intrinsically safe electric circuits with type of protection EEx ib IIC.</i>	
	Maximum input voltage $U_i$	DC 30 V
	Maximum input current $I_i$	100 mA
	Maximum input power $P_i$	750 mW
	Maximum inner capacity $C_i$	negligible
	Maximum inner inductivity $L_i$	negligible
<b>Auxiliary voltage output (for digital inputs E1-E3)</b>	Voltage	15 V DC
	Output current	max. 9 mA
	 <i>Intrinsically safe current output circuit with type of protection EEx ib IIC.</i>	
	Maximum output voltage $U_o$	DC 15,8 V
	Maximum output current $I_o$	71 mA
	Maximum output $P_o$	1.13 W
	Maximum outer capacity $C_o$	50 nF
	Maximum outer inductivity $L_o$	100 $\mu$ H
<b>Interface to CPG 30</b>	Power supply:	
	Output voltage	11.5 ... 18 V
	Output current	max. 60 mA
	Communication (only internal)	RS 485
	 <i>Intrinsically safe current output circuit with type of protection EEx ib IIC.</i>	
<b>Limit value and alarm functions</b>	Setpoint adjustments	pH $-2.00 \dots 16.00$
	Hysteresis for switch contacts	pH: 0.1 ... 18 Redox absolute: 10 ... 100 mV Redox relative: 1 ... 3000%
	Error delay	0 ... 6000 s

**Relay contacts**

The NC/NO contact type can be set by software.

Switching voltage	max. 250 V AC / 125 V DC
Switching current	max. 3 A
Switching power	max. 750 VA
Life span	≥ 5 million switching cycles
With the maximum settable frequency in PFM	120 min <sup>-1</sup>
With the maximum settable period length in PWM	1 ... 999.9s
With PWM minimum switch-on period	0.4 s



*Intrinsically safe relay contact circuits for connection with intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC.*

Maximum input voltage $U_i$	DC 30 V
Maximum input current $I_i$	100 mA
Maximum input power $P_i$	3 W
Maximum inner capacity $C_i$	1.1 nF
Maximum inner inductivity $L_i$	24 μH

<sup>1</sup>: acc. to IEC 746-1, under nominal operating conditions

**Galvanic isolation**

At the same potential are:

- Current output 1 and the auxiliary energy supply output (term. 85/86)
- Current output 2, connection to interface CPG 30 and the resistance input (term. 21/22)

The remaining circuits are galvanically isolated from each other.

**CPG 30:**

Output voltage	30 V
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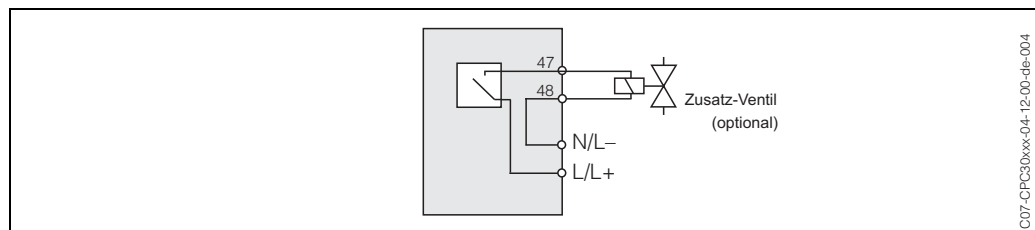
**Digital outputs**

Output current	100 mA
Output power	750 mW

**Control for an external valve and CYR 10 (non-Ex)**

Switched mains voltage:

Max. current	$I_{\max} = 3 \text{ A}$
Max. power	$P_{\max} = 750 \text{ VA}$



Switched mains voltage to control the additional external valve

**Control for external valve (Ex)**

pneumatic

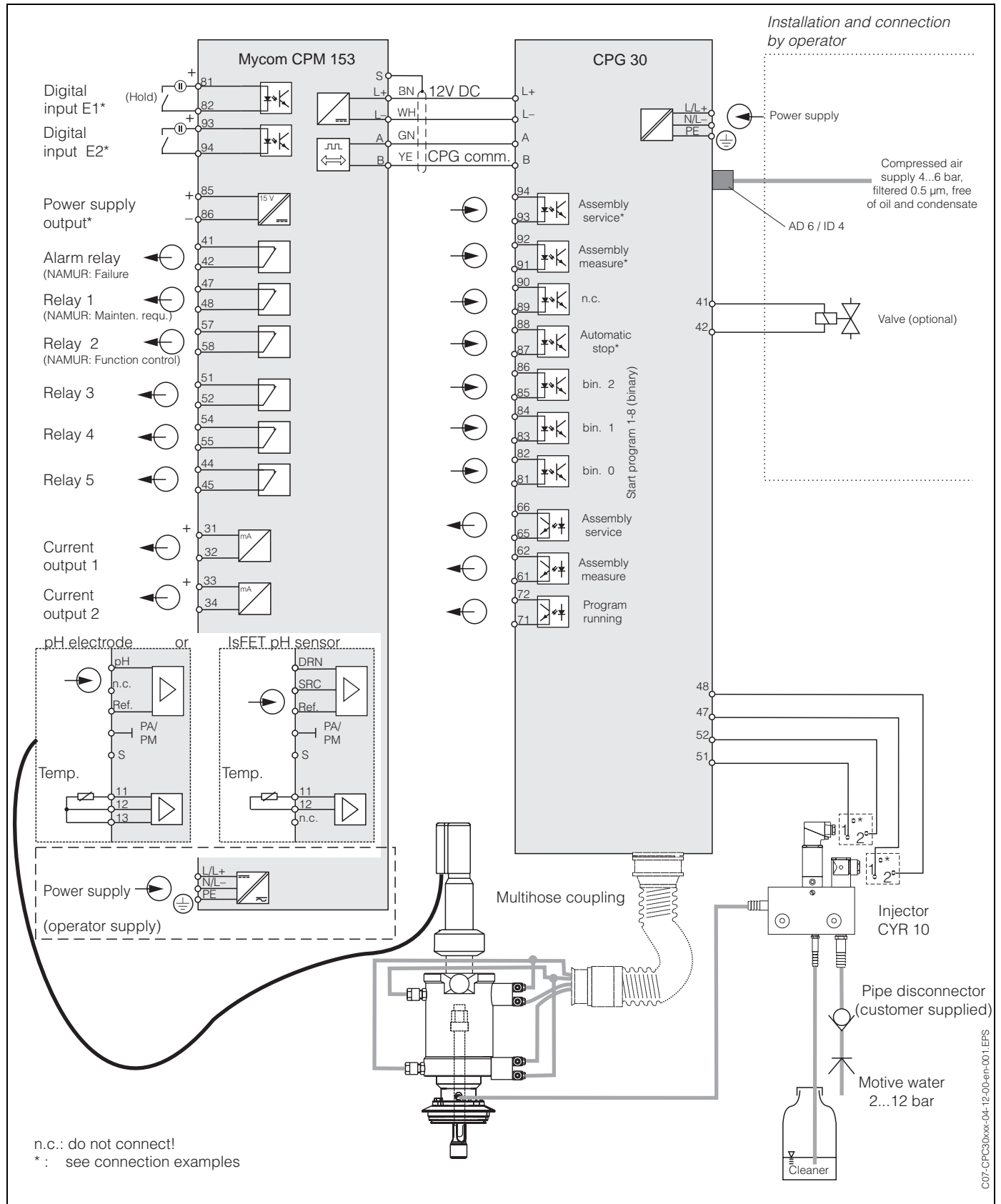
**Control for CYR 10Z (Ex)**

Switched voltage:	12 V
Max. current	$I_{\max} = 3 \text{ mA}$
Max. power	$P_{\max} = 10 \text{ mW}$

