# Technical Information
# **Topclean S CPC30**
## Automation of pH/ORP measurements

## Automatic measuring and cleaning system in hazardous and non-hazardous areas

**Application**
The automatic pH/ORP measuring and cleaning system 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 example:
- Process industry
- Wastewater treatment
- Food industry
- Pharmaceutical industry

**Your benefits**
- Very high degree of safety:
  - In-process cleaning, no electrode removal necessary
  - System status messages with feedback to the control desk
- High availability
  - Long electrode life due to measuring cycle
  - Offline configuration (optional): very simple set-up on PC
- Short amortization times
  - Low maintenance costs thanks to automatic cleaning of electrode
- Low maintenance effort even for heavily polluted and aggressive media
- Communication via PROFIBUS PA (Profile 3.0) and HART
- Memosens technology

Endress+Hauser
People for Process Automation

# Function and system design

## Measuring principle

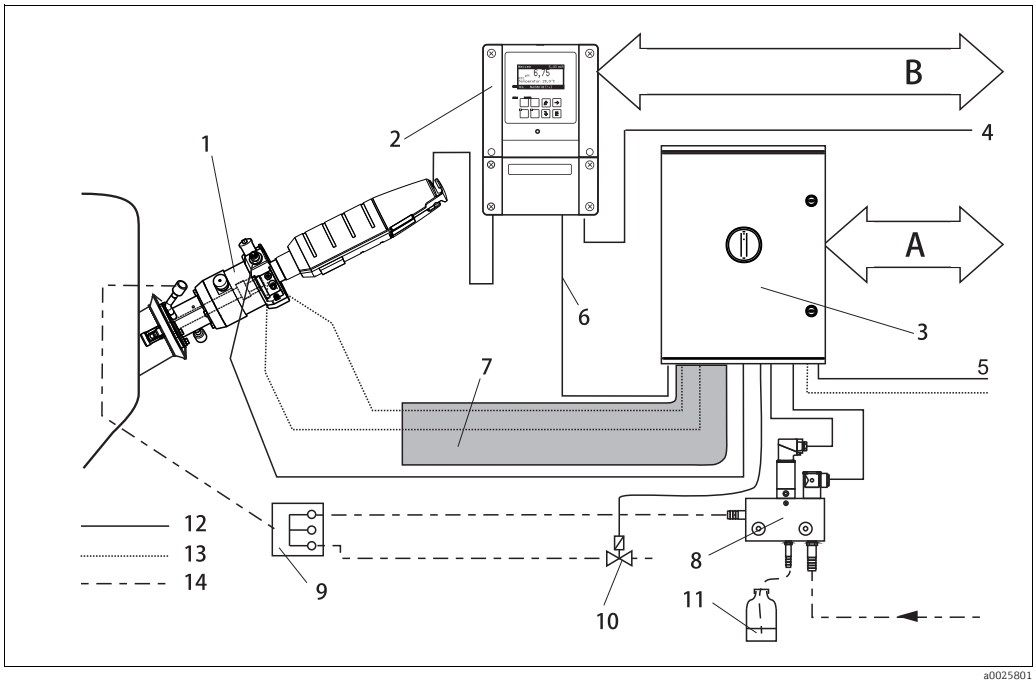
**CPG30 control unit**
The control unit CPG30 converts the commands of the CPM153 into pneumatic signals and sends feedback signals such as assembly position and monitoring signals for compressed air and water. The injector CYR10 doses water and cleaning agent to clean the electrode. The transmitter CPM153 has five contacts and an alarm contact. Optionally, you can obtain an extra user-configurable output contact for the control unit CPG30. This can be used to control pneumatic valves to convey hot or aggressive media (including steam), for instance.

**Mycom S CPM153 transmitter**
The transmitter CPM153 is the central unit of the measuring point. It processes the measured variables, acts as the communications center and controls processes. The transmitter controls the processes in the CPG30 via an interface and processes its feedback signals.

In the hazardous area version (Ex), the CPC30 is powered by the CPC153 via the power supply/control cable; in the non-hazardous area version (non-Ex), the CPC30 has its own power supply connection.

## Measuring system

A complete measuring system consists of the following components:
- Topclean S CPC30
- Pneumatically driven retractable assembly (e.g. CleanFit series) with pneumatic or inductive limit switches
- pH/ORP sensor
- Measuring cables
- Cleaning agent with hoses
- Rinsing block (for media which are controlled by additional valves)
- Hoses for injector CYR 10 / retractable assembly

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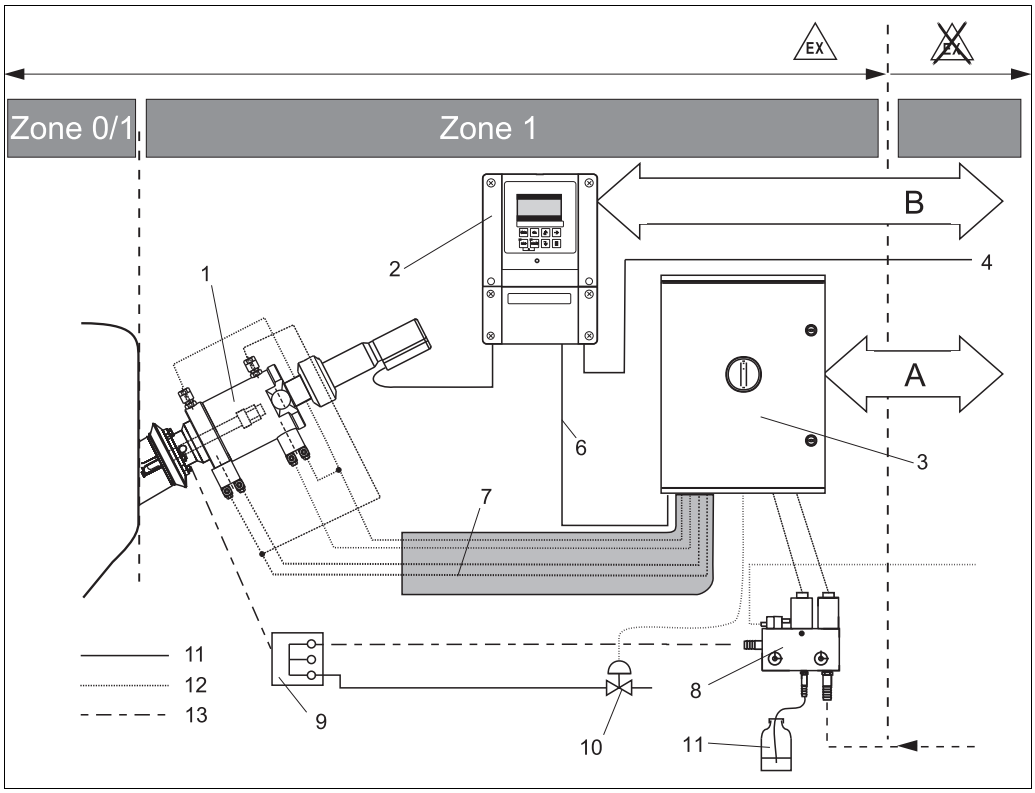
*Complete measuring system in non-hazardous area*

| | | | |
|---|---|---|---|
| *1* | *CPA875 retractable assembly with pH/ ORP sensor* | *9* | *Rinsing block* |
| *2* | *Mycom S CPM153 transmitter* | *10* | *Additional valve (optional)* |
| *3* | *CPG30 control unit* | *11* | *Cleaning solution* |
| *4* | *Power supply for Mycom S CPM153* | *12* | *Electric cable* |
| *5* | *Power supply for CPG30 control unit* | *13* | *Compressed air line* |
| *6* | *Communication/power supply cable* | *14* | *Liquids/cleaning mixture* |
| *7* | *Multihose* | *A* | *Status and control signals* |
| *8* | *CYR10 injector* | *B* | *Hold input, six relay contacts, two 0/4 to 20 mA current outputs* |




*Complete measuring system in hazardous area*

| | | | |
|---|---|---|---|
| *1* | *CPA475 retractable assembly with pH/ ORP sensor* | *9* | *Rinsing block* |
| *2* | *Mycom S CPM153 transmitter (Ex)* | *10* | *Additional valve (optional)* |
| *3* | *CPG30 control unit (Ex)* | *11* | *Cleaning solution* |
| *4* | *Power supply for Mycom S CPM153-G* | *12* | *Electric cable* |
| *6* | *Communication/power supply cable* | *13* | *Compressed air* |
| *7* | *Multihose* | *14* | *Liquids/cleaning mixture* |
| *8* | *CYR10 injector (Ex)* | *A* | *Status and control signals* |
| | | *B* | *Hold input, six relay contacts, two 0/4 to 20 mA current outputs* |

The CPA87x assemblies cannot be used in the hazardous area.

