Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Liquisys M CPM223/253

pH/ORP Measurement
Transmitter for analogue sensors, digital pH sensors and for ISFET sensors

The modular design of the Liquisys M CPM223/253 allows easy adaption of the transmitter to a variety of customer requirements. Starting with the basic version for "measurement and alarm generation", the transmitter can be equipped with additional software and hardware modules for special applications. These modules can also be retrofitted as required.

Application

- Effluent treatment
- Neutralisation
- Detoxication (electroplating)
- Water treatment
- Water monitoring

Your benefits

- Field or panel-mounted housing
- Universal application
- Simple handling
  - Logically arranged menu structure
  - Large two-line display
  - Ultrasimple two-point calibration
- Safe operation
  - Overvoltage (lightning) protection
  - Direct access for manual contact control
  - Calibration plausibility check
  - User-defined alarm configuration

The basic unit can be extended with:

- Addtional 2 or 4 contacts for use as:
  - Limit contacts (also for temperature)
  - P(ID) controller
  - Timer for simple rinse processes
  - Complete cleaning with Chemoclean
  - Current input
- Plus package:
  - User defined current output characteristics
  - Automatic cleaning trigger on alarm or limit violation
  - Sensor Check System for pH glass and reference
  - Live check of sensor
  - Special neutralisation controller
- HART® or PROFIBUS-PA/-DP
- 2nd current output for temperature, pH/ORP or continuous controller

TI194C/07/en/04.04
51500277

Endress+Hauser

People for Process Automation

Function and system design

Features of the basic version

pH and ORP value measurement

This is selected via the menu. During measurement, the value measured can be displayed in the other measuring mode (e.g. pH – mV or ORP % – ORP mV). The temperature is displayed at the same time or, if desired, not shown at all.

Calibration

pH electrodes are normally calibrated with the same pH values. Therefore the transmitter presents the settings from the **previous** calibration as defaults for the next calibration. If the buffer solutions are interchanged by accident (e.g. pH 4 buffer first, then pH 7 buffer instead of pH 7 first and then pH 4) the **plausibility check** ensures that the calibration is accepted anyway.

Configuration

Different alarms are required depending on application and operator. Therefore the transmitter permits independent **configuration of the alarm contact and error current** for each individual error. Unnecessary or undesirable alarms can be suppressed in this manner. **Up to four contacts** can be used as limit contacts (also for temperature) to implement a P(ID) controller or for cleaning functions.
Direct **manual operation of the contacts** (bypassing the menu) provides quick access to limit, control or cleaning contacts, permitting speedy correction of deviations.

Additional functions of the plus package

Current output

In order to output wide measuring ranges while still achieving a high resolution in specific ranges, the **current output** can be configured as required via a table. This permits **bilinear** or **quasi-logarithmic** curves, etc.

Sensor-Check-System (SCS)

The sensor check system alerts to deviations of the pH glass resistance or reference resistance from the normal range, thus indicating possible failure due to pH electrode blocking or damage.

Live-check

The live check issues an alarm when the sensor signal does not change over a defined period of time. This may be caused by blocking, passivation, separation from the process, etc.

Neutralisation controller

A special control response that cannot be handled adequately by a P(ID) controller is required to neutralise solutions. For this reason, the transmitter provides a special neutralisation controller function by combining two P(ID) controllers.

Current input

The current input of the transmitter allows two different applications: controller shut-down in case of lower flow rate violation or total failure in the main flow as well as feedforward control. Both functions are also combinable.

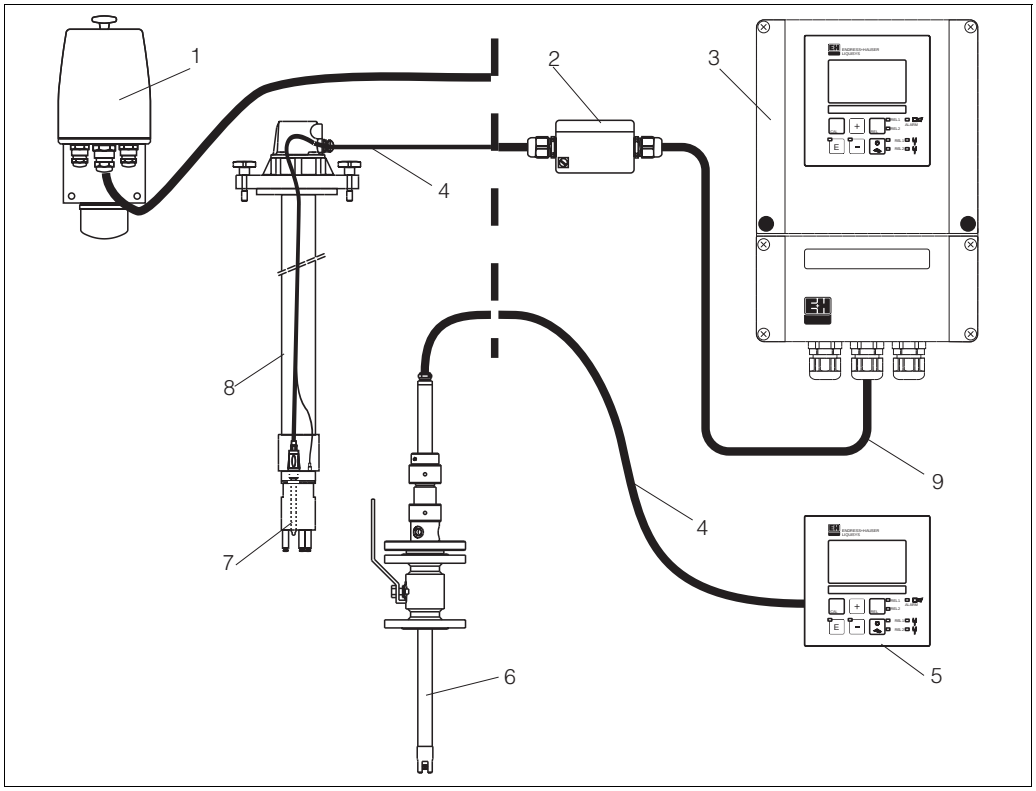
Explosion proof versions for zone 2

Field housing CPM253 with power supply 24 V	Application of transmitter and sensor in hazardous area zone 2
Field housing CPM253 with power supply 230 V	Application of transmitter as related electrical equipment in non-hazardous area or in simple pressurised apparatus; application of sensor in hazardous area zone 2
Panel mounted housing CPM223 with power supply 230 V or 24 V	Application of transmitter as related electrical equipment in non-hazardous area or in simple pressurised apparatus; application of sensor in hazardous area zone 2

Measuring system

A complete measuring systems comprises:
- the transmitter Liquisys M CPM223 or CPM253
- a pH/ORP electrode with or without an integrated temperature sensor
- an immersible, flow or retractable assembly
- measuring cable (e.g. CPK9)

Options: extension cable, junction box VBA or VBM



Complete measuring system Liquisys M CPM223/253

1 Flow assembly CPA250
2 Junction box VBA
3 Liquisys M CPM253
4 Measuring cable e.g. CPK9
5 Liquisys M CPM223
6 Retractable assembly Cleanfit W CPA450
7 Electrode, e.g Orbisint CPS11
8 Immersion assembly CPA111
9 Extension cable

Input

Measured variables

pH (analogue or digital sensors)
ORP
Temperature

Measuring range

pH:	–2 ... 16
ORP:	–1500 ... +1500 mV / 0 ... 100 %
Temperature:	
Pt 100, Pt 1000	-50 ... +150 °C (-58 ... +302 °F)
NTC 30K	-20 ... +100 °C (-4 ... +212 °F)

Input resistance

> 10^{12} Ω (for nominal operating conditions) for standard sensors

Cable specification

Length of cable (analogue):	max. 50 m (164.05 ft)
Length of cable (digital):	max. 100 m (328.10 ft)