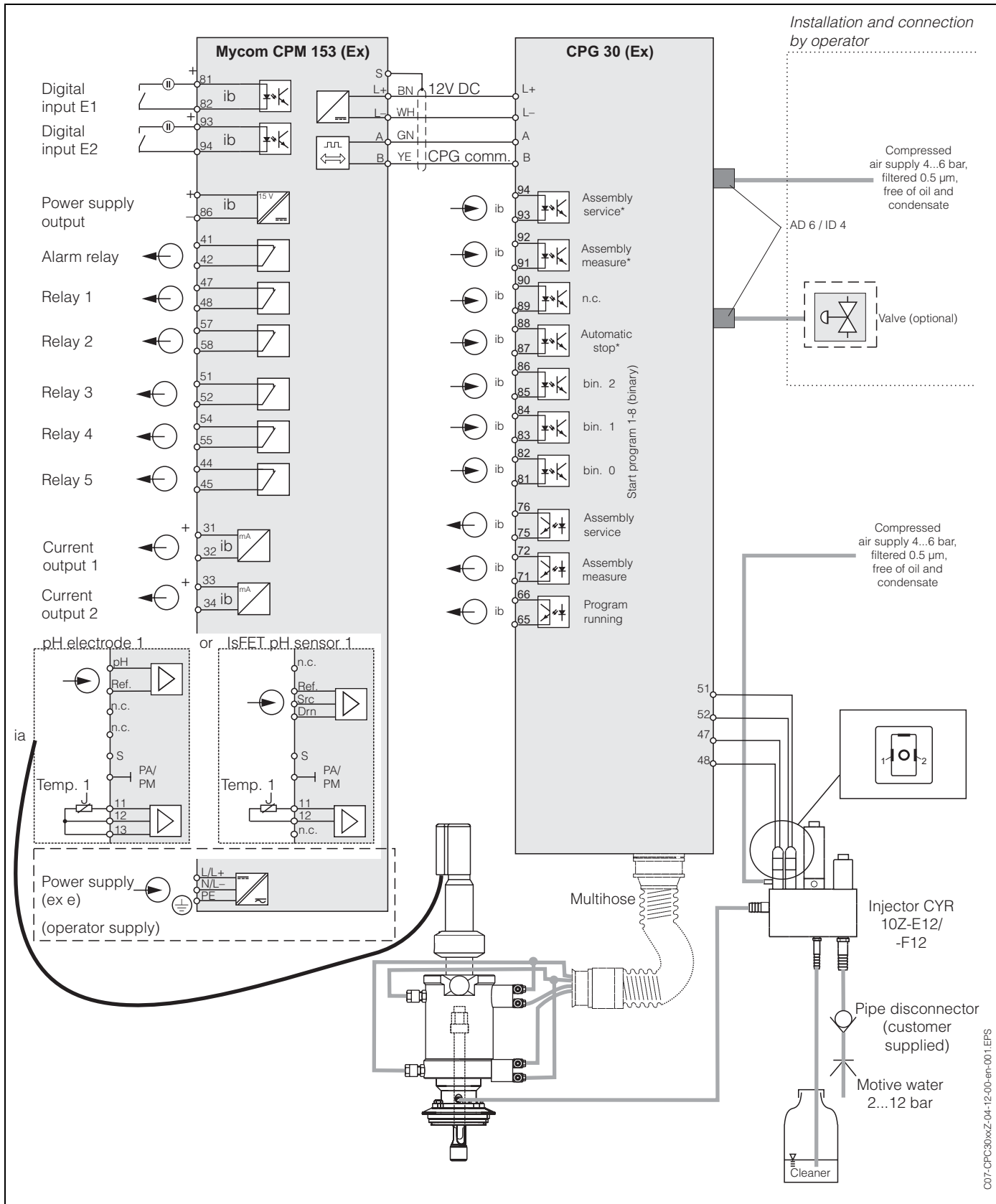
# Electrical connection

## Connection diagram

## Non-Ex area



## Ex area



**Contacts CPM 153**

In the transmitter Mycom S CPM 153, there are six relays available which you can configure using the software.




The **ChemoClean**® spray cleaning system with the injector CYR 10 automatically cleans the electrode. It is controlled by two contacts.

The NC/NO contact type can be switched by software.




Note!

- If you use NAMUR contacts (acc. to recommendations of the community of interest process control engineering of the chemical and pharmaceutical industry), the contacts are set to the relays as follows:
  - Failure to "ALARM"
  - Maintenance required to "RELAY 1" and
  - Function control to "RELAY 2".
- You can assign up to three relays to the controller, dependent on the instrument version.

Selection by software		NAMUR on	NAMUR off
<b>ALARM</b>		Alarm	Alarm
<b>RELAY 1</b>		Warning when maintenance required	Controller or ChemoClean
<b>RELAY 2</b>		Function control	Controller or ChemoClean

**Electrical connection data****Mycom S CPM 153:**

Power supply	230 V AC +10/–15% 24 V AC/DC +20/–15%
Frequency	47 ... 64 Hz
Power consumption	max. 10 VA
Separation voltage between galvanically isolated circuits	276 V <sub>rms</sub>
Terminals, max. cable cross-sectional area	2.5 mm <sup>2</sup>
 Connection data for 12V supply:	
Maximum output voltage $U_O$	18.5 V
Maximum output current $I_O$	100 mA
Maximum output power $P_O$	1.53 W
Maximum external capacity $C_O$	150 nF
Maximum external inductivity $L_O$	150 μH

**CPG 30:**

Power supply	230 V AC +10/–15% 24 V AC/DC +20/–15%
Frequency	47 ... 64 Hz
Power consumption	max. 12 VA
Separation voltage between galvanically isolated circuits	276 V <sub>rms</sub>
Terminals, max. cable cross-sectional area	2.5 mm <sup>2</sup>