## Measuring system connections

You require the following connections to set up the complete measuring system:

### Electrical power supply

Mycom S CPM153:

| | |
|---|---|
| Non-hazardous area: | 100 to 230 V AC or 24 V AC/DC (depending on version) |
| Hazardous area: | 100 to 230 V AC or 24 V AC/DC (depending on version) |

CPG30 control unit:

| | |
|---|---|
| Non-hazardous area: | 100 to 230 V AC or 24 V AC/DC (depending on version) |
| Hazardous area: | Power supply via Mycom S |

### Compressed air

| | |
|---|---|
| Specification: | 4 to 6 bar (58 to 87 psi), filtered, 50 µm, free from oil and condensate |
| Connection: | Bulkhead gland OD 6 mm (0.24"), connection to CPG30 control unit via pressure reduction valve supplied |

### Rinse water

| | |
|---|---|
| Specification: | Tap water, 2 to 6 bar (29 to 87 psi), filtered, 100 µm |
| Connection: | Connection to CYR10 (water filter, see "Accessories" section) |

### Assembly

| | |
|---|---|
| Process connection: | As per the assembly version ordered, see Operating Instructions for assembly |

### Rinsing block

| | |
|---|---|
| Connection to assembly rinse chamber: | G¼ or NPT ¼" external thread (depending on version) |

A detailed description of how to connect the necessary pipes and cables is provided in the Operating Instructions for Topclean S CPC30.

## Cleaning programs

You have a choice of six programs in total.
- Programs Clean, Clean S, Clean Int: You can configure these programs as required. The cleaning times or repeat cycles are freely selectable.
- Programs User 1 to 3: User-definable. A simple way of programming is to copy predefined programs to user programs and adapt them.

You can select the control signal for an external additional valve for your device under the order code item **External valve control**. The "sterilization" or "back pressure 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 pressurized media such as superheated steam, a second cleaner, cooling air, organic cleaner etc.

| No. | Function → Program ↓ | Cleaning | Sterilization | Back pressure water* |
|---|---|---|---|---|
| 1 | **Clean** (= cleaning) | ✔ | - | Control for one valve required |
| 2 | **Clean S** (= cleaning + sterilization | ✔ | Control for one valve required | - |
| 3 | **Clean Int** (= cleaning interval) | ✔ | - | Control for one valve required |
| 4 | **User 1** | ✔ | An external extra valve can be used as required, e.g. for superheated steam or organic cleaner. Device control for one valve is required. | |
| 5 | **User 2** | ✔ | | |
| 6 | **User 3** | ✔ | | |

***Back pressure water**
In processes where the medium is fibrous or tends to form buildup, assemblies with a ball valve for shutting off the medium are used e.g. Cleanfit CPA473 or Cleanfit CPA474. To keep the rinse chamber free of medium, the back pressure water valve opens automatically before the assembly moves out of the process. The counterpressure in the rinse chamber caused by the back pressure water prevents the ingress of medium into the chamber. The back pressure water pressure must then be greater than the pressure of the medium.

## Other functions

### Memosens

Memosens makes your measuring point safer and more reliable:
- Non-contact, digital signal transmission enables optimum galvanic isolation
- No contact corrosion
- Completely watertight
- Predictive maintenance with recording of sensor data, e.g.:
  - Total operating hours
  - Operating hours at very high and very low pH values
  - Operating hours at high temperatures
  - Number of steam sterilizations
  - Sensor condition

### 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 electrode status or the degree of electrode aging. The status is indicated by the messages "Electrode OK", "Low wear" or "Replace electrode". The electrode status is updated after each calibration. If the "Replace electrode" message appears, an error message is also displayed.

### SCS (= Sensor Check System)

The SCS detects glass breakage in the case of conventional glass electrodes and leaks in the case of ISFET sensors.
In the case of analog sensors with a symmetrically high impedance connection, the Sensor Check System also displays the pH glass resistance or the reference resistance, thereby indicating the possibility of an incorrect measurement due to blocking or damage to the pH electrode.

### PCS (= Process Check System)

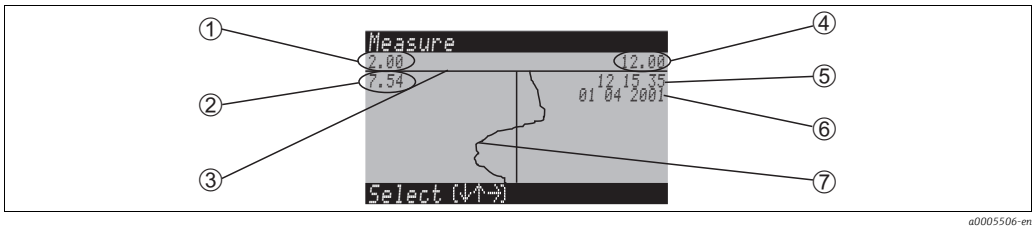
This function checks the measuring signal for stagnation. If the measuring signal does not change over a specific period (several measured values), an alarm is triggered. This may be caused by fouling, blocking or similar.

### 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 arbitrary parameters using the integrated data loggers and then view them 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 optimizing pH control.




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

1 *Minimum display range (choose as low as –2 pH)*
2 *Measured value for current position of the scroll bar*
3 *Scroll bar*
4 *Maximum display range (choose as high as +16 pH)*
5 *Time when the measured value was recorded*
6 *Date of this measured value*
7 *Measured value curve*

### Simple to control

The follow controller functions are implemented in the Mycom:
- 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 (segmented curve)
  - distinction between batch and flow processes.
- Manipulated variable output
  The manipulated variable can be output as a binary signal via the relays or via the current output:
  - Binary signal via relay as PWM (pulse length), PFM (pulse frequency)
  - Current output (0/4 to 20 mA): Analog signal to control the positioner (for one or two actuator drives)

### DAT module

The DAT module is a memory device (EEPROM) which is inserted in the connection compartment of the Mycom S.

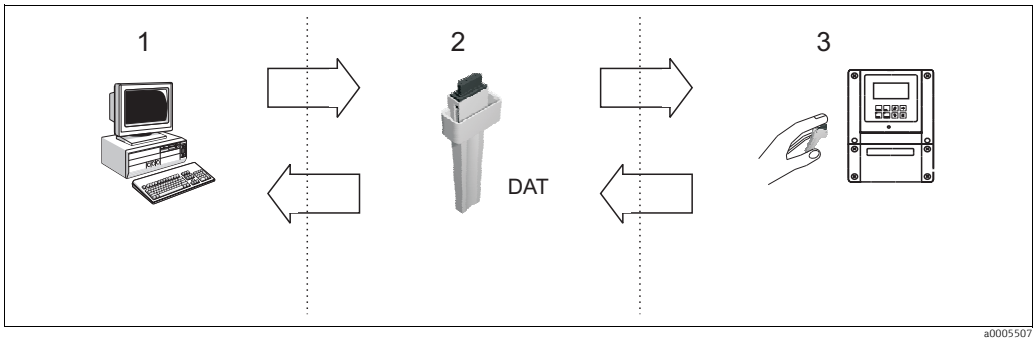
Using the DAT module, you can:
- *Save* the complete settings, including the program settings, and the logbooks and the data of the data logger of a transmitter, and
- *Copy* the complete settings to other Mycom S transmitters which have identical hardware functionality.

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

**Offline configuration with Parawin (option)**

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 Mycom 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.




*Offline configuration with Parawin (1 - 2 -3) ⇒ Mycom*

*Offline data backup (3 -2 -1) ⇐ Mycom*

An additional adapter (RS232 <-> USB) is required to use the Parawin option. This is available as an accessory (see the "Accessories" section).

**Calibration and measurement**

Calibration options:

- Automatic calibration with automatic buffer recognition
  The buffer tables, e.g. tables according to DIN, Endress+Hauser, Merck and Riedel de Haën/ Ingold, are saved in the device. Further buffer tables can also be programmed. During calibration, the device automatically recognizes 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, along with the date and time, are saved to a list.

Accuracy thanks to:

- Medium temperature compensation
  This allows high-accuracy measurement over wide temperature ranges. With this type of compensation, the influence of temperature on the pH of the medium is compensated.
- Isothermic intersection compensation (important for ISFET)
  This allows high-accuracy measurement even in the event of temperature fluctuations. Compensates the deviation between electrode zero point and isothermic intersection point.

