

Technical Information

Liquiline Control CDC90

The smart system for automated measuring points



Applications

The Liquiline Control CDC90 plug & play system automates Memosens pH and ORP measuring points in all industries.

Your benefits

- Optimized cleaning and calibration cycles guarantee reliable and reproducible measuring signals that help to improve product yield, quality and raw material consumption.
- Pro-active cleaning and calibration in the event of sensor fouling and blockage ensures reliable measured values and therefore the safety of your product.
- Liquiline Control CDC90 minimizes maintenance and repair activities in environments that are hazardous and difficult to access. This increases workplace safety for your service staff.
- Seamless integration of system into your process control system thanks to certified communication standards such as analog signals (0/4 to 20 mA), PROFIBUS DP, Modbus TCP, EtherNet/IP, Profinet or OPC UA, including web server technology.

Function and system design

Measuring principle


The Liquiline Control CDC90 plug & play system automates Memosens pH and ORP measuring points in all industries. It automatically cleans, calibrates, monitors and validates up to two sensors, reducing maintenance costs, improving workplace safety in hazardous environments and boosting product yield and quality.

Liquiline Control CDC90 can be easily integrated into existing system infrastructures and allows your measuring points to be controlled remotely via a control station or mobile terminals.

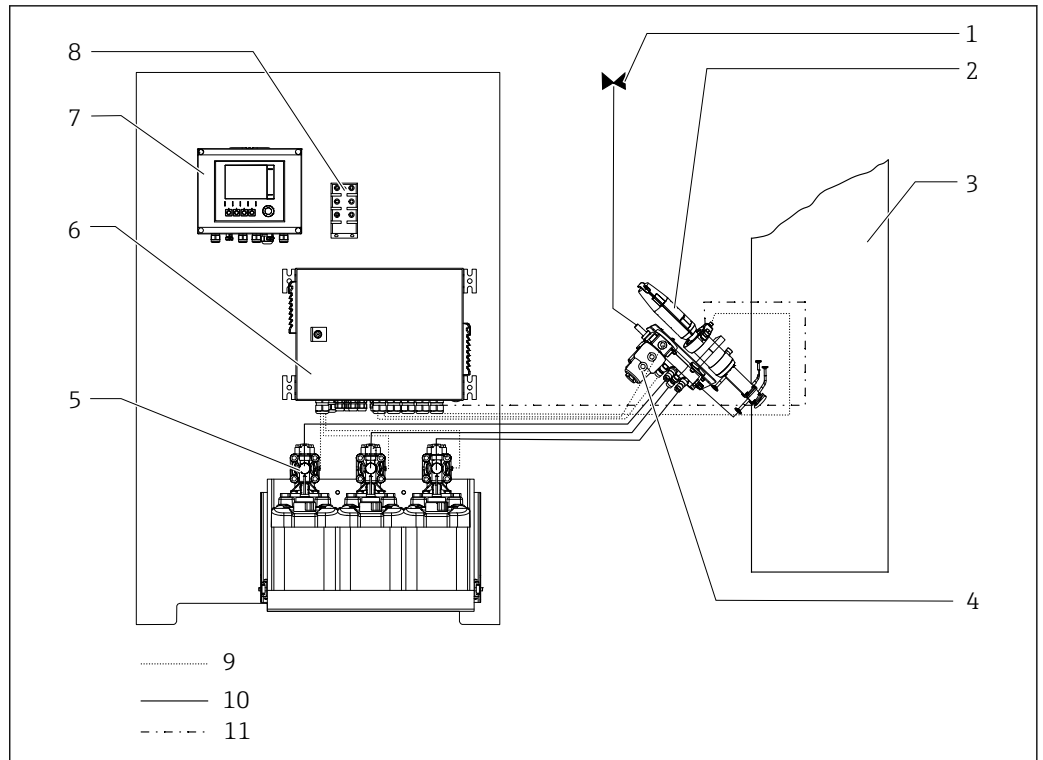
Measuring system

A complete measuring system comprises the following components:



 1 System overview

- CDC90 including:
 - CDC90 control unit (1)
 - Ethernet switch (2)
 - Pneumatic control unit (3)
 - Pump canister unit (4) for the transportation and storage of buffer solutions and cleaning agents
 - Rinsing block
- Retractable assembly (e.g. Cleanfit series) with inductive limit switches
- pH/ORP sensor
- Buffer solutions and cleaning agents (5)



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2 Complete measuring system

- | | | | |
|---|--|----|------------------------------|
| 1 | Water connection, at installation location | 7 | CDC90 control unit |
| 2 | Assembly | 8 | Ethernet switch |
| 3 | Process/medium | 9 | Media (cleaners, buffers) |
| 4 | Rinsing block | 10 | Compressed air line |
| 5 | Pump canister unit | 11 | Electric cable, signal cable |
| 6 | Pneumatic control unit | | |

Cleaning/calibration programs

You can choose from the following cleaning and calibration options:

Predefined program for:

- Cleaning the sensor
- Sterilizing the sensor
- Cleaning and calibrating the sensor
- Cleaning, calibrating and sterilizing the sensor
- Quick testing of system
- User-definable programs without predefined program steps

You can freely configure all programs to suit your requirements. The predefined programs are used for faster configuration.