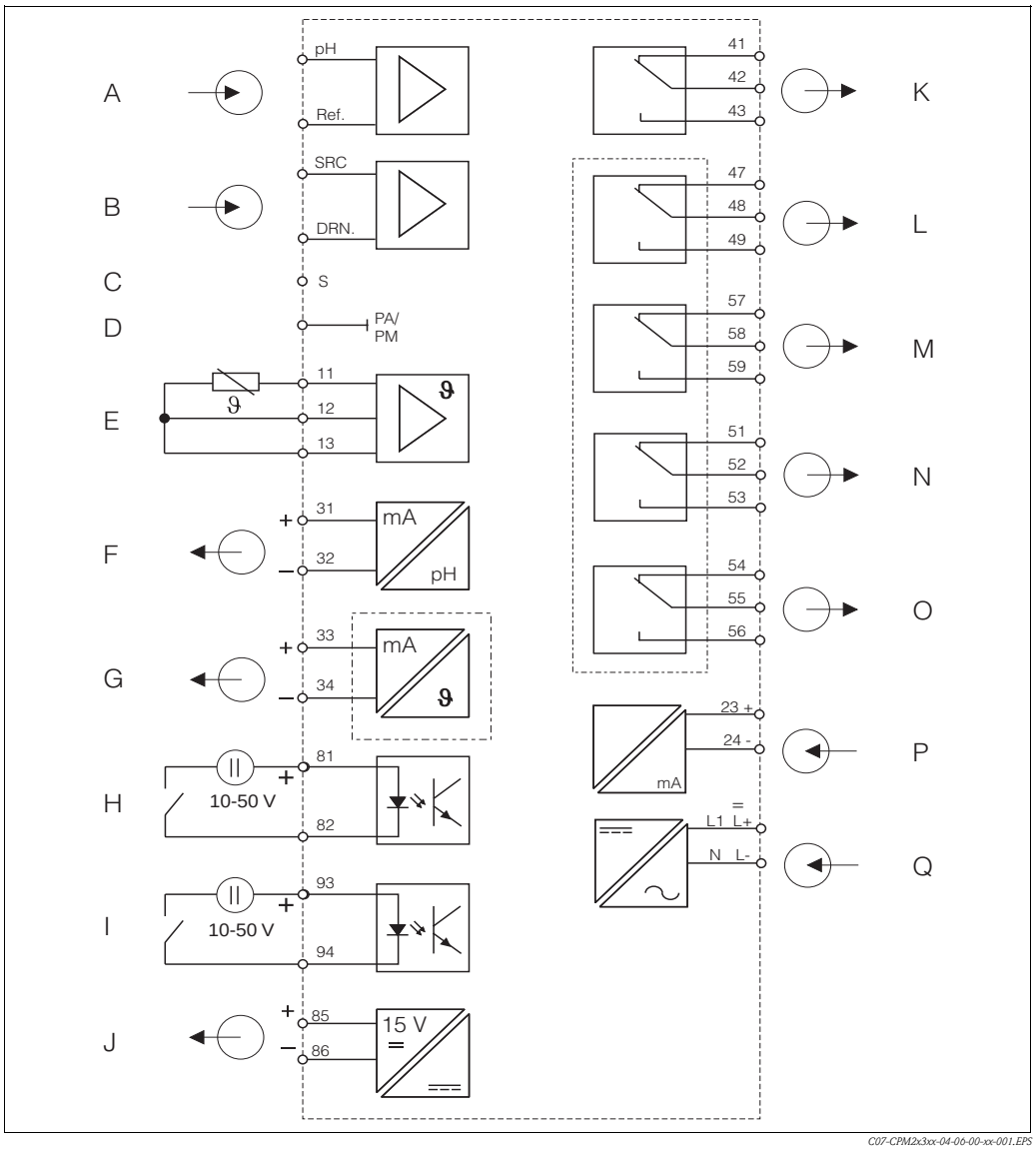
Binary inputs	Voltage:	10 ... 50 V
	Power consumption:	max. 10 mA
Current input	4 ... 20 mA, galvanically separated Load: 260 Ω at 20 mA (voltage drop 5.2 V)	

Output

Current range	0 / 4 ... 20 mA, galvanically seperated	
Error current	2.4 or 22 mA	
Load	max. 500 Ω (depending on operating voltage)	
Output range	pH:	adjustable, min. Δ 1 pH
	ORP:	
	absolute:	adjustable, min. Δ 50 mV
	relative:	fixed, 0 ... 100 %
	Temperature:	adjustable, Δ 10 ... Δ 100 % of upper range value
Resolution	max. 700 digits/mA	
Min. distance for 0 / 4 ... 20 mA signal	10 % of measuring range	
Isolation voltage	max. 350 V_{rms} / 500 V DC	
Overvoltage protection	acc. to EN 61000-4-5:1995	
Auxiliary voltage output	Output voltage:	15 V ± 0.6
	Output current:	max. 10 mA
Contact outputs	Switching current with ohmic load (cos φ = 1):	max. 2 A
	Switching current with inductive load (cos φ = 0.4):	max. 2 A
	Switching voltage:	max. 250 V AC, 30 V DC
	Switching power with ohmic load (cos φ = 1):	max. 1250 VA AC, 150 W DC
	Switching power with inductive load (cos φ = 0.4):	max. 500 VA AC, 90 W DC
Limit contactor	Pickup/dropout delay:	0 ... 2000 s
Controller	Function (adjustable):	pulse length/pulse frequency controller
	Controller response:	PID
	Control gain K_p:	0.01 ... 20.00
	Integral action time T_n:	0.0 ... 999.9 min
	Derivative action T_v:	0.0 ... 999.9 min
	Period for pulse length controller:	0.5 ... 999.9 s
	Frequency for pulse frequency controller:	60 ... 180 min^{-1}
	Basic load:	0 ... 40% of max. set value
Alarm	Function (selectable):	latching/momentary contact
	Alarm threshold adjustment range:	pH/temperature: complete measuring range
	Alarm delay:	0 ... 2000 s 0 ... 2000 min

Power supply

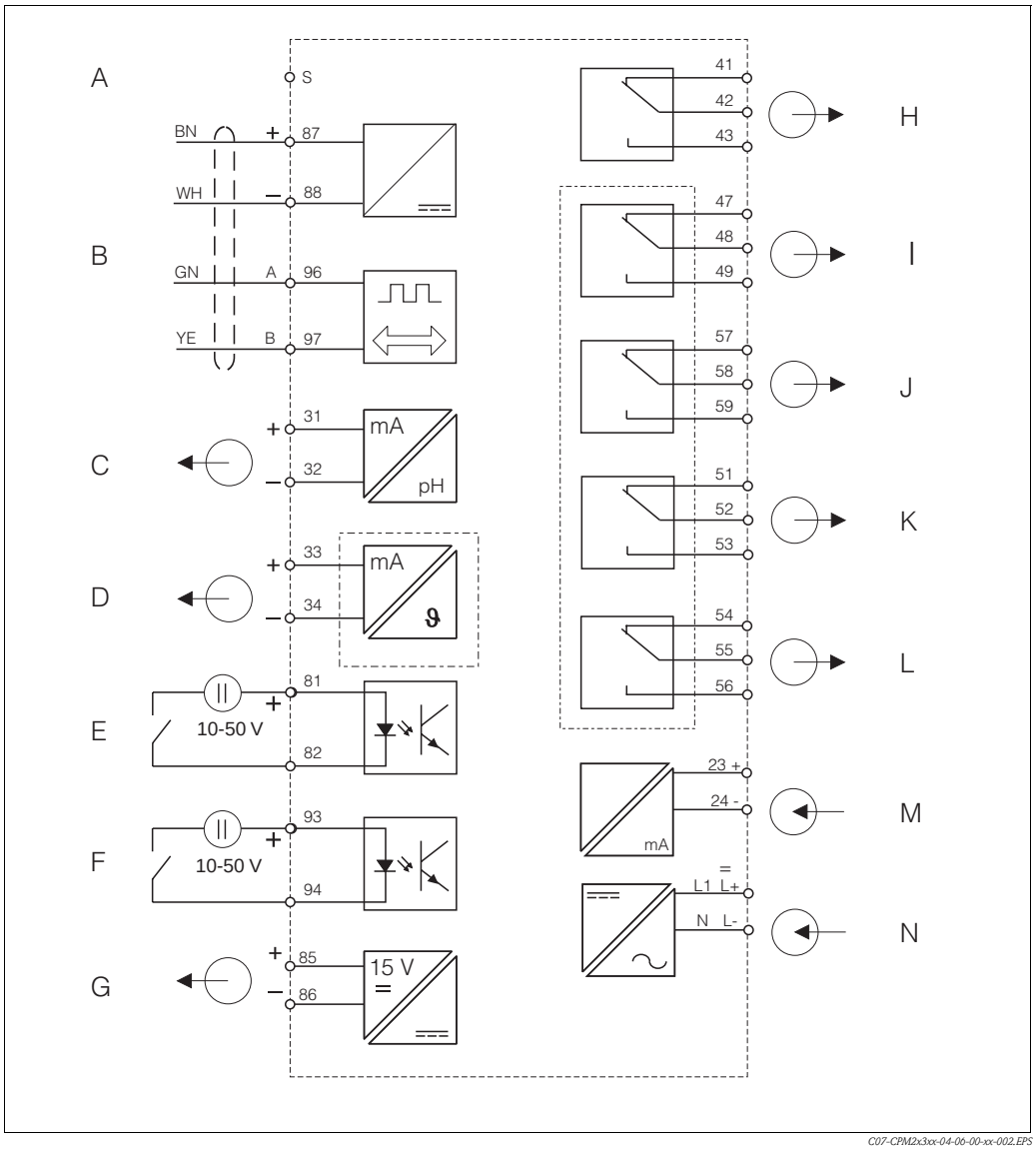
Electrical connection of standard sensors and ISFET sensors