# Input

| | Mycom S CPM153 |
|---|---|
| **Measured variable** | pH (analog sensors or sensors with Memosens technology)<br>ORP (analog or digital sensors)<br>Temperature |
| **Measuring range** | pH: −2 to 16 pH<br>ORP: −1500 to +1500 mV / -300 to +300 %<br>Temperature: -50 to +200 °C (-58 to +392 °F) |
| **Input impedance** | > $10^{12}$ Ω (at rated operating conditions, analog measured value transmission) |
| **Sensor circuit input current** | < $1.6 \cdot 10^{-12}$ A (at rated operating conditions) |
| **Sensor circuit Ex connection data** | Sensor circuit with type of protection EEx ia IIC (optional). This circuit can also be connected to sensors of category 1G (zone 0).<br>Maximum output voltage $U_O$: 12.6 V DC<br>Maximum output current $I_O$: 130 mA<br>Maximum output power $P_O$: 198 mW<br>Maximum external capacitance $C_O$: 50 nF (with ISFET sensors 150 nF)<br>Maximum external inductance $L_O$: 100 µH |
| **Sensor circuit cable specification** | Cable length (analog): Max. 50 m (164 ft.)<br>Cable length (digital): Max. 100 m (328 ft.) |
| **Current inputs 1 / 2 (passive, optional)** | Signal range: 4 to 20 mA<br>Input voltage range: 6 to 30 V<br><br>Intrinsically safe current inputs for connection of intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC (optional)<br>Maximum input voltage $U_i$: 30 V DC<br>Maximum input current $I_i$: 100 mA<br>Maximum input power $P_i$: 3 W<br>Maximum internal capacitance $C_i$: 1.1 nF<br>Maximum internal inductance $L_i$: 24 µH |
| **Resistance input (active, optional, non-hazardous only)** | Resistance ranges (can be switched by software) 0 to 1 kΩ<br>0 to 10 kΩ |
| **Digital inputs E1-E3** | Input voltage: 10 to 50 V<br>Internal resistance: $R_i$ = 5 kΩ<br><br>Intrinsically safe optoelectronic coupler interfaces for connection of intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC<br>Maximum input voltage $U_i$: 30 V DC<br>Maximum internal capacitance $C_i$: negligible<br>Maximum internal inductance $L_i$: negligible |

**CPG30 control unit**

**Digital inputs**

Input voltage: 10 to 40 V
Internal resistance: $R_i$ = 5 kΩ
Minimum switching signal duration: 500 ms

Intrinsically safe optoelectronic coupler interfaces for connection of intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC.
Maximum input voltage $U_i$: 30 V DC
Maximum internal capacitance $C_i$: negligible
Maximum internal inductance $L_i$: negligible

**Cable specification for inductive limit position switches**

Cable length: Max. 100 m (328 ft.)

# Output

**Mycom S CPM153**

**Output signal**

0/4 to 20 mA

**Signal on alarm**

2.4 or 22 mA in the event of an error

**Load of active current output**

Max. 600 Ω (depends on operating voltage)

**Output distribution**

pH: Adjustable, 0 to 18 pH
ORP:
Absolute: Adjustable, 300 to 3000 mV
Relative: Adjustable, 0 to 600 %
Temperature: Adjustable, 17 to 200 °C (62.6 to 392 °F)

**Passive current output**

Operating voltage range: 6 to 30 V

**Ex connection data**

Intrinsically safe current circuits for connection of intrinsically safe electric circuits with type of protection EEx ib IIC.
Maximum input voltage $U_i$: 30 V DC
Maximum input current $I_i$: 100 mA
Maximum input power $P_i$: 750 mW
Maximum internal capacitance $C_i$: negligible
Maximum internal inductance $L_i$: negligible

**Overvoltage protection**

As per EN 61000-4-5:1995

**Auxiliary voltage output (for digital inputs E1 - E3)**

Output voltage: 15 V DC
Output current: Max. 9 mA

Intrinsically safe current output circuit with type of protection EEx ib IIC.

Maximum output voltage $U_O$: 15.8 V DC
Maximum output current $I_O$: 71 mA
Maximum output power $P_O$: 1.13 W
Maximum external capacitance $C_O$: 50 nF
Maximum external inductance $L_O$: 100 µH

**Interface to CPG30**

Power supply:
- Output voltage: 11.5 to 18 V DC
- Output current: Max. 60 mA

Communication: RS 485

Intrinsically safe current output circuit with type of protection EEx ib. IIC.

**Contact outputs**

Switching voltage: Max. 250 V AC / 125 V DC
Switching current: Max. 3 A
Switching power: Max. 750 VA
Operating life: ≥ 5 million switching cycles

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

Maximum input voltage $U_i$: 30 V DC
Maximum input current $I_i$: 100 mA
Maximum input power $P_i$: 3 W
Maximum internal capacitance $C_i$: 1.1 nF
Maximum internal inductance $L_i$: 24 µH

**Controller**

Function (adjustable): Pulse-length controller (PWM); Pulse-frequency controller (PFM); Three-point stepping controller (3-point step); Analog (via current output)

Controller behavior: P / PI / PID
Control gain $K_R$: 0.01 to 20.00
Integral action time $T_n$: 0.0 to 999.9 min
Derivative action time $T_v$: 0.0 to 999.9 min
Max. frequency with pulse-frequency controller: 120 $min^{-1}$
Period length for pulse-length controller: 1 to 999.9 s
Minimum switch-on period for pulse-length controller: 0.4 s

**Limit value and alarm functions**

Set point settings: -2.00 to 16.00 pH
Hysteresis for switching contacts:
- pH: 0.1 to 18 pH
- ORP absolute: 10 to 100 mV
- ORP relative: 1 to 3000%

Alarm delay: 0 to 6000 s

**Galvanic isolation**

The following are on the same potential:
- Current output 1 and auxiliary voltage
- Current output 2 and resistance input

All other circuits are galvanically isolated from one another.

**CPG30 control unit**

**Digital outputs**

Optoelectronic coupler, max. switching voltage: 30 V DC
Max. switching current: 100 mA
Max. switching power: 3 W

Intrinsically safe optoelectronic coupler control outputs for connection of intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC.

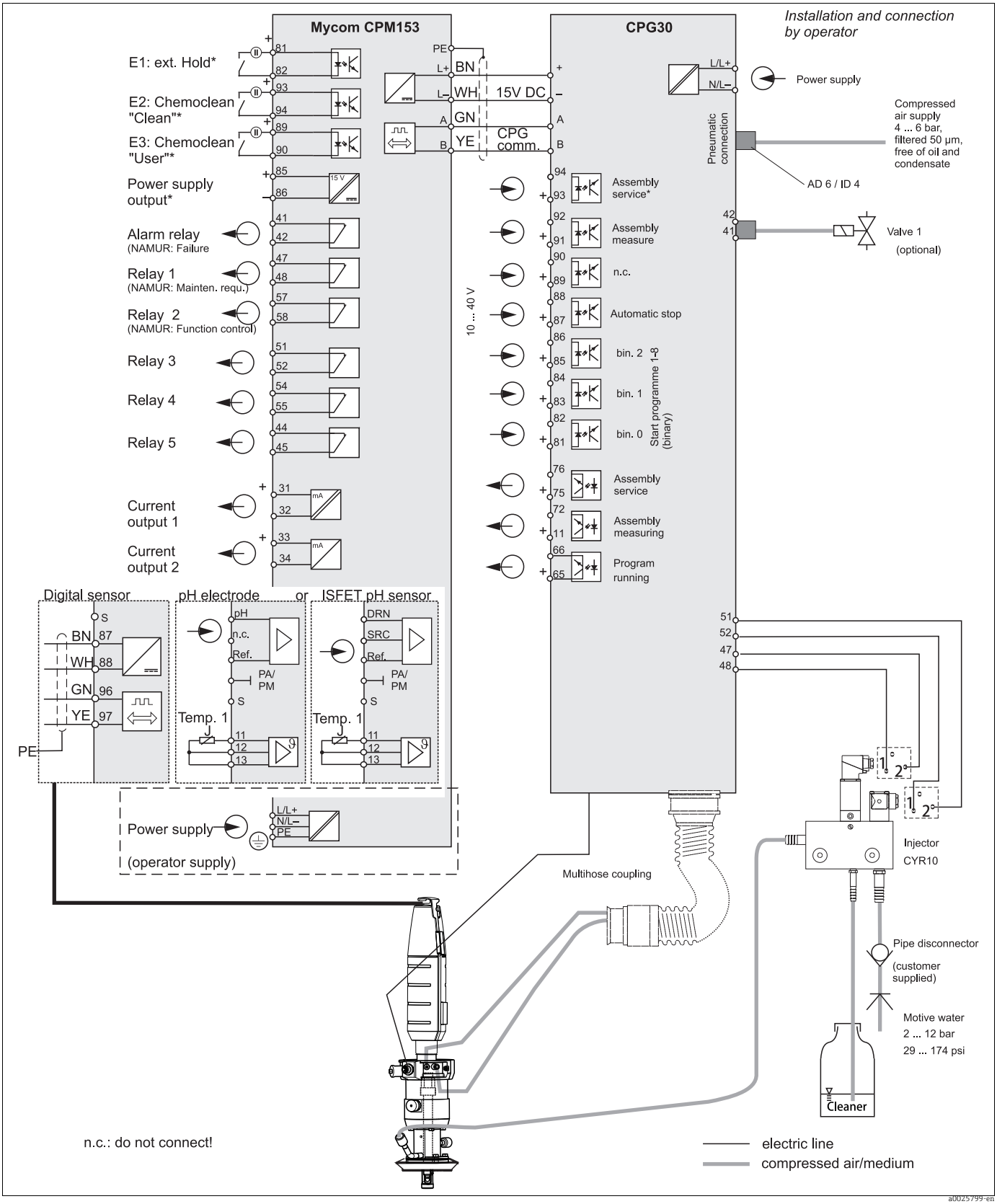
Maximum input voltage $U_i$: 30 V DC
Maximum input current strength $I_i$: 100 mA
Maximum input power $P_i$: 1 W
Maximum internal capacitance $C_i$: negligible
Maximum internal inductance $L_i$: negligible