Calibration and measurement

Calibration options:

- Automatic calibration
The buffer tables e.g. according to DIN, Endress+Hauser etc. are saved by setting the buffers used and automatically calculating the pH values depending on the temperature. Additional buffer tables can also be programmed.
- Manual calibration
During manual calibration, a two-point calibration (zero point and slope) or a single-point calibration, i.e. zero-point calibration of the pH electrode, can be performed.
- Automatic acceptance of calibration data for digital sensors with Memosens technology

Accuracy achieved through:

- Temperature compensation in the medium
The temperature measured in the medium is compensated for during the calculation of the pH value, or the pH value is recalculated.
- Selective measurement
Short sensor immersion times when measuring.
- Large portfolio of pH sensors
- Flexible configuration of sensor-dependent accuracy.

Equipment architecture

Inputs and outputs

The CDC90 control unit consists of CM44R modules and a separate industrial PC in the CM44 field housing.

The CM44R acts as the peripheral interface for analog and digital signals. It is controlled by an IPC that has a separate software program. The IPC is responsible for retracting the assembly and activating the pilot valve manifold, and processes all the states of the float switches and pressure switches.

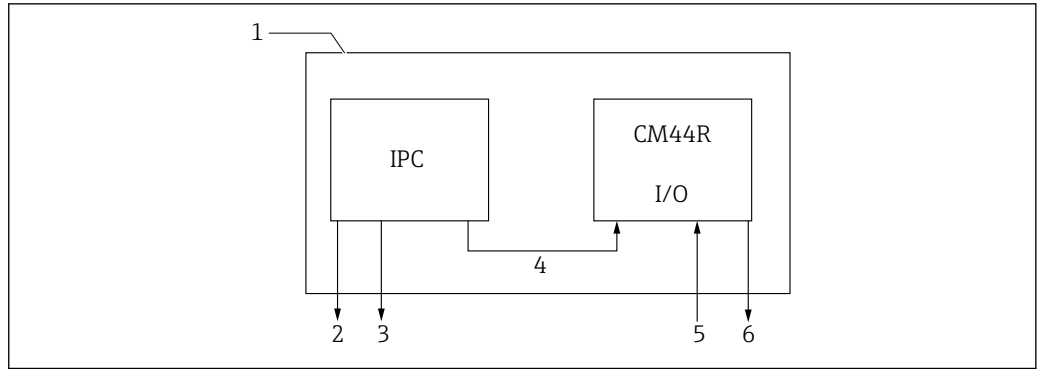
The IPC establishes digital fieldbus communication to the customer's control station only.

In both the IPC and CM44R, operation and configuration is possible via the device's web server.

Primary operation is via the IPC. As the CM44R is preconfigured upon delivery, it generally does not require any further configuration.

The assignment of the inputs and outputs is provided in the following table and graphic:

	CM44R	IPC	Pneumatic control unit
Inputs			
Digital			12x0/24 VDC, passive
Analog	1 x 0/4 to 20 mA, passive, potentially isolated from one another and from the sensor inputs		
Outputs			
Digital			16x0/24 VDC, 0.5 mA per output
Analog	1/5 x 0/4 to 20 mA, active, galvanically isolated from one another and from the sensor circuits		
Fieldbuses		<ul style="list-style-type: none"> ■ EtherNet/IP ■ PROFIBUS DP via Modbus TCP/Profibus DP coupler ■ PROFINET via Modbus TCP/PROFINET coupler ■ Modbus TCP ■ OPC UA 	



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3 Overview of analog and digital communication