Electrical connection Liquisys M

A	*Standard sensor*	*J*	*Aux. voltage output*
B	*ISFET sensor*	*K*	*Alarm (current-free contact position)*
C	*Shield for glass electrodes*	*L*	*Relay 1 (current-free contact position)*
D	*Solution ground*	*M*	*Relay 2 (current-free contact position)*
E	*Temperature sensor*	*N*	*Relay 3 (current-free contact position)*
F	*Signal output 1 pH/ORP*	*O*	*Relay 4 (current-free contact position)*
G	*Signal output 2 temperature, pH/ORP or continuous controller*	*P*	*Current input 4 ... 20 mA*
H	*Binary input 1 (Hold)*	*Q*	*Power supply*
I	*Binary input 2 (Chemoclean)*		

Electrical connection of digital sensors with Memosens technology

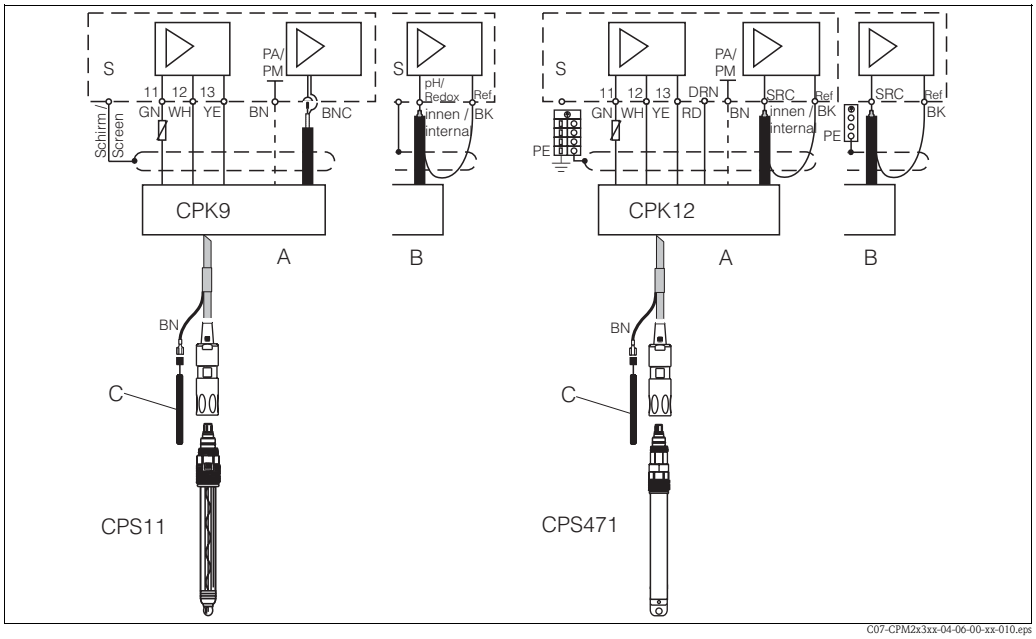


Electrical connection of the transmitter with Memosens technology

A	*Shield*	*H*	*Alarm (current-free contact position)*
B	*Sensor*	*I*	*Relay1 (current-free contact position)*
C	*Signal output 1 pH/ORP*	*J*	*Relay 2 (current-free contact position)*
D	*Signal output 2 temperature, pH/ORP or continuous controller*	*K*	*Relay 3 (current-free contact position)*
E	*Binary input 1 (Hold)*	*L*	*Relay 4 (current-free contact position)*
F	*Binary input 2 (Chemoclean)*	*M*	*Current input 4 ... 20 mA*
G	*Aux. voltage output*	*N*	*Power supply*

Connection of sensor

The pH and ORP electrodes are connected using special terminated and shielded multicore cables. The measuring cable can be extended with a junction box and an extension cable.
Termination instructions are supplied with the measuring cable.



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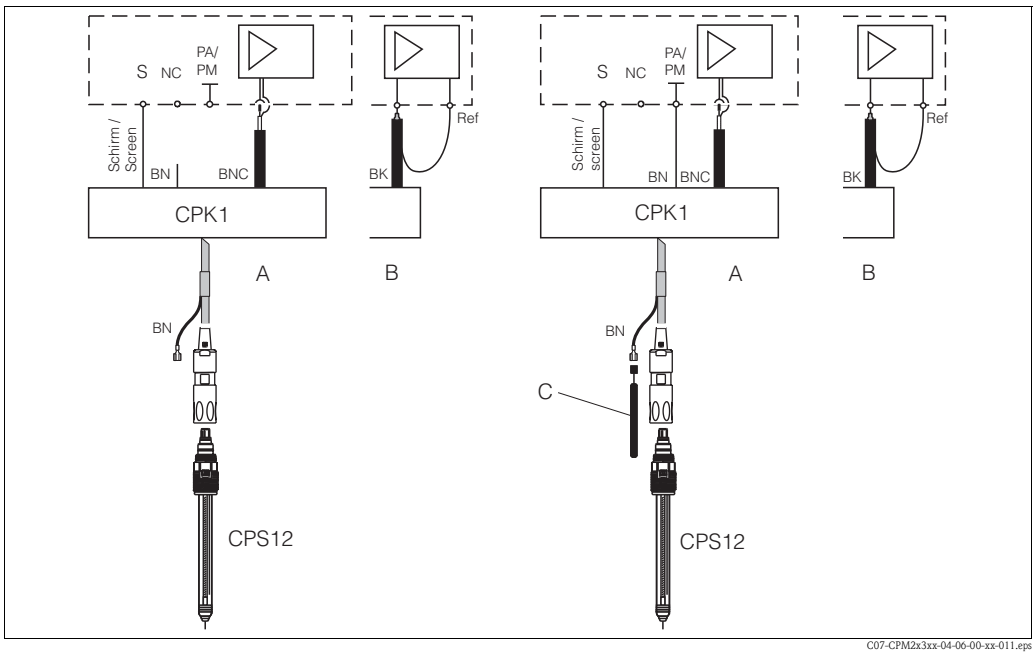
Connection CPS11 with CPK9 and CPS471 with CPK12 to Liquisys M