**Control for external valves**

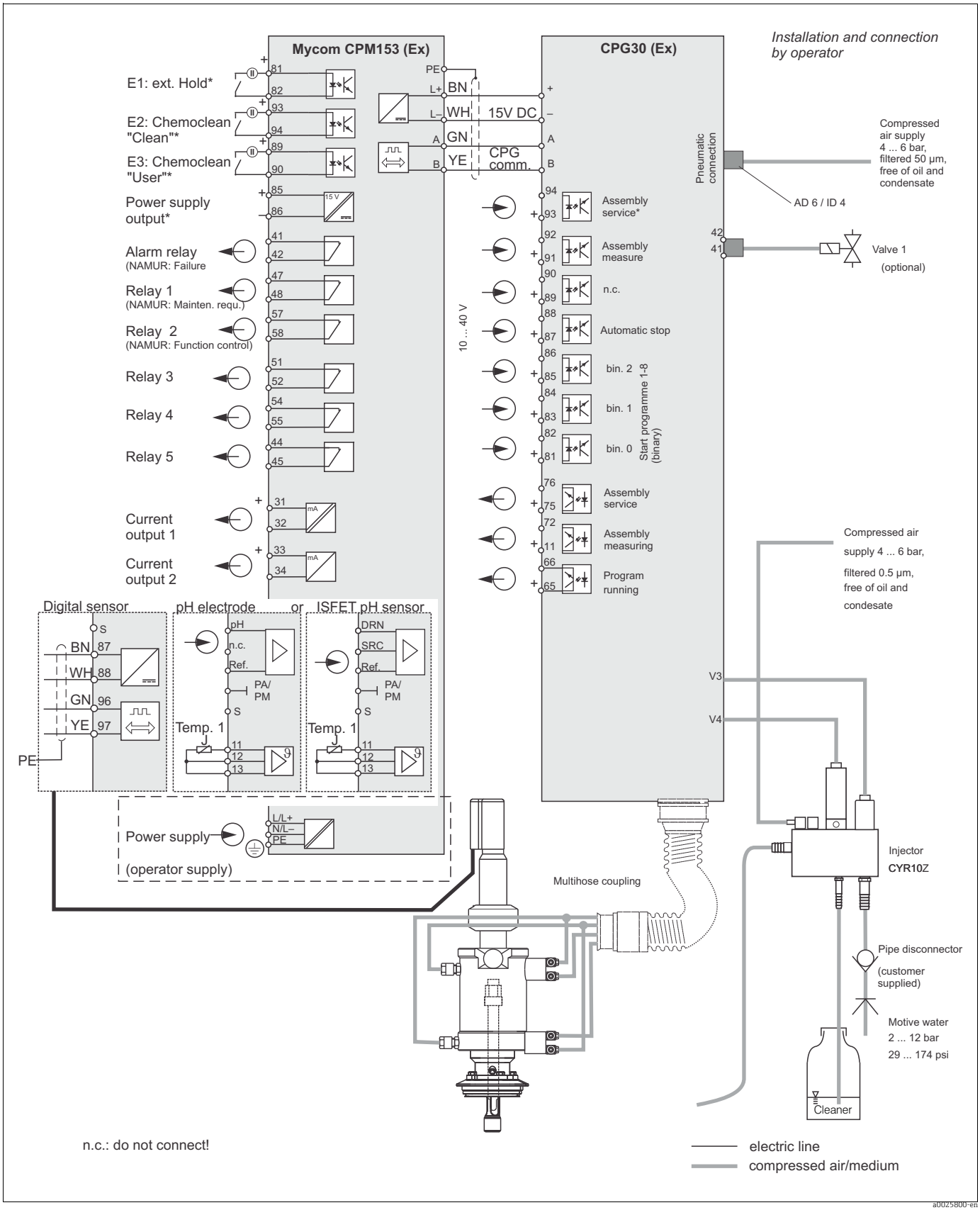
**Switched compressed air output:**
Max. pressure: Like supply pressure

# Power supply

## Electrical connection




*Connecting in the non-hazardous area*




*Connecting in the hazardous area*

**Mycom S CPM153**

**Supply voltage**

Version CPM153-xxxx**0**xxxx: 100 to 230 V AC +10/-15 %
Version CPM153-xxxx**8**xxxx: 24 V AC/DC +20/-15 %

**Cable specifications**

Max. cable cross-section: 2.5 $mm^2$ (≙14 AWG)

**Power consumption**

Max. 10 VA

**Separation voltage between galvanically isolated circuits**

276 $V_{rms}$

**Interface connection data**

Mycom S has an alarm contact and five additional contacts.
You can assign functions to the contacts available via the software. The NC/NO contact type can also be switched by software.
You can assign up to three relays to the controllers.

When using the NAMUR assignment (based on the recommendations of the interest group for process control technology in the chemical and pharmaceutical industry), the functions are specified for the relays as follows:

| Relay | Assignment NAMUR on | Assignment NAMUR off | Terminal |
|---|---|---|---|
| ALARM | Failure | Alarm | 41 42 |
| RELAY 1 | Warning if maintenance required | Can be assigned as required | 47 48 |
| RELAY 2 | Function check | Can be assigned as required | 57 58 |

**Frequency**

47 to 64 Hz

**Ex connection data**

Connection data for 12V power 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 capacitance $C_O$: | 150 nF |
| Maximum external inductance $L_O$: | 150 µH |

| | CPG30 control unit | |
|---|---|---|
| **Supply voltage** | Version CPC30-xxxx**0**xxxxxxx<br>Version CPC30-xxxx**1**xxxxxxx<br>Version CPC30-xxxx**8**xxxxxxx | 230 V AC +10/-15 %<br>110 to 115 V AC +10/-15 %<br>24 V AC/DC +20/-15 % |
| **Cable specification** | Max. cable cross-section: | 2.5 $mm^2$ (≙14 AWG) |
| **Power consumption** | Max. 12 VA | |
| **Separation voltage between galvanically isolated circuits** | 276 $V_{rms}$ | |
| **Frequency** | 47 to 64 Hz | |
| **Ex connection data** | The hazardous area device versions are powered by the CPM153 transmitter (see the data above). | |

# Performance characteristics

| | | |
|---|---|---|
| **Reference temperature** | 25 °C (77 °F), can be set with medium temperature compensation | |
| **Measured value resolution** | pH:<br>ORP:<br>Temperature: | 0.01 pH<br>1 mV / 1%<br>0.1 K |
| **Maximum measured error**[1)] | Display<br>pH:<br>ORP:<br>Temperature<br>Current outputs:<br><br>Current inputs:<br>Resistance input: | <br>Max. 0.2 % of measuring range scope<br>Max. 1 mV<br>Max. 0.5 K<br>Max. 0.2 % of current range end value in addition to deviation of display<br>Max. 1 % of measuring range scope<br>Max. 1 % of measuring range scope |
| **Repeatability** | Max. 0.1 % of measuring range | |
| **Zero point offset range** | pH:<br>ORP: | -2 to +16 pH<br>-200 to +200 mV |
| **Slope adjustment** | pH: | 5 to 99 mV / pH |
| **Offset** | ORP:<br>Temperature: | ±120 mV<br>±5 K |
| **Assignment for ORP relative** | Adjustable, Δ for 100% = 150 to 2000 mV | |

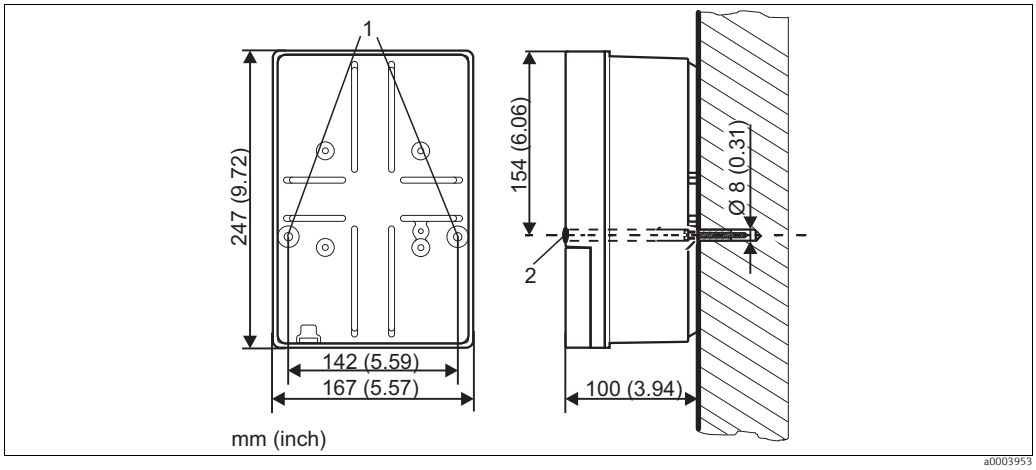
1) According to IEC 746-1, at rated operating conditions

# Installation

## Installation instructions for CPM153

### Wall mounting

- Make sure the maximum permitted ambient temperature range is observed (-20 to +60 °C (-4 to +140 °F)). Install the device in a shady location. Avoid direct sunlight.
- Mount the wall-mount housing in such a way that the cable entries always point downwards.