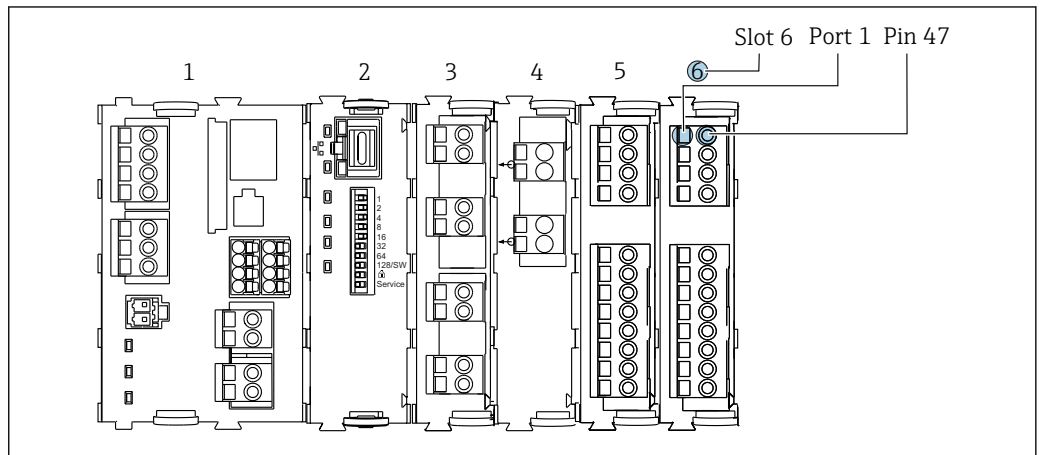
- 1 CM44 field housing
- 2 Digital communication with the actuators
- 3 Digital communication with the control station (PROFINET, Ethernet IP, Modbus TCP, PROFIBUS DP, OPC UA)
- 4 Internal communication (Modbus TCP)
- 5 Digital communication with the sensors
- 6 Analog communication with the control station (4 to 20 mA)

CM44R modules

Modules of the CM44R:

- Base module BASE-E (contains 2 sensor inputs, 2 current outputs)
- Communication module ETH
- Module 4AO (4 current outputs, optional)
- Module 2AI (2 current inputs)
- DIO module

Example of terminal name:



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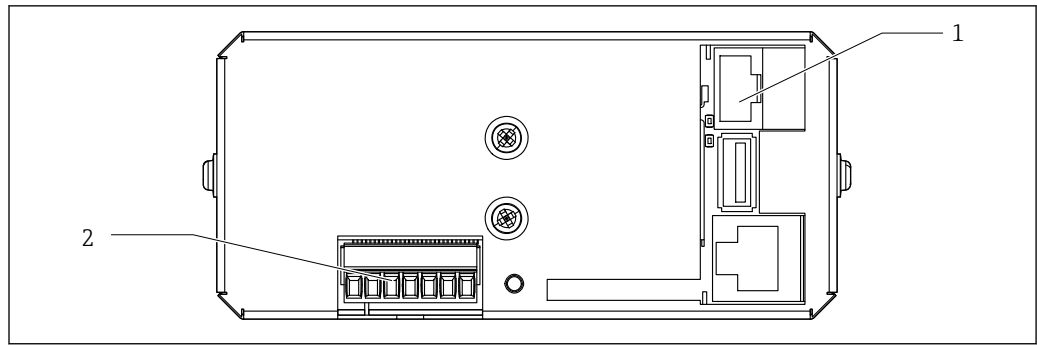
4 Example of port assignment

Basic rule for hardware upgrades

- i Please note the following if upgrading the device:**
 - The sum of all current inputs and outputs may not exceed 8!
 - A maximum of two "DIO" modules may be used.

IPC ports

Digital fieldbus communication with the control station



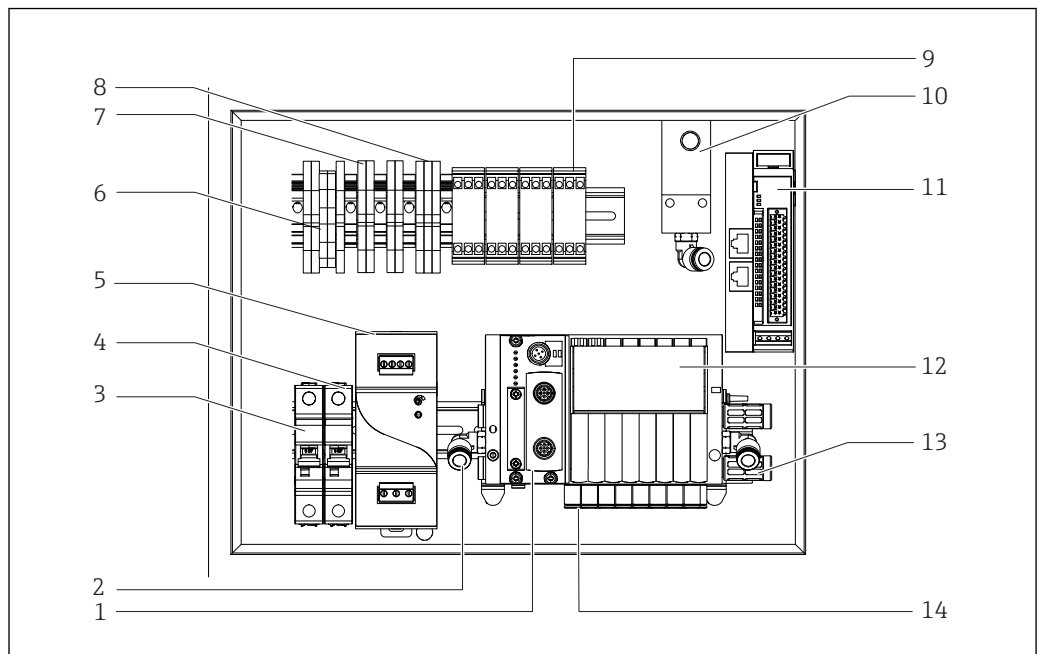
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5 IPC ports