A Panel-mounted instrument
B Field instrument
C Potential matching PM for symmetrical connection



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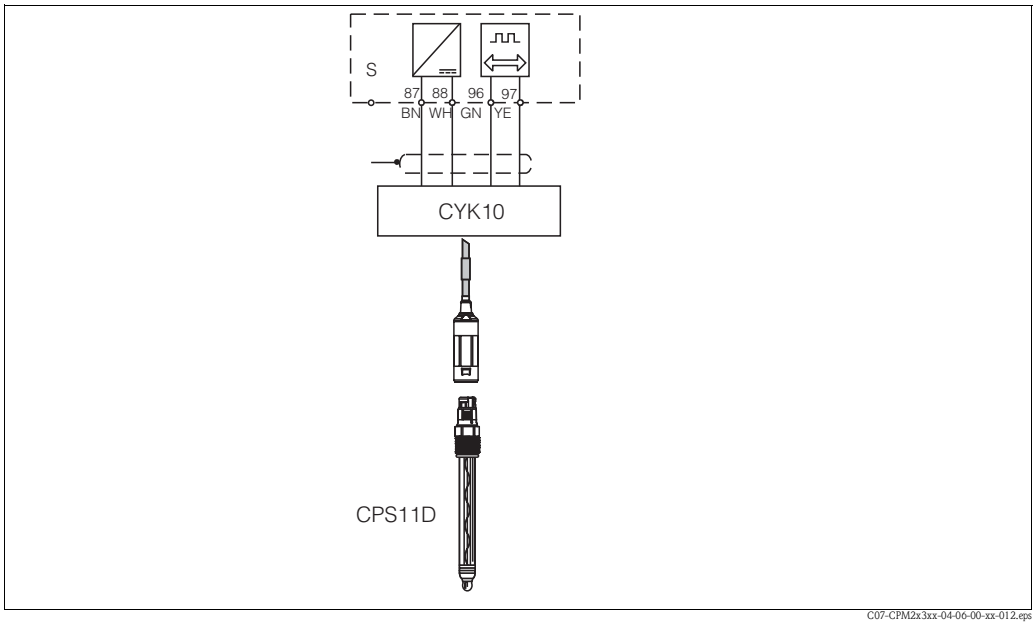
Unsymmetrical and symmetrical connection of ORP electrodes to Liquisys M

A Panel-mounted instrument
B Field instrument
C Potential matching PM for symmetrical connection



Connection of digital sensor CPS11D with CYK10

Power supply	depending on ordered version: 100/115/230 V AC +10/-15 %, 48 ... 62 Hz 24 V AC/DC +20/-15 %
Power consumption	max. 7.5 VA
Mains protection	microfuse, medium time-lag, 250 V/3.15 A

Performance characteristic

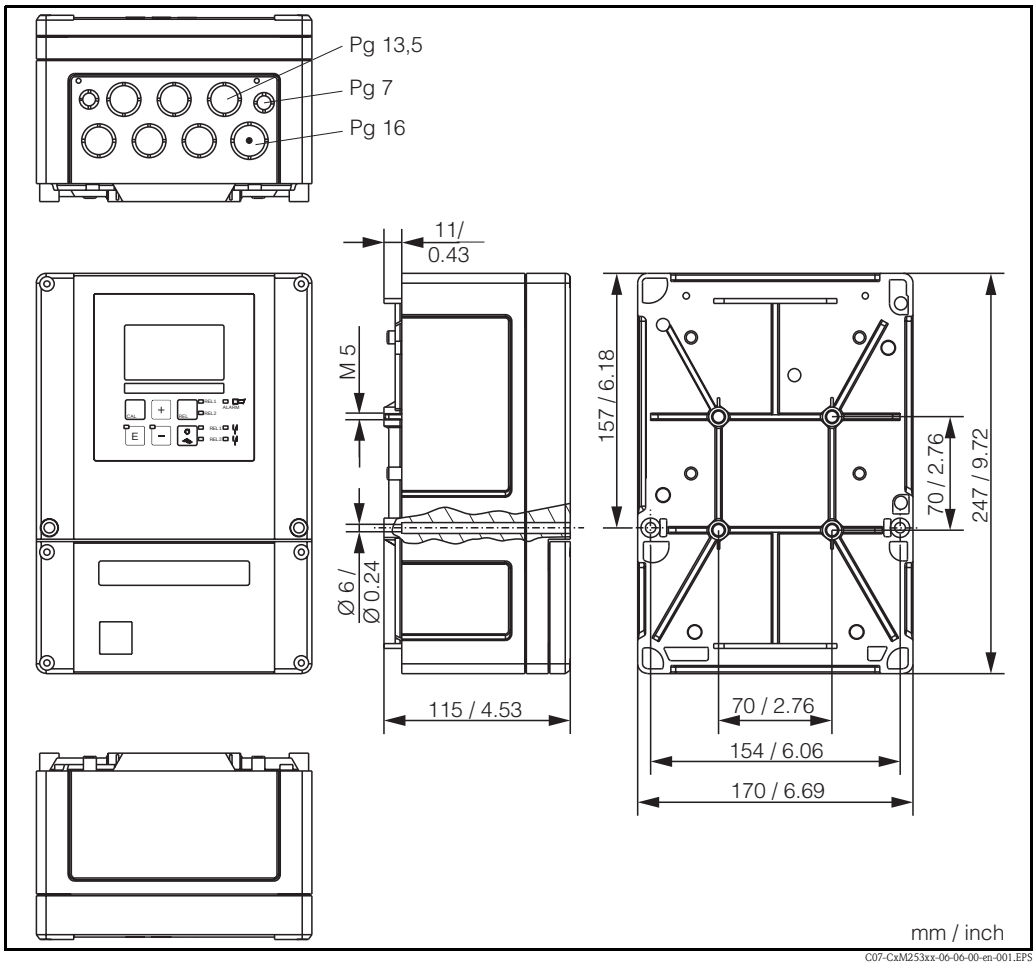
Reference temperature	25 °C (77 °F)	
Resolution	pH:	0.01 pH
	ORP:	1 mV/0.1 %
	Temperature:	0.1 °C
Deviation of indication[a]	Display	
	pH:	max. 0.5 % of measuring range
	ORP:	max. 0.5 % of measuring range
	Temperature:	max. 1.0 % of measuring range
	Signal output	
	pH:	max. 0.75 % of measuring range
	ORP:	max. 0.75 % of measuring range
	Temperature:	max. 1.25 % of measuring range
Repeatability[a]	pH:	max. 0.2 % of measuring range
	Redox:	max. 0.2 % of measuring range