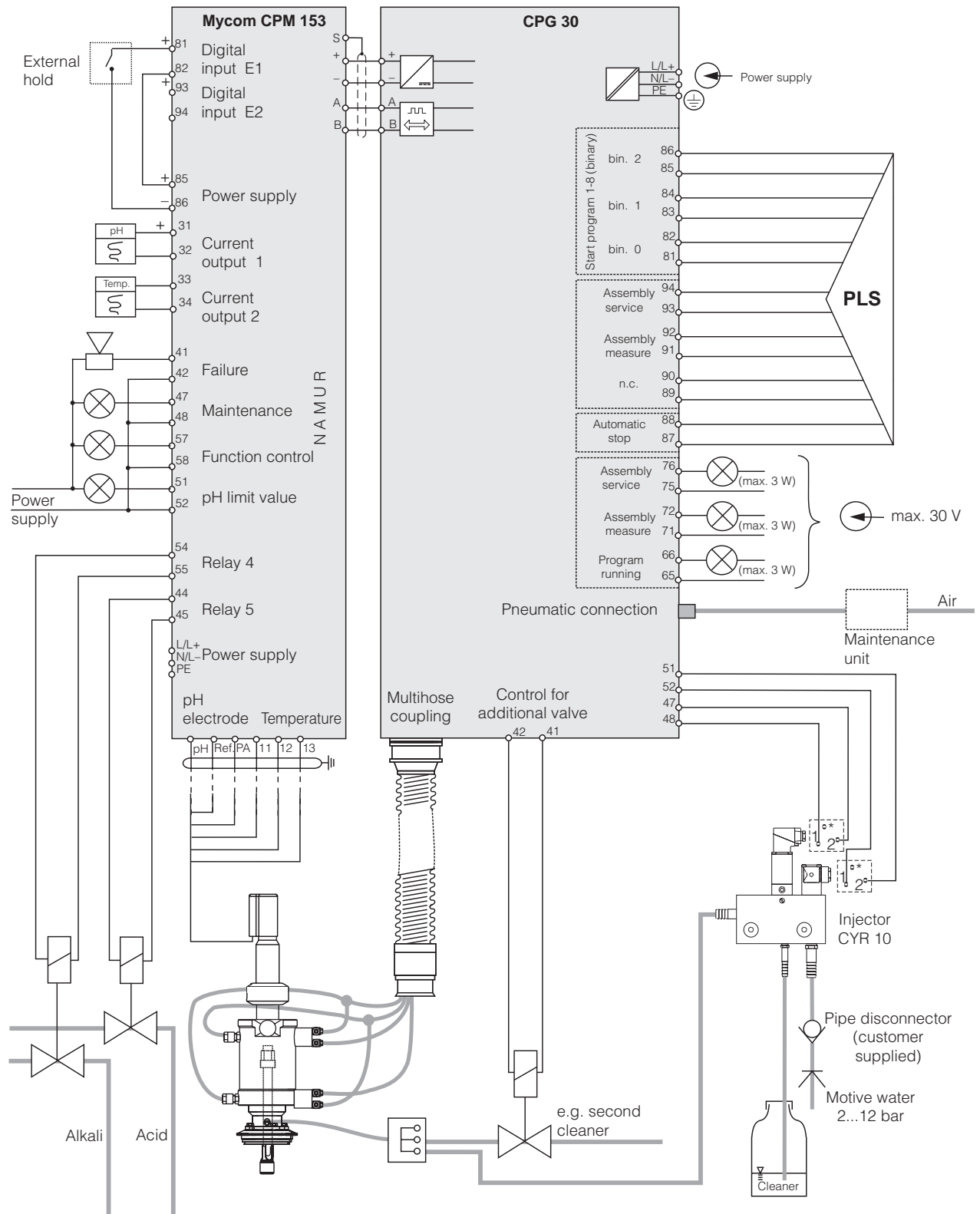
**CPG 30 (Ex)**

 : The devices in Ex version are powered from the transmitter CPM 153 (refer above for data).

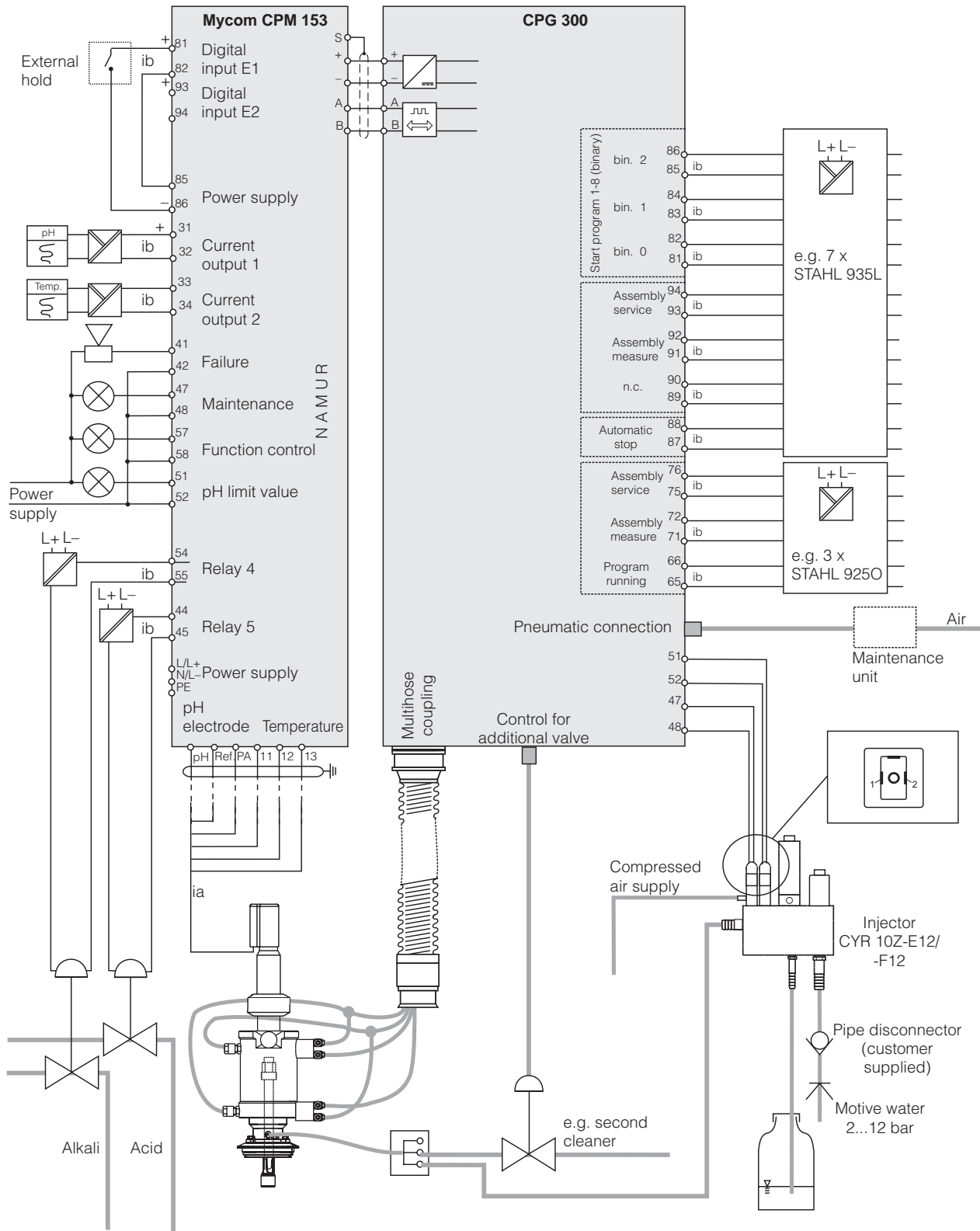


## Connection examples

### Non-Ex, double-sided neutralisation, pH limit value, NAMUR pin assignment, pH and temperature at current outputs, two additional valves, external control using PLS, assembly status display



# **Ex, double-sided neutralisation with equipment for two additional valves, rinse block, connected digital inputs and outputs**