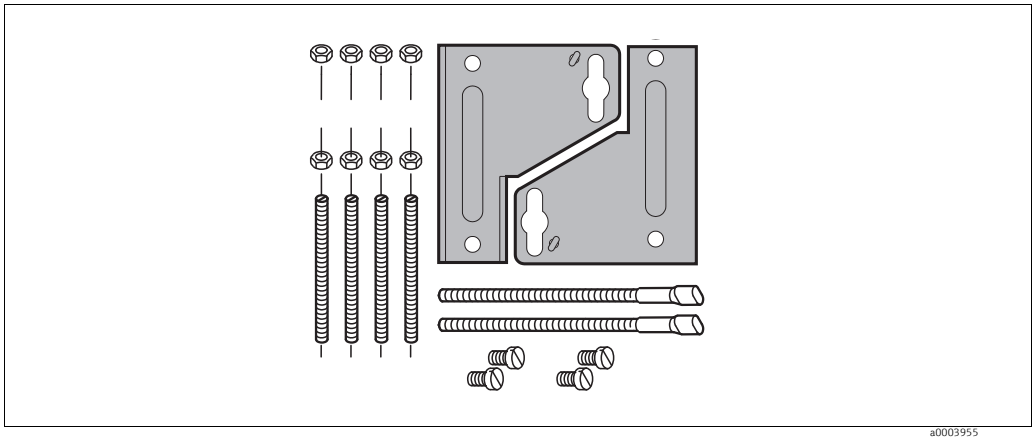



*Dimensions for wall mounting, securing screw: Ø 6 mm (0.24"), wall plug: Ø 8 mm (0.31")*

*1 Mounting bore holes*
*2 Plastic caps*

### Post mounting and panel mounting

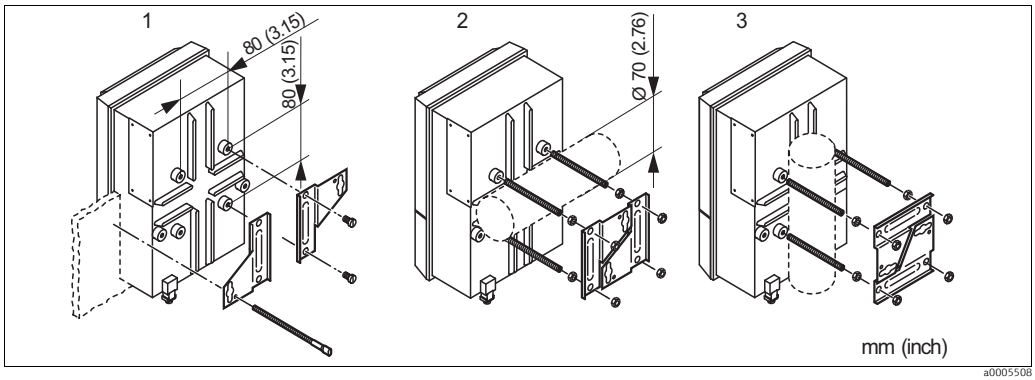
You need a post mounting kit to secure the field device to horizontal and vertical posts or pipes (max. Ø 60 mm / 2.36"). This is available as an accessory (see the "Accessories" section).




*Mounting kit*

Mount the parts of the mounting kit on the back of the device as illustrated in the graphic below.

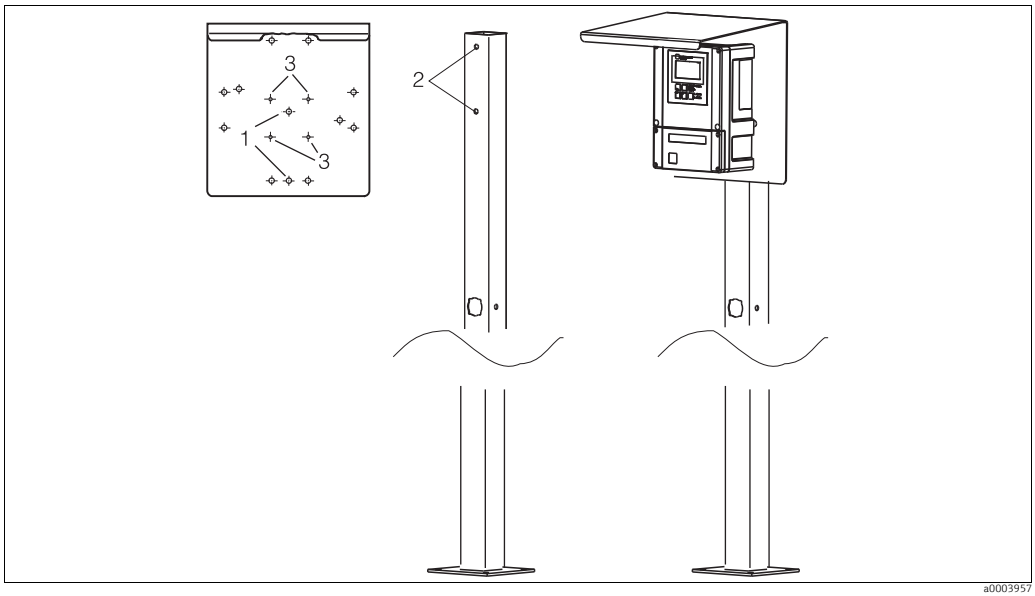
Panel mounting:
If you want to mount the device on the front of an air-tight panel, you must also use a flat seal (see "Accessories").
Required cutout for mounting: 161 x 241 mm (6.34" x 9.49")
Installation depth: 134 mm (5.28")
Post mounting:
Pipe diameter: Max. 70 mm (2.76")




*Panel mounting and post mounting*

*1 Panel mounting*
*2 Post mounting, horizontal*
*3 Post mounting, vertical*

**NOTICE**
**Climatic influences (rain, snow, direct sunlight etc.)**
Function impairment and even total transmitter failure
- Always use the weather protection cover (accessory) when mounting the device outdoors.

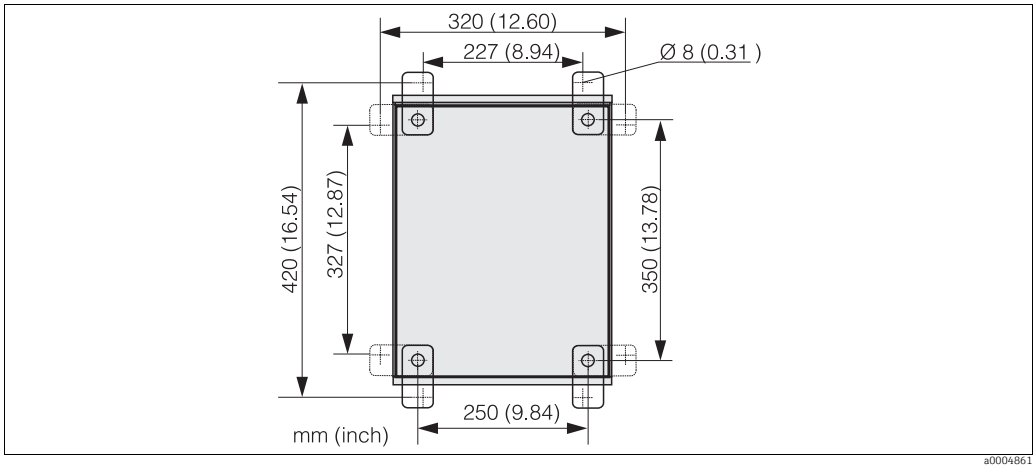



*Secured to post with weather protection cover*

*1 Bore holes for mounting on upright post*
*2 Bore holes for securing the weather protection cover*
*3 Bore holes for mounting the transmitter*