a) acc. to IEC 746-1, for nominal operating conditions

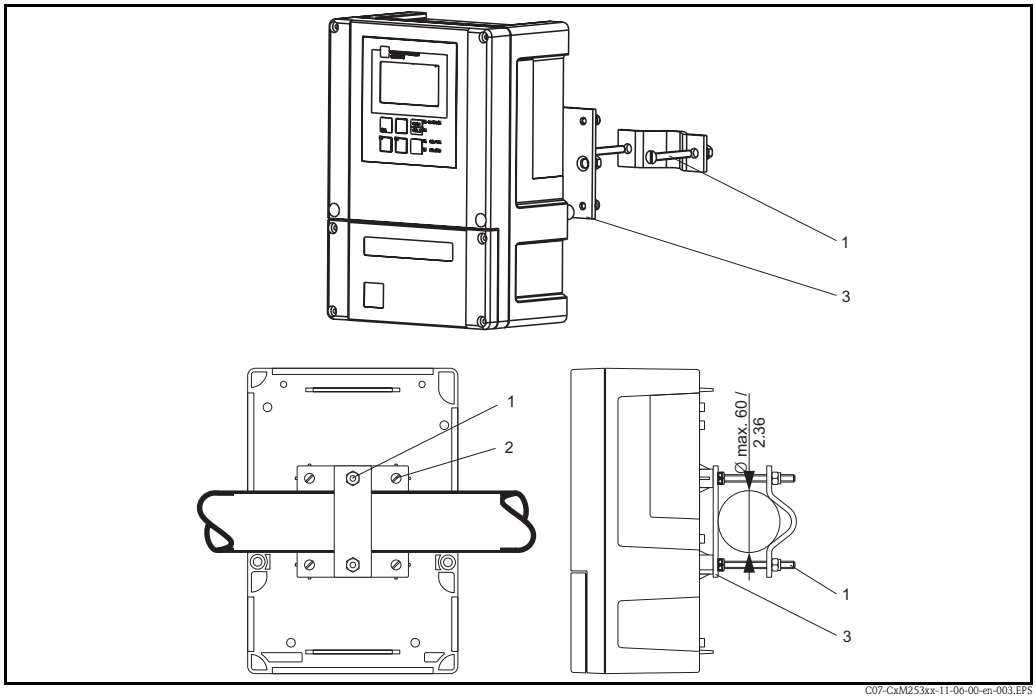
Zero point	Glass:	pH 5.0 ... 9.0 (nominal pH 7.00)
	Antimon:	pH –1.0 ... 3.0 (nominal pH 1.00)
	ISFET:	-500 ... +500 mV
Slope	Glass:	38.00 ... 65.00 mV/pH (nominal 59.16 mV/pH)
	Antimon:	25.00 ... 65.00 mV/pH (nominal 59.16 mV/pH)
	ISFET:	38.00 ... 65.00 mV/pH (nominal 59.16 mV/pH)
Offset	pH:	±2 pH
	ORP:	±120 mV/±50 %
	Temperature:	±5 °C