C07-CPC30xZ-04-12-00-en-002 EPS

# Performance characteristics

<b>Measured value resolution</b>	pH: 0.01 Redox: 1 mV / 1% Temperature: 0.1 K
<b>Measurement deviation<sup>1</sup> display</b>	pH: max. 0.2% of measuring range Redox: 1 mV Temperature: max. 0.5 K
<b>Measured error<sup>1</sup></b>	max. 0.2% of current range end value
<b>Repeatability<sup>1</sup></b>	max. 0.1% of measuring range

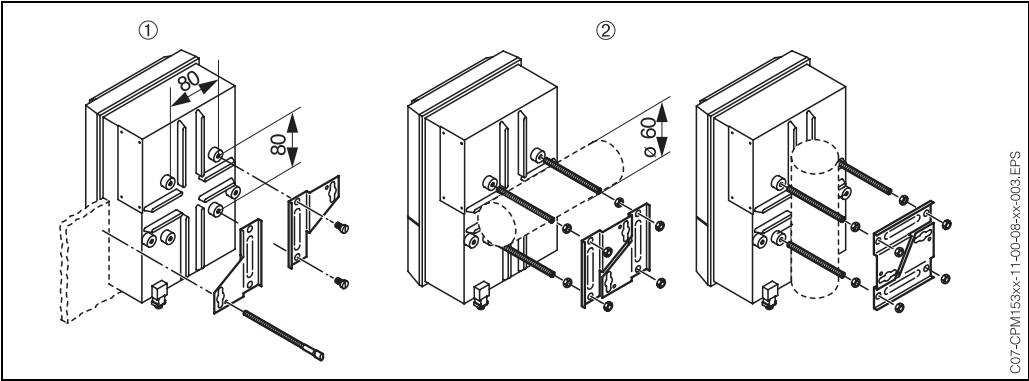
<sup>1</sup>: acc. to IEC 746-1, under nominal operating conditions

# Installation conditions

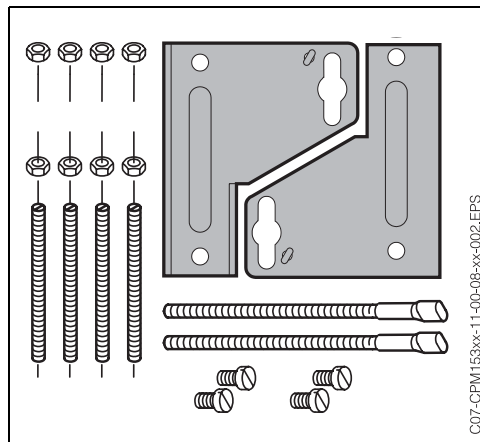
- Installation instructions**
- Always install the transmitter and the control unit so that the cable entries always point downwards.
- The components can be installed using the following methods:

Device	Wall mounting	Post/ pipe installation	Panel mounting
<b>Control unit CPG 30</b>	Mounting kit contained in scope of supply. Refer to figure below.	not applicable	not applicable
<b>CPM 153, covered</b>	Required: 2 screws ø 6 mm 2 rawl plugs ø 8 mm	Mounting kit contained in scope of supply. Refer to figure below.	Mounting kit contained in scope of supply. Refer to figure below.
<b>CPM 153, outdoors</b>	If installed outdoors, weather protection cover CYY102-A required	Weather protection cover CYY102-A and two round post fixtures required	not usual

- The transmitter CPM 153 is normally installed as a panel-mounted unit.
- The transmitter CPM 153 can be fixed to a vertical or horizontal pipe using the supplied mounting kit. For outdoor installation, a weather protection cover CYY 101 is required. It can be fitted to the field unit using all kinds of fixtures (refer to "Accessories").



Panel mounting ① and post mounting ② for CPM 153



Mounting the transmitter in panels or on posts CPM 153 using supplied mounting kit (see left).

If you want to mount the device on the front of an air-tight panel, you must also use a flat seal (see "Accessories").

Required installation cutout for panel mounting:

$161^{+0.5} \times 241^{+0.5}$  mm.

The installation depth is

approx. 134 mm.

The maximum pipe diameter is

60 mm.

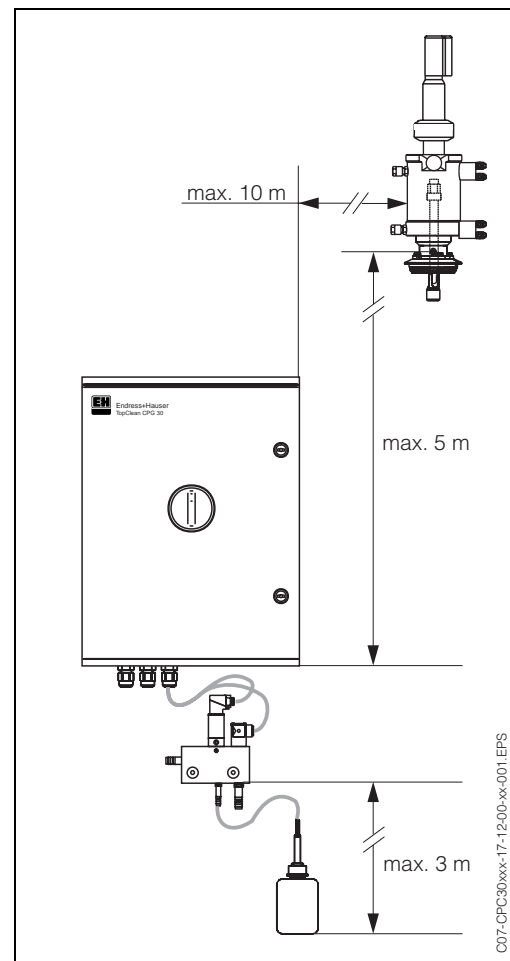
For outdoor use, the weather protection cover CYY 101 is required. This is available as an accessory.

#### Water and compressed air connections

Water	4 ... 6 bar, filtered 100 µm, max. 56°C
Compressed air	4 ... 6 bar, filtered 0.5 µm, free from oil and condensate
Screw unions	bulkhead gland AD 6 / ID 4

#### Injector CYR 10:

max. suction height concentrated cleaner	3 m
Motive water volume	min. 2 l/min. max. 10 l/min.
Motive water pressure	2 ... 12 bar