**Installation instructions for CPG30**

## Wall mounting



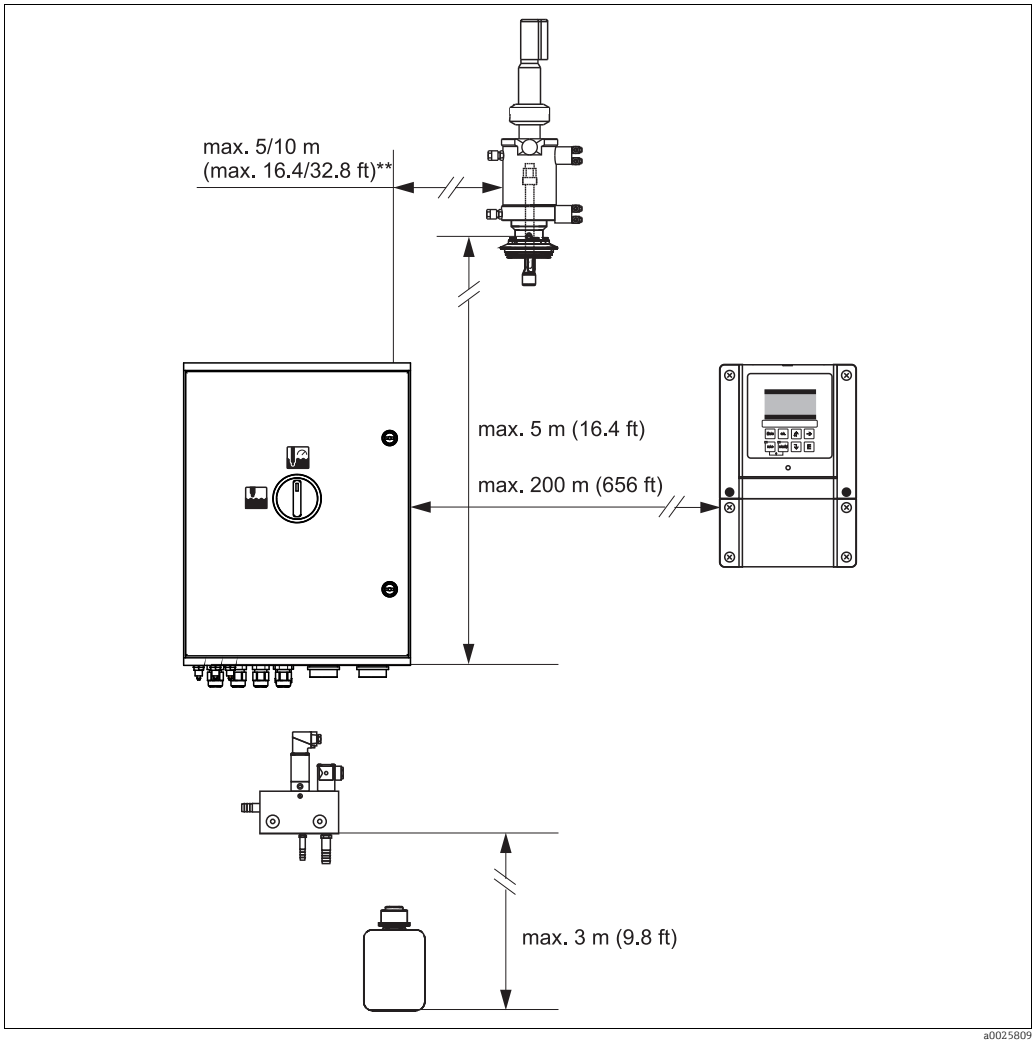

*Dimensions for wall mounting with wall securing kit (part of scope of delivery)*

Proceed as follows to wall-mount the unit:

1. Please note that the maximum suction height for buffer and cleaner is 2.5 m (8.2 ft.) when using the standard multihoses supplied. Bore the holes as per the graphic above.
2. Screw the elements of the wall securing set supplied to the rear wall of the housing.
3. Secure the housing to the wall without any inclination.

### Maximum length of lines and hoses

The graphic below illustrates the maximum distances between the system components.




*Maximum spacing for Topclean S CPC30 system components*

* *when using the multihoses supplied as standard*
** *depending on the multihose version ordered*

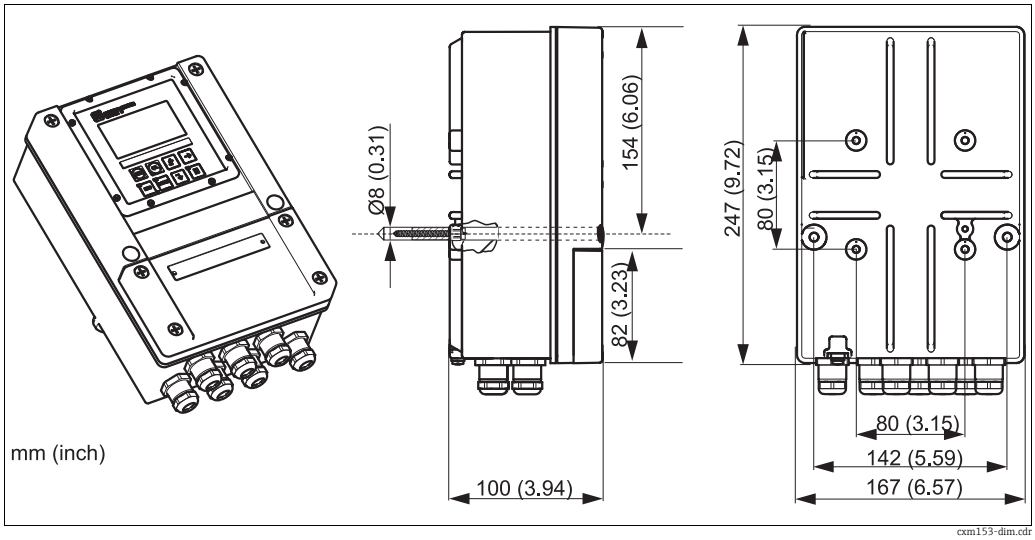
# Environment

| | |
|---|---|
| **Ambient temperature range** | -10 to +55 °C (+14 to +131 °F)<br>-10 to +50 °C (+14 to +122 °F) (Ex) |
| **Ambient temperature limits** | –20 to +60 °C (-4 to +140 °F)<br>-10 to +50 °C (+14 to +122 °F) (Ex) |
| **Storage temperature** | –30 to +80 °C (-22 to +176 °F) |
| **Electromagnetic compatibility** | Interference emission to EN 61326: 1997 / A1:1998; Class B equipment (residential environments)<br>Interference emission to EN 61326: 1997 / A1:1998; Appendix A (industry) |
| **Degree of protection** | **CPM153**<br>IP 65<br>**CPG30**<br>IP 54 |
| **Relative humidity** | 10 to 95%, non-condensating |
| **Safety requirements** | Complies with general safety requirements acc. to EN 61010.<br>Complies with NAMUR Recommendations NE 21: 08/1998. |

# Mechanical construction

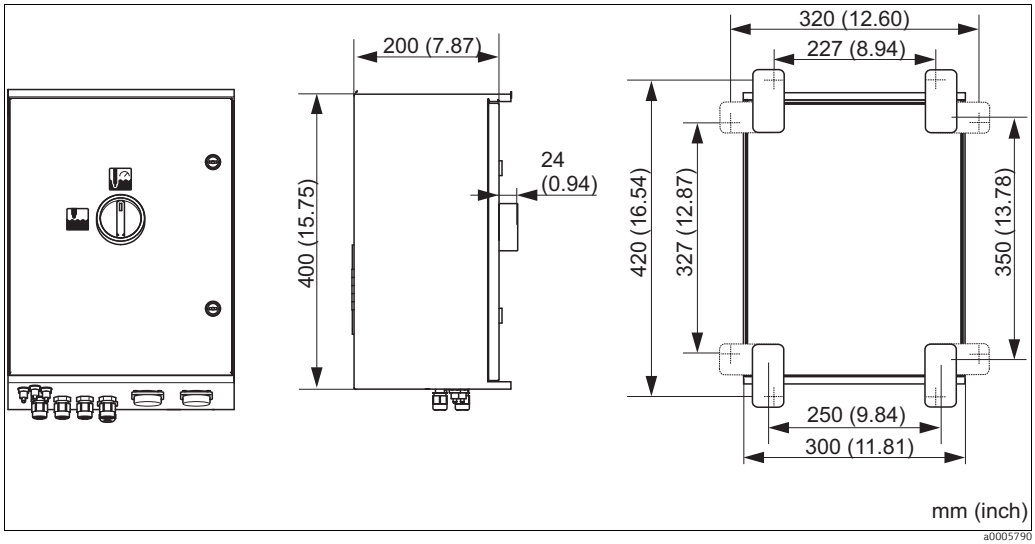
**Design/dimensions**

**CPM153**




*Dimensions of Mycom S*

**CPG30**




*Dimensions of CPG30 control unit*

**Weight**

**CPM153**

Max. 6 kg (13.23 lbs)

**CPG30**

Approx. 20 kg (44.1 lbs)

## Materials

### CPM153

| | |
|---|---|
| Housing: | GD-AlSi 12 (Mg content 0.05%), plastic-coated |
| Front: | Polyester, UV-resistant |

### CPG30

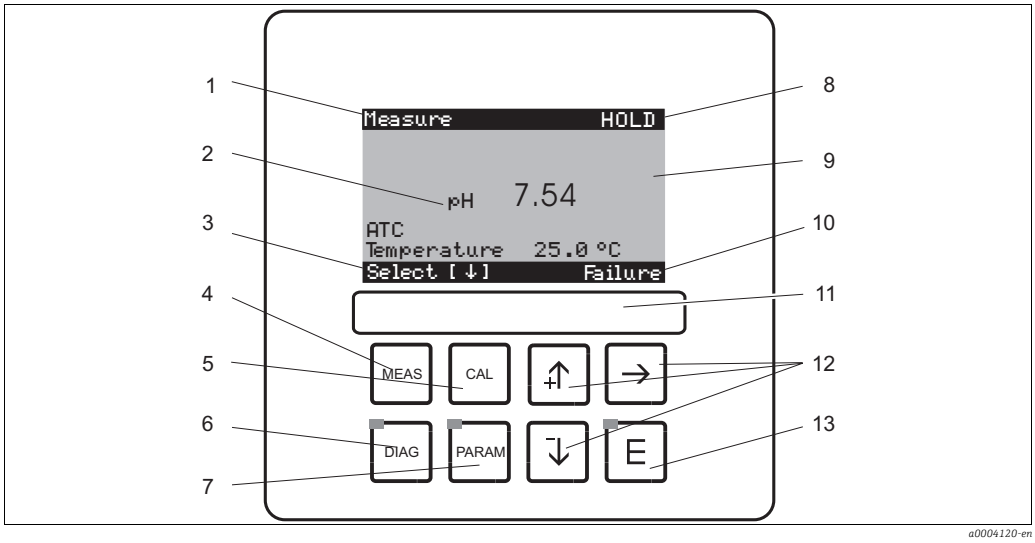
| | |
|---|---|
| Housing: | Polyester GF |
| Hoses: | PU, PTFE (wetted) |
| Pump: | PP, PVDF (wetted) |
| CYR10 injector: | PVC (wetted) |

You can convey aggressive or hot media via an additional valve. For this, please order a system with a control function for an additional valve.