Installation conditions

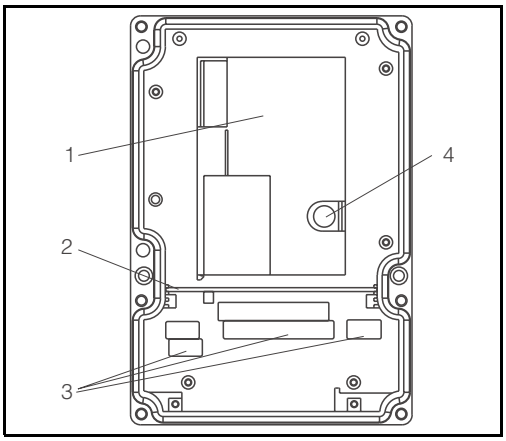
Installation instructions



Field instrument

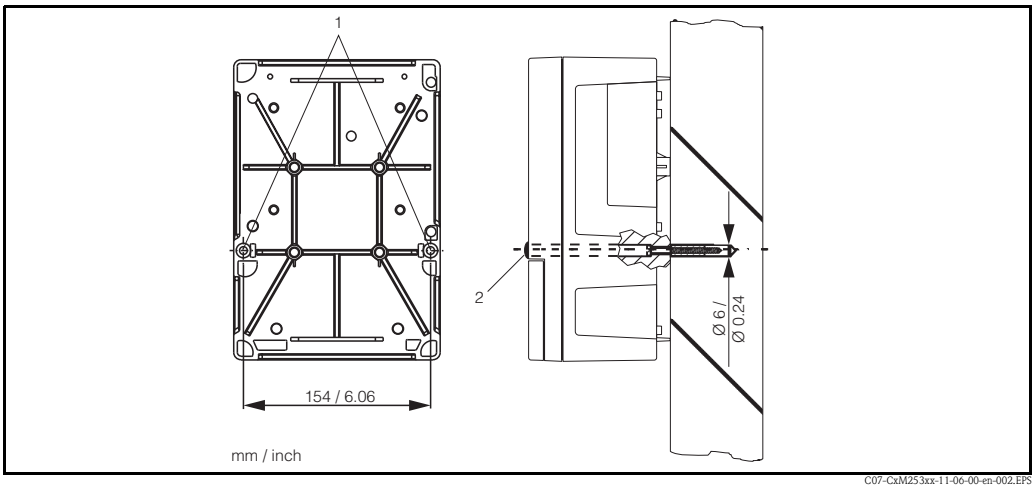


Mounting on cylindrical pipes

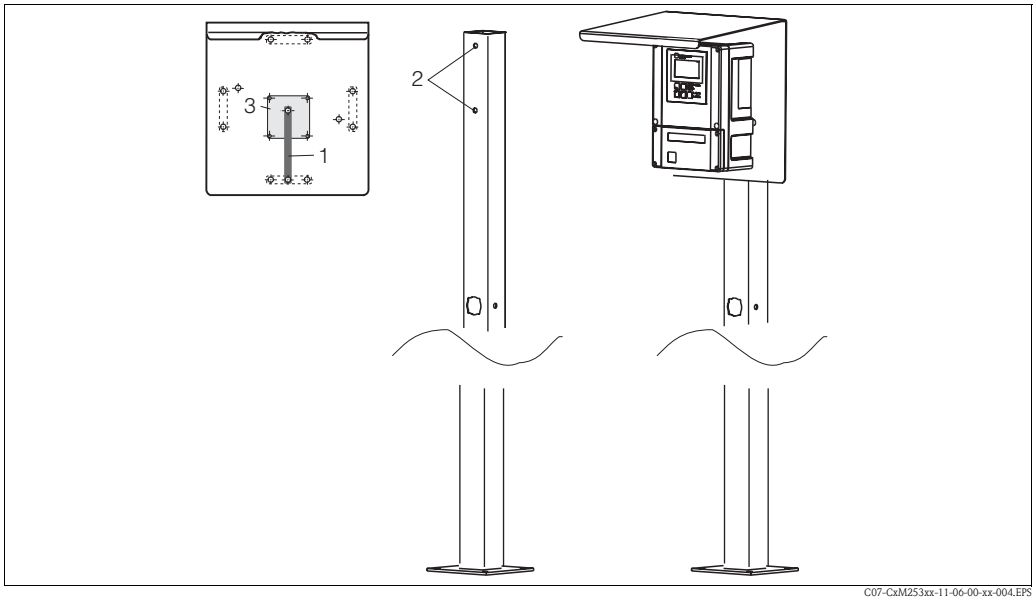


1 Removable electronics box
2 Partition plate
3 Terminal blocks
4 Fuse

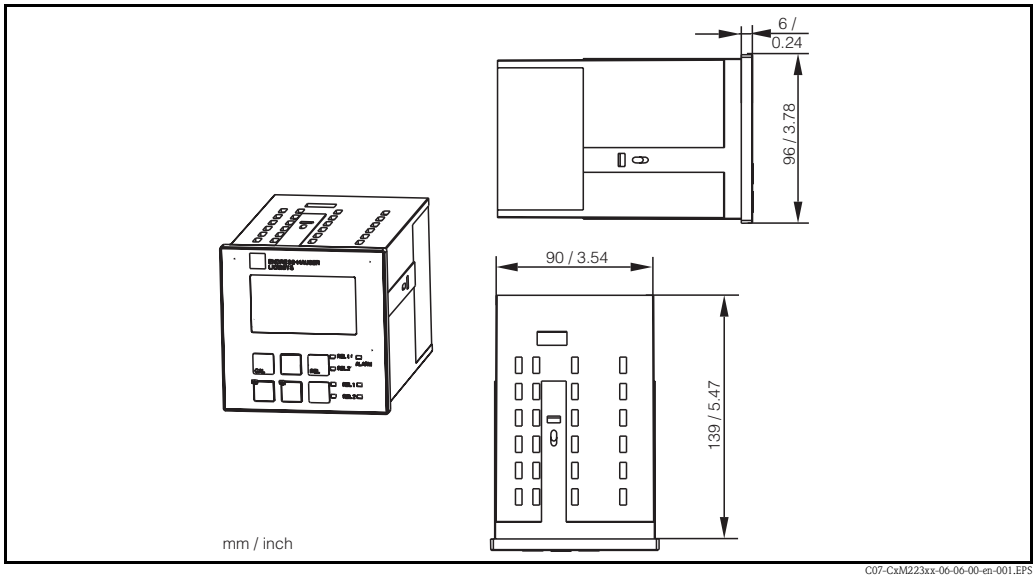
Inside of field instrument



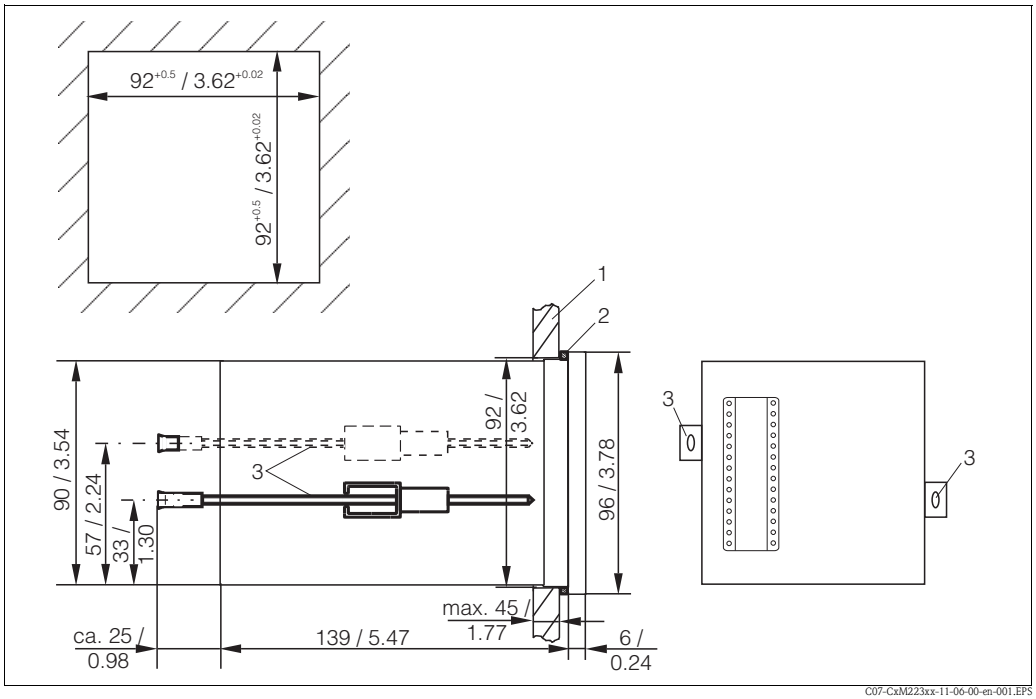
Wall mounting of the field instrument



Mounting of the field instrument with mounting post and weather protection cover



Dimensions panel-mounted instrument



Installation of the panel mounted instrument

1 Wall of control cabinet
2 Gasket
3 Tensioning screws

Environment

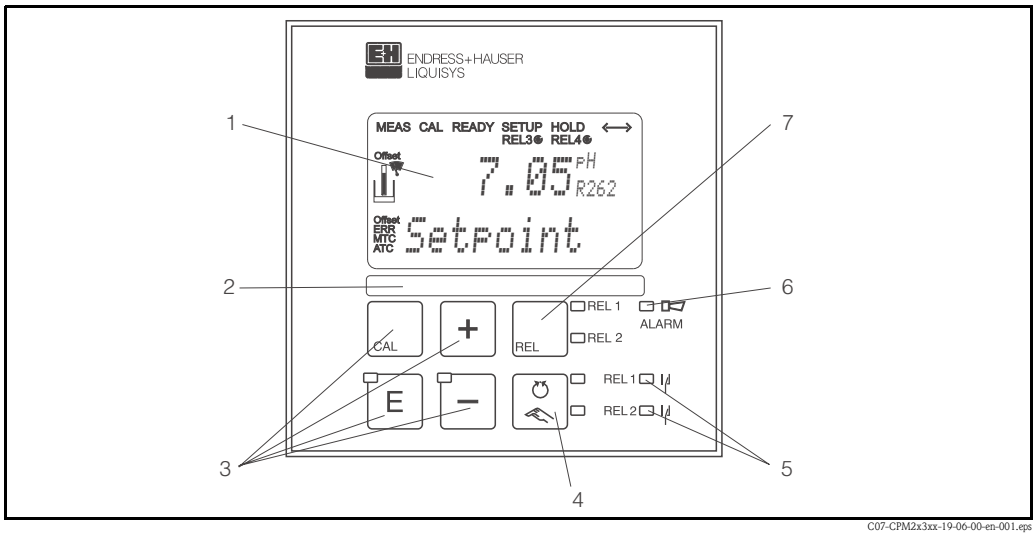
Ambient temperature	-10 ... +55 °C (+14 ... +131 °F)	
Ambient temperature limit	–20 ... +60 °C (-4 ... +140 °F)	
Storage and transport temperature	–25 ... +65 °C (-13 ... +149 °F)	
Electromagnetic compatibility	Interference emission and interference immunity acc. to EN 61326: 1997 / A1: 1998	
Ingress protection	Panel mounted instrument: Field instrument:	IP 54 (front), IP 30 (housing) IP 65
Relative humidity	10 ... 95%, non-condensing	

Mechanical construction

Dimensions	Panel mounted instrument: Field instrument:	96 x 96 x 145 mm (3.78 x 3.78 x 5.71 inches) Mounting depth: approx. 165 mm (6.50") 247 x 170 x 115 mm (9.72 x 6.69 x 4.53 inches)
Weight	Panel mounted instrument: Field instrument:	max. 0.7 kg (1.5 lb) max. 2.3 kg (5.1 lb)
Materials	Housing of panel mounted instrument: Field housing: Front membrane:	Polycarbonate ABS PC Fr Polyester, UV-resistant
Terminals	Cross section	2.5 mm^2

Human interface

Display elements



Operating elements

1 LC display for display of measured values, configuration data and current menu field
2 Field for user labeling
3 4 main control keys for calibration and instrument configuration
4 Key for switching between automatic/manual operation
5 LED indicators for switched limit outputs
6 LED indicator for alarm function
7 Display of active contact and key for relay switching in manual mode

The display simultaneously shows the current measured value and the temperature – the essential process data. Brief information texts in the configuration menu provide assistance with parameter configuration.

Instrument control functions

All instrument control functions are arranged in a logical menu structure. Following access code entry, the individual parameters can be easily selected and modified as needed.

Certificates and approvals

CE symbol

Declaration of conformity
The product meets the legal requirements of the harmonised European standards.
The manufacturer confirms compliance with the standards by affixing the CE symbol.

Ex approval for zone 2

CPM253-..6...	ATEX II 3G EEx nA[L] IIC T4
CPM253-..4... CPM223-..4... CPM223-..6...	ATEX II 3G [EEx nAL] IIC

Ordering information

Product structure

	Sensor input; software
IS	pH (glass/ISFET) / ORP; Plus package
MR	pH (digital sensor); basic version
MS	pH (digital sensor); Plus package
PR	pH (glass)/ORP; basic version
PS	pH (glass)/ORP; Plus package

		Power supply; approval
0		230 V AC
1		115 V AC
2		230 V AC; CSA Gen. Purp.
3		115 V AC; CSA Gen. Purp.
4		230 V AC; ATEX II 3G [EEx nAL] IIC
5		100 V AC
6		24 V AC/DC; ATEX II 3G [EEx nAL] IIC for CPM223, EEx nA[L] IIC T4 for CPM253
7		24 V AC; CSA Gen. Purp.
8		24 V AC/DC

			Output
0			1 x 20 mA, pH/ORP
1			2 x 20 mA, pH/ORP + selectable
3			PROFIBUS PA
4			PROFIBUS DP
5			1 x 20 mA, pH/ORP HART
6			2 x 20 mA, pH/ORP HART + selectable

				Additional contacts; analogue input
05				not selected
10				2 x relay (limit/P(ID)/timer)
15				4 x relay (limit/P(ID)/Chemoclean)
16				4 x relay (limit/P(ID)/timer)
20				2 x relay (limit/P(ID)/timer); 20 mA
25				4 x relay (limit/P(ID)/Chemoclean); 20 mA
26				4 x relay (limit/P(ID)/timer); 20 mA