## Ambient conditions

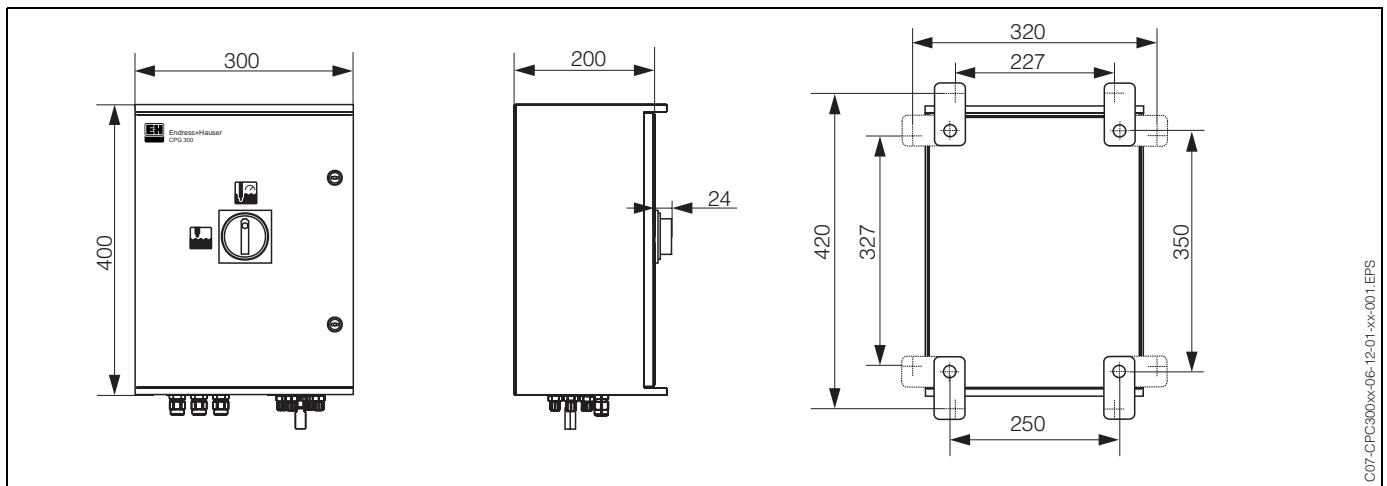
<b>Ambient temperature</b>	-10 ... +55°C (Ex: -10 ... +50°C)	
<b>Ambient temperature limit</b>	-20 ... +60°C (Ex: -10 ... +50°C)	
<b>Storage and transport temperature</b>	-30 ... +80°C	
<b>Relative humidity</b>	10 ... 95%, non-condensing	
<b>Ingress protection</b>	CPM 153: IP 65	CPG 30: IP 54
<b>Electromagnetic compatibility</b>	Interference emission and interference immunity to EN 61326: 1997 / A1:1998	
<b>Safety requirements</b>	Complies with general safety requirements acc. to EN 61010. Complies with NAMUR Recommendations NE 21.	

## Process conditions

<b>Temperature range media conveyed</b>	max. 60°C
<b>Pressure of media conveyed</b>	Aggressive or hot media which are conveyed via additional valves (optional) must not be conveyed by the injector CYR 10 of the CPC 30 system. Use the rinse block CPR 40 for that.

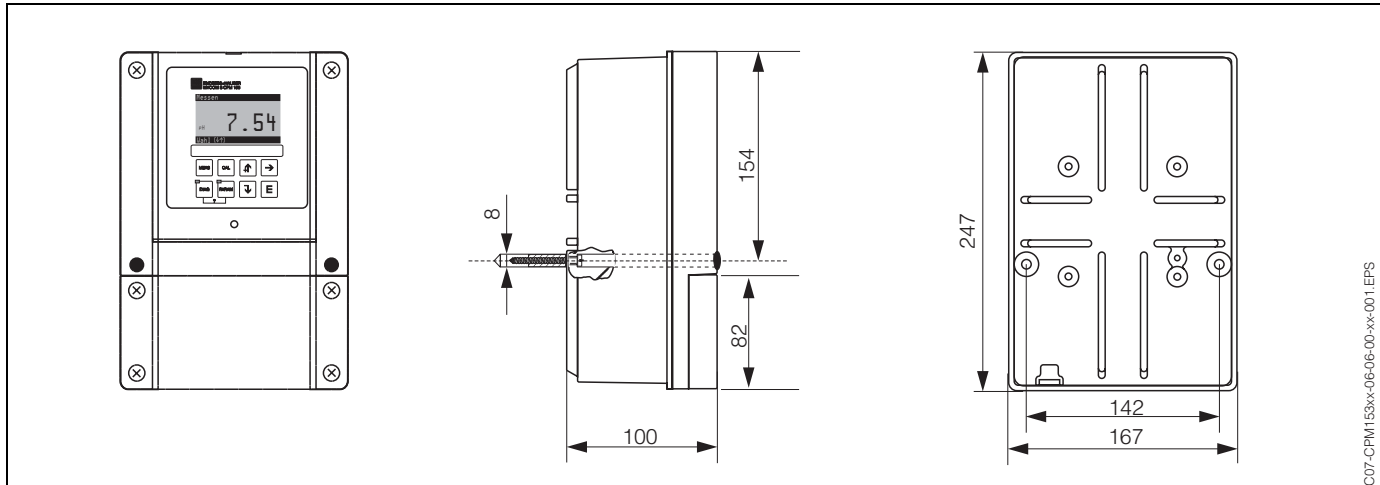
## Mechanical construction

### Design / dimensions



Dimensions of control unit CPG 30

C07-CPC300xx-06-12-01-xx-001.EPS



*Dimensions of transmitter CPM 153*

C07-CPM153xx-06-06-00-xx-xx-001.EPS

### Weight

CPG 30: approx. 20 kg

CPM 153: max. 6 kg

### Materials

CPM 153	Housing	GD-AISI 12 (Mg content 0.05%), plastic-coated
	Front	Polyester, UV-resistant
CPG 30	Housing	Ex and non-Ex: Polyester GF
Injector CYR 10	Housing	PVC (in contact with medium)

## Display and operating interface

You can set up the complete measuring point with using the operating panel on the transmitter CPM 153 or using the offline set-up function in the PC tool.

If you are using several devices, you can copy the entire set-up of one device to another device using the DAT module.