# Operability

**CPM153 display elements and operating elements**

Backlit LC display with dot matrix, 128 x 64 dots
The display shows the current measured value and the temperature simultaneously, providing you with the most important process data at a glance. Text information in the Configuration menu helps users configure the device parameters.




| | | | |
|---|---|---|---|
| *1* | *Current menu* | *8* | *HOLD displayed if HOLD active* |
| *2* | *Current parameter* | *9* | *Current primary value* |
| *3* | *Navigation row: arrows for scrolling; "E" for scrolling on; notice for canceling* | *10* | *"Failure", "Warning" displayed if the NAMUR contacts are active* |
| *4* | *Measuring mode key* | *11* | *Labeling field* |
| *5* | *Calibration key* | *12* | *Arrow keys for selecting and entering* |
| *6* | *Diagnosis menu key* | *13* | *Enter key* |
| *7* | *Parameterization menu key* | | |

**Operating functions**

There are four main menus available for device operation:

- Measure
- Parameterization
- Calibration
- Diagnosis

Here, the submenus 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.

**Access codes**

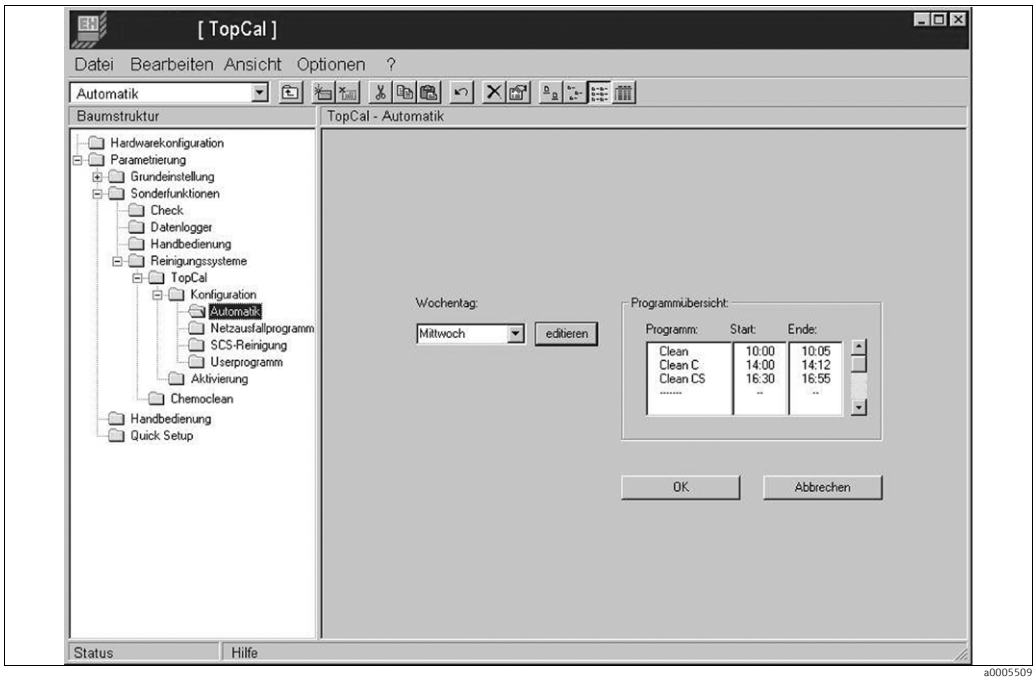
Functions can be protected by four-digit access codes to protect the transmitter against unintentional and undesired changes to the configuration and the calibration data. Access is categorized into the following levels:

- Display level (can be accessed without a code)
  The complete menu can be viewed. The configuration cannot be altered. No calibration is possible. On this level, only the control parameters for new processes can be changed in the "DIAG" menu branch.
- Maintenance level (can be protected by the maintenance code)
  Calibration is possible with this code.
  The temperature compensation menu item can be used with this code. The factory functions and the internal data can be viewed.
- Specialist level (can be protected by the specialist access code)
  All menus can be modified.

All the functions are freely accessible provided no codes have been defined.

**Offline configuration with Parawin (option)**

The Parawin PC tool provides you with a tool for configuring your measuring point offline at the PC using a simple and self-explanatory menu structure (see the sample window below). Write the configuration to the DAT module using the RS232 interface on the PC. The module can then be plugged into the transmitter.
The adapter (RS232 <-> USB) is available as an accessory.




*Parawin menu structure*

# Certificates and approvals

**CE mark**

**Declaration of conformity**
The product meets the statutory requirements of the harmonized European standards. The manufacturer confirms the product complies with the standards by affixing to it the CE mark.

**Ex approval**

Depending on the version ordered:
- ATEX II (1) 2G, EEx em ia/ib IIC T4
- EC system approval

# Ordering information

**Ordering instructions**

Compile the order code for the Topclean system as follows:

1. Select the desired approval.
2. What material should the rinsing block and O-ring be made of?
3. Select the sensor input and measurement output.
4. Which type of power supply is required?
5. Select the language for the menu.
6. Define the cable entries and the option for the multihose.
7. Which assemblies (CPA47x or CPA87x) should Topclean be configured for?

**Product page**

You can create a valid and complete order code on the Internet with the Configurator tool.

Enter the following address in the browser to access the product page:
www.endress.com/cpc30

**Product Configurator**

You can find the navigation area on the right-hand side of the product page.

1. Under "Device support", click "Configure the selected product".
   ↳ The Configurator opens in a separate window.
2. Configure the device according to your requirements by selecting all the options.
   ↳ This provides you with a complete and valid order code.
3. Export the order code as a PDF or Excel file. To do so, click the corresponding button at the top section of the window.

**Scope of delivery**

The scope of delivery of the system comprises:
- 1 Mycom S CPM153 transmitter including post mounting kit
- 1 CPG30 control unit
- 1 multihose
- 1 canister for cleaning liquid
- 1 communication/power supply cable CPG310 / Mycom S CPM153
- 1 pressure reduction valve with pressure gauge
- 1 device identification card
- 1 set of Operating Instructions in English
- Accessories where applicable

# Accessories

**Offline configuration**

- Parawin
  Graphic PC program for offline configuration of the measuring point at the PC. You can switch the language via software. Required operating system: Windows NT/95/98/2000.
  Offline configuration consists of:
  - One DAT module
  - DAT interface (RS 232)
  - Software
  Order No.: 51507563 (Topclean S / Mycom S)

**Additional adapter**

- RS232 <-> USB adapter
  Order No.: 71200843

**DAT module**

- Additional memory module for saving or copying configuration, data logs and logbooks;
  Order No.: 51507175

**Flat seal**

- Flat seal for front-panel airtight panel mounting of Mycom S;
  Order No.: 50064975

**Water filter**

- Filter assembly for rinse water
  Order No.: 71031661

**Assemblies**

Cleanfit CPA871
- Flexible retractable process assembly for water, wastewater and the chemical industry
- Order according to product structure, www.products.endress.com/cpa871
- Technical Information TI01191C/07/EN

Cleanfit CPA875
- Retractable process assembly for sterile and hygienic applications
- Order according to product structure, www.products.endress.com/cpa875
- Technical Information TI01168C/07/EN

Cleanfit P CPA472, version CPA472-xxxxxx3/4
- Compact plastic retractable assembly for installation in tanks and pipes, for manual or pneumatically remote-controlled operation
- Order according to product structure, www.products.endress.com/cpa472
- Technical Information TI00223C/07/EN

Cleanfit P CPA472D, version CPA472-xxxxxxx3/4/5
- Retractable assembly for pH/ORP measurement in tanks and pipes, manual or pneumatic operation, heavy-duty version made from heavy-duty materials
- Order according to product structure, www.products.endress.com/cpa472d
- Technical Information TI00403C/07/EN

Cleanfit P CPA473
- Stainless steel retractable process assembly with ball valve shutoff for very reliable separation of the process medium from the environment
- Order according to product structure, www.products.endress.com/cpa473
- Technical Information TI00344C/07/EN

Cleanfit P CPA474
- Plastic retractable process assembly with ball valve shutoff for very reliable separation of the process medium from the environment
- Order according to product structure, www.products.endress.com/cpa474
- Technical Information TI00345C/07/EN

**Sensors**

**Glass electrodes**

Orbisint CPS11/CPS11D
- pH electrode for process engineering
- With dirt-repellent PTFE junction
- Order according to product structure, www.products.endress.com/cps11 or www.products.endress.com/cps11d
- Technical Information TI00028C/07/EN

Orbisint CPS12/CPS12D
- ORP electrode for process engineering
- With dirt-repellent PTFE junction
- Order according to product structure, www.products.endress.com/cps12 or www.products.endress.com/cps12d
- Technical Information TI00367C/07/EN

Memosens CPS31D
- pH electrode with Memosens technology for drinking water and swimming pool water
- Gel-filled reference system with ceramic junction
- Order according to product structure, www.products.endress.com/cps31d
- Technical Information TI00030C/07/EN