CPM253-					complete order code
CPM223-					

Additional functions of the Plus package

- Current output configuration via table
- Monitoring sensor and process for safe operation
- Neutralisation controller
- Automatic start of cleaning

Scope of delivery

The delivery of the field instrument includes:
- 1 transmitter CPM253
- 1 plug-in screw terminal
- 1 cable gland Pg 7
- 1 cable gland Pg 16 reduced
- 2 cable glands Pg 13.5
- 1 operating instructions BA 194C/07/en
- versions with HART communication:
  1 operating instructions Field Communication with HART, BA 208C/07/en
- versions with PROFIBUS communication:
  1 operating instructions Field Communication with PROFIBUS PA/DP, BA 209C/07/en
- versions with ex approval for hazardous area zone II (ATEX II 3G):
  Safety instructions for use in explosion-hazardous areas, XA 194C/07/a3

The delivery of the panel mounted instrument includes:
- 1 transmitter CPM223
- 1 set of plug-in screw terminals
- 2 tensioning screws
- 1 BNC-plug (solder-free)
- 1 operating instructions BA 194C/07/en
- versions with HART communication:
  1 operating instructions Field Communication with HART, BA 208C/07/en

- versions with PROFIBUS communication:
  1 operating instructions Field Communication with PROFIBUS PA/DP, BA 209C/07/en
- versions with ex approval for hazardous area zone II (ATEX II 3G):
  Safety instructions for use in explosion-hazardous areas, XA 194C/07/a3

Accessories

Sensors

❑ Orbisint CPS11
pH electrode for process applications, with PTFE diaphragm;
Ordering acc. to product structure, see Technical Information (TI 028/C07/en)

❑ Orbisint CPS12
ORP electrode for process applications, with PTFE diaphragm;
Ordering acc. to product structure, see Technical Information (TI 367/C07/en)

❑ Ceraliquid CPS41
pH electrode with ceramics diaphragm and KCl liquid electrolyte;
Ordering acc. to product structure, see Technical Information (TI 079/C07/en)

❑ Ceraliquid CPS42
ORP electrode with ceramics diaphragm and KCl liquid electrolyte;
Ordering acc. to product structure, see Technical Information (TI 079/C07/en)

❑ Ceragel CPS71
pH electrode with double chamber reference system and integrated bridge electrolyte;
Ordering acc. to product structure, see Technical Information (TI 245/C07/en)

❑ Ceragel CPS72
ORP electrode with double chamber reference system and integrated bridge electrolyte;
Ordering acc. to product structure, see Technical Information (TI 374/C07/en)

❑ Orbipore CPS91
pH electrode with open aperture for media with high dirt load;
Ordering acc. to product structure, see Technical Information (TI 375C/07/en)

❑ Orbisint CPS11D
Digital pH sensor for process applications, with PTFE diaphragm;
Ordering acc. to product structure, see Technical Information (TI 028/C07/en)

❑ Ceragel CPS71D
Digital pH sensor with double chamber reference system and integrated bridge electrolyte;
Ordering acc. to product structure, see Technical Information (TI 245/C07/en)

❑ Orbipore CPS91D
Digital pH sensor with open aperture for media with high dirt load;
Ordering acc. to product structure, see Technical Information (TI 375C/07/en)

❑ Tophit CPS471
Sterilisable and autoclavable ISFET sensor for food and pharmaceuticals, process technology, water treatment and biotechnology;
Ordering acc. to product structure, see Technical Information (TI 283/C07/en)

❑ Tophit CPS441
Sterilisable ISFET sensor for media with low conductivity, with liquid KCl electrolyte;
Ordering acc. to product structure, see Technical Information (TI 352/C07/en)

❑ Tophit CPS491
ISFET sensor with open aperture for media with high dirt load;
Ordering acc. to product structure, see Technical Information (TI 377/C07/en)

Assemblies

❑ Cleanfit W CPA450
Manually operated retractable assembly for pH electrodes, for the installation of 120 mm electrodes in tanks and pipes,
Ordering acc. to product structure, see Technical Information (TI 183C/07/en)

❑ Cleanfit P CPA471
Compact retractable stainless steel assembly, for the installation in tanks and pipes, manual or pneumatic operation;
Ordering acc. to product structure, see Technical Information (TI 217C/07/en)

❑ Cleanfit P CPA472
Compact retractable plastic assembly, for the installation in tanks and pipes, manual or pneumatic operation;
Ordering acc. to product structure, see Technical Information (TI 223C/07/en)

❑ Cleanfit P CPA473
Retractable stainless steel process assembly, with ball valve for a particularly safe and reliable separation of the medium from the environment;
Ordering acc. to product structure, see Technical Information (TI 344C/07/en)

❑ Cleanfit P CPA474
Retractable plastic process assembly, with ball valve for a particularly safe and reliable separation of the medium from the environment;
Ordering acc. to product structure, see Technical Information (TI 345C/07/en)

❑ Dipfit W CPA111
Plastic immersion and installation assembly, for open and closed tanks;
Ordering acc. to product structure, see Technical Information (TI 112C/07/en)

❑ Flowfit W CPA250
Flow assembly for pH and ORP measurement
Ordering acc. to product structure, see Technical Information (TI 041C/07/en)

❑ Immersion assembly Dipfit W CYA611
for sensor immersion in basins, open channels and tanks, PVC;
Ordering acc. to product structure (Technical Information TI 166C/07/en)

Connection accessories

❑ CPK9 special measuring cable
For electrodes with TOP 68 plug-in head, for high-temperature and high-pressure applications, IP 68
Ordering acc. to product structure, see Technical Information (TI 118C/07/en)

❑ CPK1 special measuring cable
For pH/redox electrodes with GSA plug-in head
Ordering acc. to product structure, see Technical Information (TI 118C/07/en)

❑ CPK2 special measuring cable
For pH/redox electrodes with GSA plug-in head, with three sensor plugs
Ordering acc. to product structure, see Technical Information (TI 118C/07/en)

❑ CPK12 special measuring cable
For pH/redox glass electrodes and ISFET sensors with TOP68 plug-in head
Ordering acc. to product structure, see Technical Information (TI 118C/07/en)

❑ CYK10 Data cable for digital sensors
For digital pH sensors with Memosens technology (CPSxxD)
Ordering according to product structure, see below

	Certificates			
	A	Standard, non Ex		
		Cable length		
		03	Cable length: 3 m / 9.84 ft	
		05	Cable length: 5 m / 16.41 ft	
		10	Cable length: 10 m / 32.81 ft	
		15	Cable length: 15 m / 49.22 ft	
		20	Cable length: 20 m / 65.62 ft	
		25	Cable length: 25 m / 82.03 ft	
			Ready-made	
			1	Wire terminals
CYK10-				complete order code

❑ Measuring cableCYK81
to lengthen the fixed cable of e.g. Memosens, CUS31/CUS41,
2 wires, twisted pair with shield and PVC-sheath (2 x 2 x 0.5 mm^2 + sheath), sold by the metre
order no. 51502543

❑ Junction box VBM
for cable extension, with 10 terminals, IP 65 / NEMA 4X

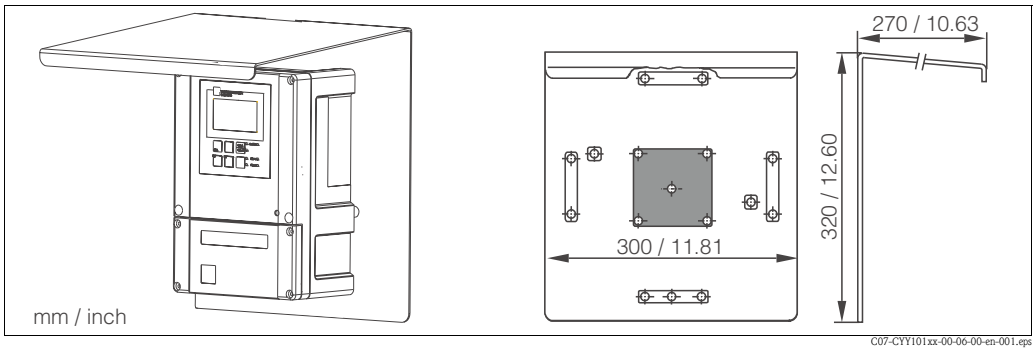
Cable entry Pg 13.5	Order no. 50003987
Cable entry NPT ½"	Order no. 51500177