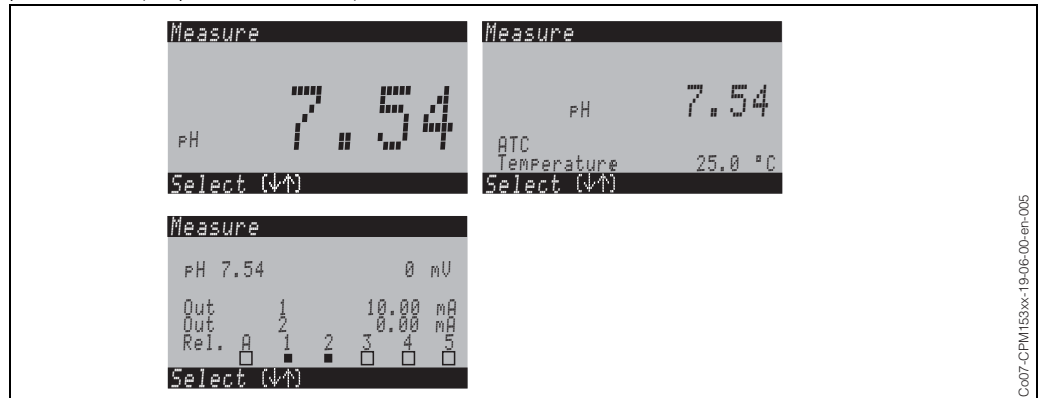
### Display elements Mycom S CPM 153

Backlit LC display with dot matrix, 128 x 64 dots

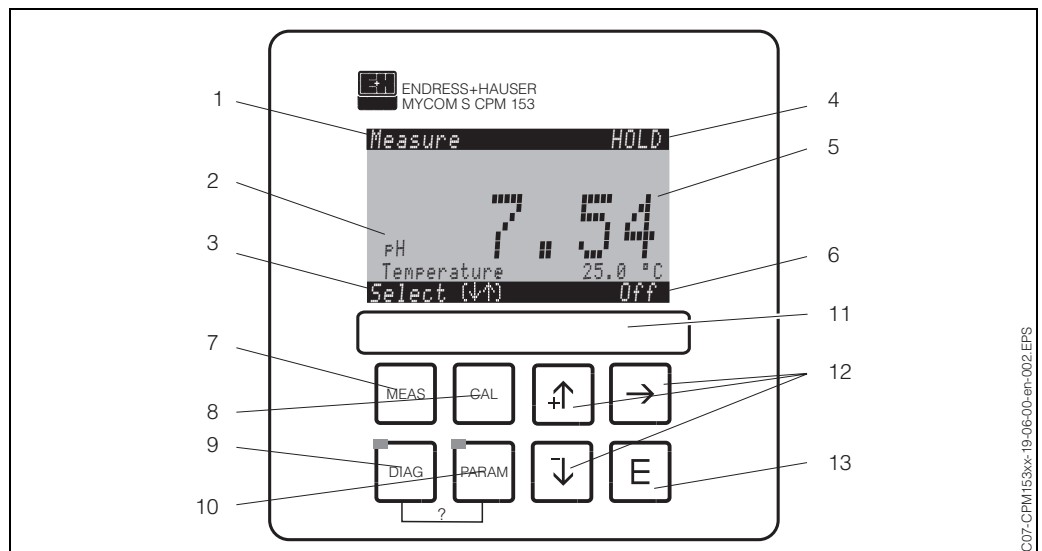
#### Display possibilities:

*One circuit instrument:*

pH/redox value, temperature, current outputs 1 and 2, contact states, status CPG 30, control parameters (setpoint, set values)



C07-CPM153xx-19-06-00-en-005



C07-CPM153xx-19-06-00-en-002 EPS

Backlit dot matrix display, display example

1: Current measured variable

2: Current menu option

3: Measured variable

4: Select: arrow keys for scrolling through the menu/through the measuring menus, »E« to browse down

5: "Meas" (Measuring mode) key

6: "Cal" (Calibration) key

7: "Diag" (Diagnosis menu) key

8: "Param" (Parameter entry menu) key

9: ENTER key

10: Scroll keys

11: Labelling strip

12: Display of measured value

?: Press DIAG and PARAM together to open the Help page

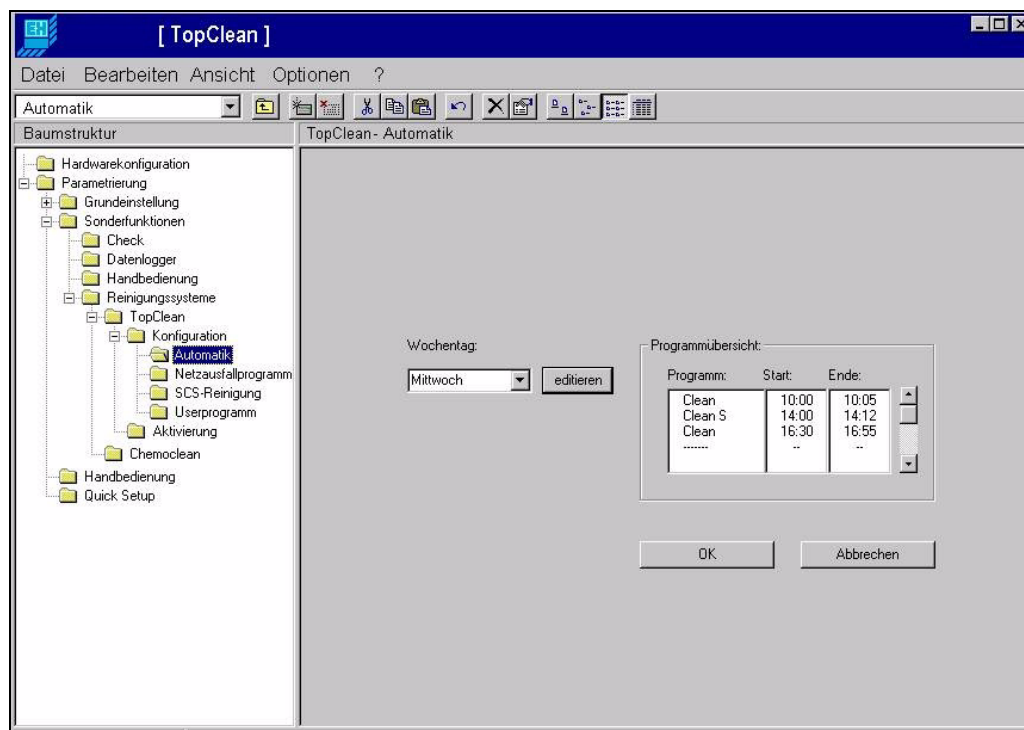
## Operating elements Mycom S CPM 153

There are 4 main menus available for instrument operation:

- Measurement ("MEAS")
- Configuration ("PARAM")
- Calibration ("CAL") and
- Diagnostics ("DIAG").

Press the "MEAS", "PARAM", "CAL" and "DIAG" keys to switch to the appropriate selection menu. Here, the possible options are displayed in plain text and selected elements are displayed in reverse video. Selections are made using the arrow keys, which are also used to edit the numeric values.

## Offline configuration user interface using Parawin (Accessories)



The PC tool Parawin provides you with a tool for configuring your measuring point on a PC using a simple and self-explanatory menu structure (an example window can be seen above). Write the configuration to the DAT module using the RS232 interface on the PC. The data can then be transferred to the transmitter.

## Certificates and approvals

### CE symbol

The TopCal S system complies with the statutory requirements of the harmonised EC directives. Endress+Hauser confirms the successful testing of the system by affixing the **CE** symbol.

### Ex approvals

- ATEX II (1) 2G EEx em ib[ia] IIC T4
- FM Cl. I, Div. 2, with NI input and output circuits, sensor IS Cl. I Div. 1
- FM Cl. I, Div. 2, with NI input and output circuits
- CSA Cl. I, Div. 2, sensor IS Cl. I Div. 1
- TIIS
- EC system approval



## Ordering information

### Product structure for the complete system TopClean S CPC 30

#### Scope of delivery of basic equipment:

Control unit CPG 30, transmitter Mycom S CPM 153 with 6 relays and DAT module, injector CYR 10, multihose (5 m), hose clip, power supply cable CPM 153 – CPC (5 m)