Ceratex CPS31
- pH electrode for drinking water and swimming pool water
- Gel-filled reference system with ceramic junction
- Order according to product structure, www.products.endress.com/cps31
- Technical Information TI00030C/07/EN

Ceraliquid CPS41/CPS41D
- pH electrode with ceramic junction and KCl liquid electrolyte
- Order according to product structure, www.products.endress.com/cps41 or www.products.endress.com/cps41d
- Technical Information TI00079C/07/EN

Ceraliquid CPS42/CPS42D
- ORP electrode with ceramic junction and KCl liquid electrolyte
- Order according to product structure, www.products.endress.com/cps42 or www.products.endress.com/cps42d
- Technical Information TI00373C/07/EN

Ceragel CPS71/CPS71D
- pH electrode with poison-resistant reference with ion trap
- Order according to product structure, www.products.endress.com/cps71 or www.products.endress.com/cps71d
- Technical Information TI00245C/07/EN

Ceragel CPS72/CPS72D
- ORP electrode with poison-resistant reference with ion trap
- Order according to product structure, www.products.endress.com/cps72 or www.products.endress.com/cps72d
- Technical Information TI00374C/07/EN

Orbipore CPS91/CPS91D
- pH electrode with open aperture diaphragm for media with a high dirt load
- Order according to product structure, www.products.endress.com/cps91 or www.products.endress.com/cps91d
- Technical Information TI00375C/07/EN

Orbipore CPS92/CPS92D
- ORP electrode with open aperture diaphragm for media with a high dirt load
- Order according to product structure, www.products.endress.com/cps92 or www.products.endress.com/cps92d
- Technical Information TI00435C/07/EN

**ISFET sensors**

Tophit CPS471/CPS471D
- Sterilizable and autoclavable ISFET sensor for food and pharmaceutics, process engineering, water treatment and biotechnology
- Order according to product structure, www.products.endress.com/cps471 or www.products.endress.com/cps471d
- Technical Information TI00283C/07/EN

Tophit CPS441/CPS441D
- Sterilizable ISFET sensor for low-conductivity media, with liquid KCl electrolyte
- Order according to product structure, www.products.endress.com/cps441 or www.products.endress.com/cps441d
- Technical Information TI00352C/07/EN

Tophit CPS491/CPS491D
- ISFET sensor with open aperture diaphragm for media with high dirt load
- Order according to product structure, www.products.endress.com/cps491 or www.products.endress.com/cps491d
- Technical Information TI00377C/07/EN

**Testing tool**

Memocheck Sim CYP03D
- Testing tool for analytical measuring point
- Sensor simulation and error simulation
- Order according to product structure, www.products.endress.com/cyp03d
- Technical Information TI00481C/07/EN

**Connection accessories**

CPK1 measuring cable
- For pH/ORP electrodes with GSA plug-in head
- Order according to product structure, see Technical Information TI00501C/07/EN

CPK9 measuring cable
- For pH/ORP electrodes with TOP68 plug-in head, for high-temperature and high-pressure applications, IP 68
- Order according to product structure, see Technical Information TI00501C/07/EN

CPK12 measuring cable
- For ISFET sensors and pH/ORP electrodes with TOP68 plug-in head
- Order according to product structure, see Technical Information TI00501C/07/EN

CYK10 Memosens data cable
- For digital sensors with Memosens technology
- Order according to product structure, www.products.endress.com/cyk10
- Technical Information TI00118C/07/EN

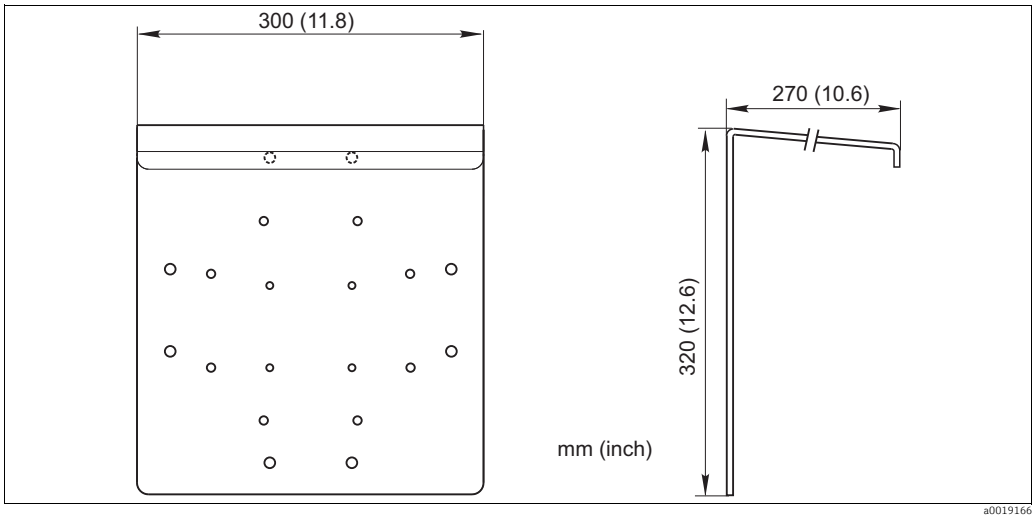
CYK12 measuring cable
- Unterminated cable for extending sensor cables CPK1, CPK9 and CPK12
- Coax and 5 pilot wires
- Material sold by the meter, order numbers:
  - Non-hazardous area version, black: 51506598
  - Hazardous area version, blue: 51506616

CYK81 measuring cable
- Unterminated cable for extending sensor cables (e.g. Memosens, CUS31/CUS41)
- 2 x 2 cores, twisted with shield and PVC sheath (2 x 2 x 0.5 $mm^2$ + shield)
- Material sold by the meter, Order No. 51502543

- Junction box VBE, Ex zone-0
  For connecting up to 3 individual wires from Ex-zone 0 sensors
  Order No. 50003993

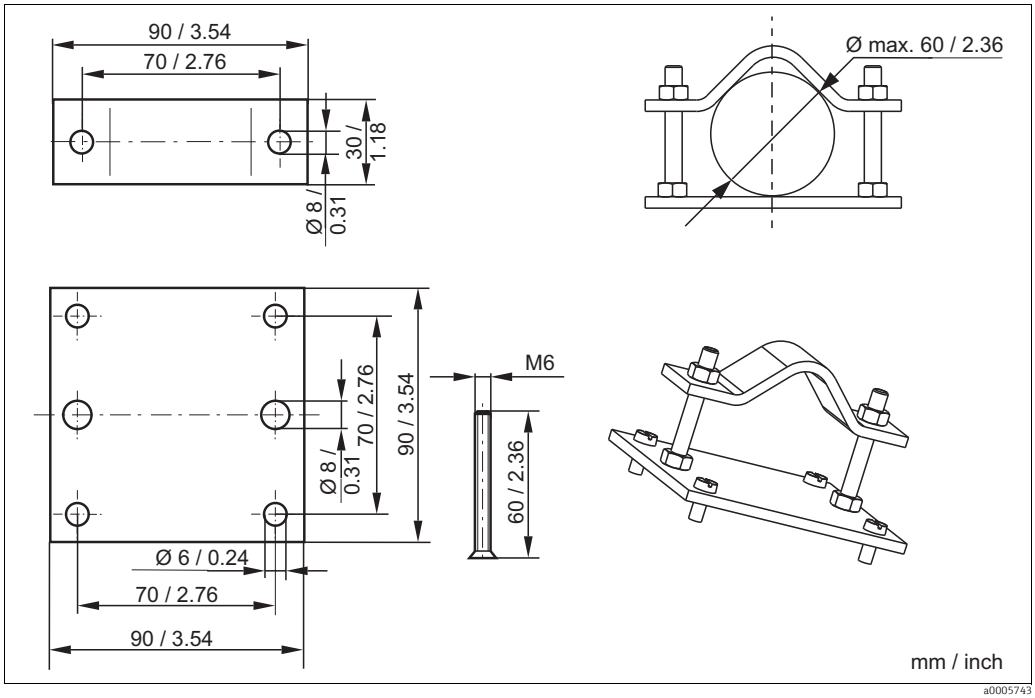
**Mounting accessories**

CYY101 weather protection cover for field devices, absolutely essential if operating the unit outdoors
- Material: stainless steel 1.4301 (AISI 304)
- Order No. CYY101-A




*Weather protection cover for field devices*

Post mounting kit
- To secure the field device to horizontal and vertical posts or pipes (Ø max. 60 mm (2.36"))
- Material: stainless steel 1.4301
- Order No. 50086842




*Mounting kit for securing to pipes and posts*

**Buffer solutions**

**High-quality buffer solutions from Endress+Hauser - CPY20**
Solutions which are traced by the DAkkS-accredited Endress+Hauser buffer laboratory (DAkkS = German Accreditation Body) to a primary reference material of the PTB and to standard reference material of the National Institute of Standards and Technology (NIST) in accordance with DIN 19266 are used as secondary reference buffer solutions.
Order according to product structure, www.products.endress.com/cpy20

Technical ORP buffer solutions
- +220 mV, pH 7, 250 ml; Order No. CPY3-4
- +468 mV, pH 0.1, 250 ml; Order No. CPY3-5

www.addresses.endress.com

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