❑ Junction box VBA
with 10 high-impedance terminals, protection class: IP 65; material: polycarbonate
order no. 50005276

❑ Junction box RM
to lengthen the cable for Memosens or CUS31/CUS41, IP 65 with 2 x PG 13.5
order no. 51500832

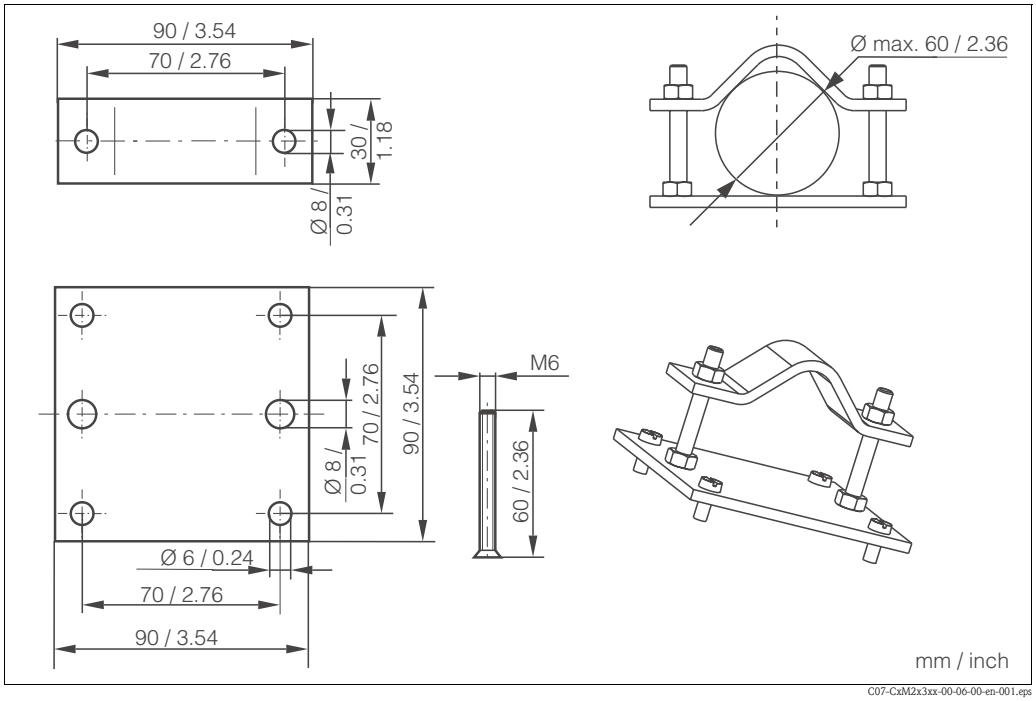
Mounting accessories

❑ Weather protection cover CYY101 for mounting of field housing, for outdoor installation
material: stainless steel 1.4031;
order no. CYY101-A



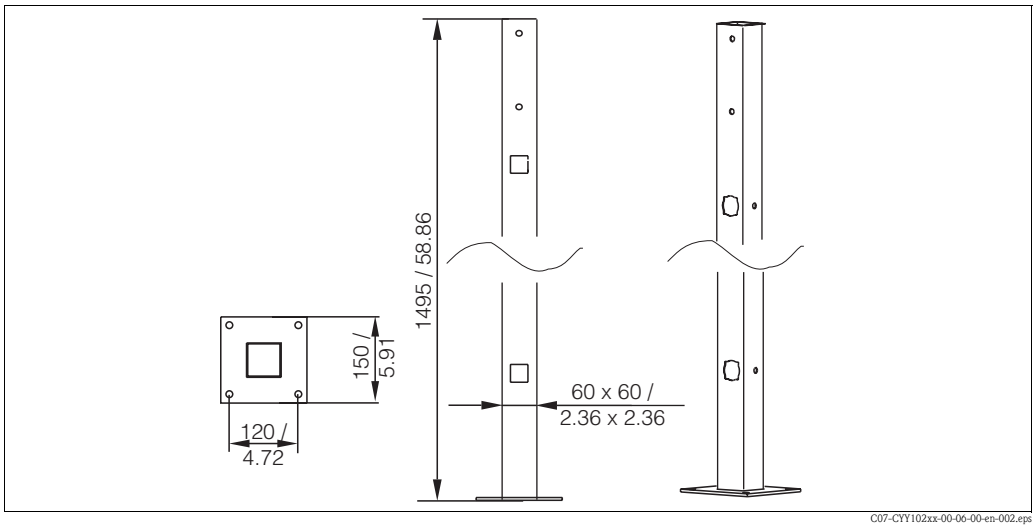
Weather protection cover for field instrument

❑ Kit for mounting of field housing on horizontal or vertical pipes (Ø max. 60 mm (2.36"))
order no. 50086842



Pipe mounting kit

❑ Universal upright post CYY102
Square tube for mounting of field housing, material: stainless steel 1.4301;
order no. CYY102-AA



Square post CYY102

Buffer solutions

Technical buffer solutions, accuracy 0.02 pH, acc. to NIST/DIN
❑ pH 4.0 red, 100 ml (0.026 US gal.), order no. CPY 2-0
❑ pH 4.0 red, 1000 ml (0.264 US gal.), order no. CPY 2-1
❑ pH 7.0 green, 100 ml (0.026 US gal.), order no. CPY 2-2
❑ pH 7.0 green, 1000 ml (0.264 US gal.), order no. CPY 2-3

Technical buffer solutions for single use, accuracy 0.02 pH, acc. to NIST/DIN
❑ pH 4.0 20 x 20 ml (0.005 US gal.), order no. CPY 2-D
❑ pH 7.0 20 x 20 ml (0.005 US gal.), order no. CPY 2-E

❑ +225 mV, pH 7, 100 ml (0.026 US gal.); order no. CPY 3-0
❑ +468 mV, pH 0, 100 ml (0.026 US gal.); order no. CPY 3-1

KCl-electrolyte solutions for liquid filled electrodes
❑ 3.0 mol, T = -10 ... 100 °C (14 ... 212 °F), 100 ml (3 oz), order no. CPY4-1
❑ 3.0 mol, T = -10 ... 100 °C (14 ... 212 °F), 1000 ml (30 oz), order no. CPY4-2
❑ 1.5 mol, T = -30 ... 100 °C (-22 ... 266 °F), 100 ml (3 oz), order no. CPY4-3
❑ 1.5 mol, T = -30 ... 100 °C (-22 ... 266 °F), 1000 ml (30 oz), order no. CPY4-4

Optoscope

❑ Optoscope
Interface between transmitter and PC / laptop for service purposes.
The Windows software "Scopeware" required for the PC or laptop is supplied with the Optoscope. The Optoscope is supplied in a sturdy plastic case with all the accessories required.
Order no. 51500650

Documentation

❑ Operating instructions Liquisys M CPM223/253, BA194C/07/en, order no. 51500268
❑ Ex safety instructions, XA194C/07/a3, order no. 51515755
❑ Operating instructions PROFIBUS-PA/-DP, BA209C/07/en, order no. 51501839
❑ Operating instructions HART, BA208C/07/en, order no. 51501609

International Head Quarter

Endress+Hauser
GmbH+Co. KG
Instruments International
Colmarer Str. 6
79576 Weil am Rhein
Deutschland

Tel. +49 76 21 9 75 02
Fax +49 76 21 9 75 34 5

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