Approvals									
A	Basic equipment: non-Ex								
G	With ATEX approval II (1) 2G EEx em ib[ia] IIC T4								
O	With FM approval Cl. I, Div. 2, with NI input and output circuits, sensor IS Cl. I Div. 1								
P	With FM approval Cl. I, Div. 2, with NI input and output circuits								
S	With CSA approval Cl. I, Div. 2, with NI input and output circuits, sensor IS Cl. I Div. 1								
T	With TIIS approval								
Control for external valves									
0	Basic equipment: no control for external valves								
1	Control for 1 external valve, non-Ex								
2	Control for 1 external valve, Ex								
Measurement input Mycom S CPM 153									
1	1 measuring circuit for glass electrodes pH/redox and temperature								
2	1 measuring circuits for glass electrodes / IsFET sensors pH/redox and temperature								
Measurement output Mycom S CPM 153									
A	2 current outputs 0/4 ... 20 mA, passive (Ex and non-Ex)								
B	2 current outputs 0/4 ... 20 mA, active (non-Ex)								
C	HART with 2 current outputs 0/4 ... 20 mA, passive								
D	HART with 2 current outputs 0/4 ... 20 mA, active								
E	PROFIBUS-PA, without current outputs								
Power supply									
0	230 V AC								
1	100 ... 115 V AC								
8	24 V AC / DC								
Language versions									
A	E / D								
B	E / F								
C	E / I								
D	E / ES								
E	E / NL								
F	E / J								
Cable connection									
0	Cable glands M 20 x 1.5								
1	Cable glands NPT ½"								
3	Cable glands M 20 x 1,5, PROFIBUS-PA M12 plug								
4	Cable glands NPT 1/2", PROFIBUS-PA M12 plug								
Length of multihose									
0	5 m								
1	with electrical heating, 5 m								
2	with electrical heating, 10 m								
8	10 m								
Additional features									
0	Standard version								
1	Preparation for housing CYC 300								
9	Special version acc. to customer specifications								
Configuration									
A	Factory settings								
CPC 30-									Complete order code

## Accessories

### Offline configuration with Parawin

The Parawin tool provides you with a graphic PC operating program for configuring your measuring point at the PC using a simple and self-explanatory menu structure. Write the configuration to the DAT module using the RS232 interface on the PC. The module can then be plugged into the transmitter. You can switch the language via software.

The offline configuration system consists of a DAT module, the software and a DAT interface (RS 232). Required operating system: Windows NT/95/98/2000.

Order No.: 51507133 (only Mycom S CPM 153)

Order No.: 51507563 (TopCal S, TopClean S / Mycom S)

### DAT module

Additional memory device for *saving/copying* complete settings, logbooks and the data loggers.

Order No.: 51507175

### Flat seal

Flat seal for air-tight panel mounting of the transmitter CPM 153.

Order No.: 50064975

### Assemblies

Type	Properties	Applications
<b>CleanFit</b> CPA 471 / 472 / 473 / 474 / 475	Retractable assembly for manual or pneumatic operation. Cleaning and calibrating the electrode is possible under process conditions. CPA 475: 3A approval, application pending with EHEDG. Technical Information: CPA 471: TI 217C/07/en, Order No.: 51502596 CPA 472: TI 223C/07/en, Order No.: 51502645 CPA 473: TI 344C/07/en, Order No.: 51510923 CPA 474: TI 345C/07/en, Order No.: 51510925 CPA 475: TI 240C/07/en, Order No.: 51505599	<ul style="list-style-type: none"> <li>Process industry (471, 472, 473 / 474)</li> <li>Food, pharmaceutical applications (475)</li> <li>Biotechnology (475)</li> </ul>

### pH/redox electrode

Type	Properties	Applications
<b>OrbiSint</b> CPS 11/12/13	Universally applicable, very easy to clean and insensitive to soiling due to PTFE diaphragm, pressures up to 6 bar, conductivity > 50 µS/cm Technical Information TI 028C/07/en, 50054649	<ul style="list-style-type: none"> <li>Process industry</li> <li>Industrial wastewater</li> <li>Detoxification (cyanide, chrome)</li> <li>Neutralisation</li> </ul>
<b>CeraLiquid</b> CPS 41/42/43	Electrodes with ceramic diaphragms and KCl liquid electrolyte, use with counterpressure, explosion-proof up to 8 bar Technical Information TI 079C/07/en, 50059346	<ul style="list-style-type: none"> <li>Process industry</li> <li>Ultrapure water</li> <li>Boiler feed water</li> <li>Detoxification (cyanide)</li> </ul>
<b>CeraGel</b> CPS 71	Gel electrode with double-chamber reference system. Long-term stability, short response time, very long toxic path, resistant to alternating temperature and pressure cycles Technical Information TI 245C/07/en, 51505837	<ul style="list-style-type: none"> <li>Process industry</li> <li>Food processing</li> <li>Water treatment</li> </ul>
<b>OrbiPore</b> CPS 91	Gel electrode with open aperture diaphragm for heavily soiled media. Resistant to pressure and concentration fluctuations. Pressures up to 13 bar. Technical Information TI 375C/07/en, 51513127	<ul style="list-style-type: none"> <li>Process industry</li> <li>Industrial wastewater</li> </ul>
<b>TopHit</b> CPS 471	Rupture-proof pH sensor based on IsFET technology. Short response time, very high resistance to alternating temperature cycles, sterilisable, almost no acid or alkaline errors Technical Information TI 283C/07/en, 51506685	<ul style="list-style-type: none"> <li>Process industry</li> <li>Food, pharmaceutical applications</li> <li>Water treatment</li> <li>Biotechnology</li> </ul>

**Connection accessories**

- **CPK 1:** Version with pilot wire and additional outer screen, sheathed in PVC,  $\varnothing$  7.2 mm. Extension with cable CYK 71 possible. Order No.: of CYK 71: 50085333
- **CPK 9:** For pH/redox electrodes with integrated temperature sensor and TOP68 plug-in head (version ESA, ESS). Extension with cable CYK 71 possible.
- **CPK 12:** For IsFET pH sensors and pH/redox electrodes with integrated temperature sensor and TOP68 plug-in head. Extension with cable CYK 12 possible.
- **Junction box VBE:** For Ex area Zone 0. Order No.: 50003993
- **Junction box VBM:** Junction box for extending measuring cable connection between electrode and transmitter. Two screw unions for e.g. combination electrode. Material: aluminium casting, ingress protection IP 65. Order No. 50003987
- **Junction box VBA:** Junction box for extending measuring cable connection between electrode and transmitter. Four screw unions for e.g. separate reference electrode. Material: aluminium casting, ingress protection IP 65. Order No. 50003987

**Rinse connection adapter**

Rinse connection adapter CPR 40 for the transport of cleaning agents for use with retractable assemblies.

**Spray cleaning system**

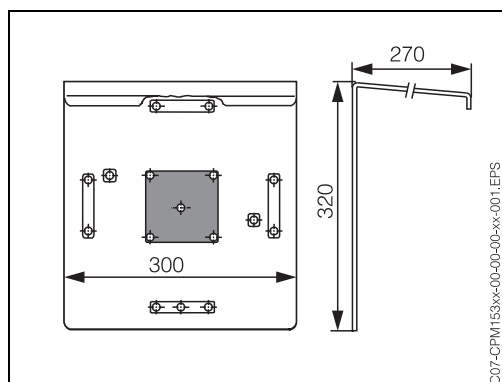
CYR 10 / CYR 20 ChemoClean Spray Cleaning System for the transport of cleaning agents or acids for use with retractable assemblies.

**Weather protection cover  
CYY 101**

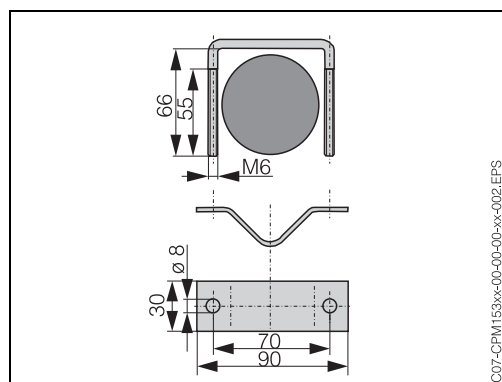
For installing the transmitter outdoors, the weather protection cover CYY 101 is required. Order No.: CYY101-A

**Round post fixture for  
weather protection cover**

To fix the weather protection cover to vertical or horizontal posts with diameters of up to 60 mm. Order No.: 50062121



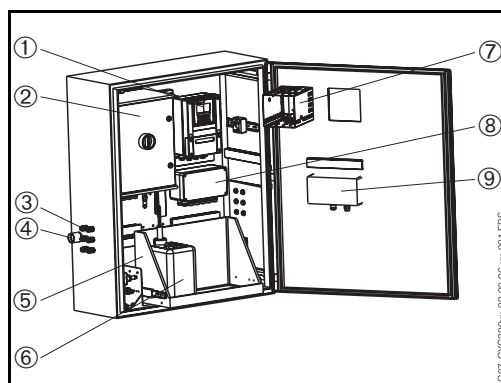
Weather protection cover CYY 101



Round post fixture for CYY 101

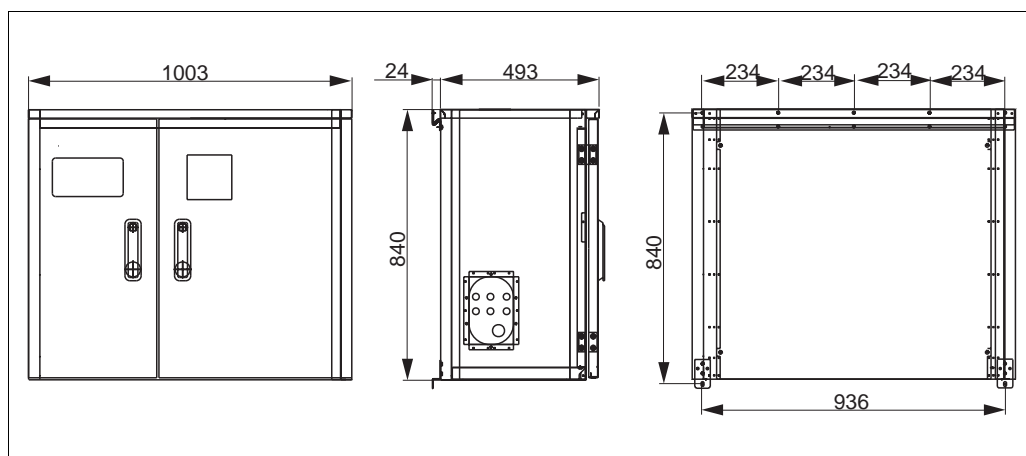
**Housing CYC 300**

Housing for TopClean S CPC 30, with rack for buffer and cleaner solutions. Operating panel with alarm LED and lock for programme start and assembly drive. Window for Mycom S or MemoGraph S. For Ex and Non-Ex applications. Material: plastic or stainless steel.

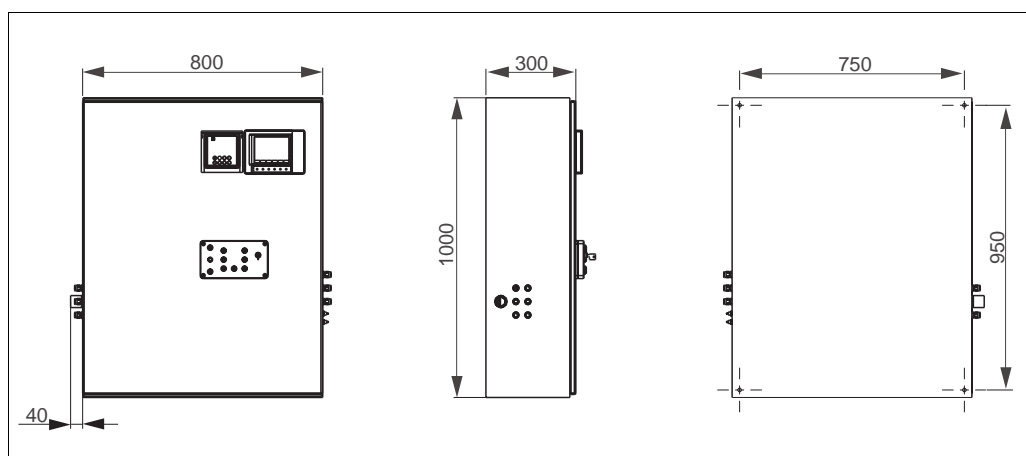


- 1 Mycom S CPM 153
  - 2 TopClean S CPC 30
  - 3 Pg cable glands
  - 4 Multihose gland
  - 5 Rack
  - 6 Buffer and cleaner solutions
  - 7 MemoGraph S
  - 8 Programme control unit
  - 9 Operating panel
- (Order operating panel separately:  
Order No.: 51512891)

*Housing CYC 300*



*Dimensions housing CYC 300, stainless steel version*



*Dimensions of housing CYC 300, plastic version*



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## Supplementary documentation

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### Supplementary documentation

- ☐ Operating Instructions TopClean S CPC 30, BA 235C/07/en, Order No. 51504339
- ☐ Operating Instructions PROFIBUS-PA, BA 298C/07/en, Order No. 51507116
- ☐ Operating Instructions HART, BA 301C/07/en, Order No. 51507114
- ☐ Ex Safety Instructions, XA 236C/07/a3, Order No. 51506729
- ☐ Technical Information Mycom S CPM 153, TI 233C/07/en, Order No. 51503788
- ☐ Technical Information CleanFit CPA 471, TI 217C/07/en, Order No. 51502595
- ☐ Technical Information CleanFit CPA 472, TI 223C/07/en, Order No. 51502644
- ☐ Technical Information CleanFit CPA 473, TI 344C/07/en, Order No. 51510923
- ☐ Technical Information CleanFit CPA 474, TI 345C/07/en, Order No. 51510925
- ☐ Technical Information CleanFit CPA 475, TI 240C/07/en, Order No. 51505598
- ☐ Technical Information OrbiSint CPS 11/12/13, TI 028C/07/en, Order No. 50052557
- ☐ Technical Information CeraLiquid CPS 41/42/43, TI 079C/07/en, Order No. 50058726
- ☐ Technical Information CeraGel CPS 71, TI 245C/07/en, Order No. 51505837
- ☐ Technical Information OrbiPore CPS 91, TI 375C/07/en, Order No. 51513127
- ☐ Technical Information TopHit CPS 471, TI 283C/07/en, Order No. 51506687
- ☐ Technical Information CPK 1-12, TI 118C/07/en, Order No. 50068525
- ☐ Technical Information CPR 40, TI 342C/07/en, Order No. 51510059
- ☐ Technical Information CYR 10 / 20, TI 046C/07/en, Order No. 50014223



**Subject to modification**

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