1 Supply voltage

2 Ethernet switch (an additional fieldbus coupler is required if PROFIBUS DP and PROFINET are used)

Pneumatic control unit



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6 Pneumatic control unit

1 Pilot valve manifold, bus node

2 Compressed air connection, 8mm OD

3 F1 fuse, pneumatic control unit and control unit

4 F2 fuse, climate control unit (optional)

5 24 V AC power unit

6 110/220 V DC terminal

7 24 V DC terminal

8 Terminals for float switches

9 Output interface terminals, assembly feedback signal

10 Pressure switch (4 bar/ 58 psi, minimum pressure)

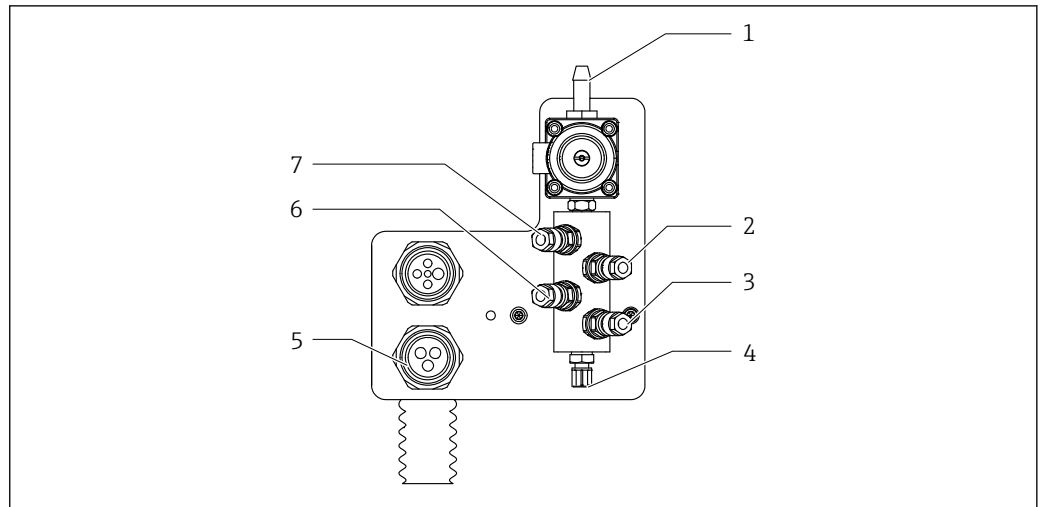
11 Input/output assembly, DIO

12 Pilot valves

13 Sound absorber

14 Hose connections, 6mm OD

Rinsing block



7 Rinsing block

1	Water connection (hose barb D12 PP)	5	Multihose connection
2	Cleaner (pump 1)	6	Buffer 1 (pump 2)
3	Buffer 2 (pump 3)	7	Air process valve (pilot valve 3)
4	Outlet, rinse connection to assembly		

A changeover valve is used in conjunction with the rinsing block for a second measuring point.

Communication and data processing

Types of communication

Several digital communication protocols are available to enable the Liquiline Control CDC90 to be integrated into a customer's digital infrastructure (process control system).

The data connection is established and managed exclusively via the internal controller of the CDC90, and not via the fieldbus module of the integrated Liquiline transmitter CM44R.

Additional Special Documentation is available for the integration process. However, if analog signals are used (current inputs/outputs), the current input and output modules of the Liquiline transmitter act as the interface to the customer's control system / PCS. For this reason, the Liquiline transmitter must be configured via the web server or an optionally available display unit.

Liquiline Control also has internal communication processes, which are designed exclusively to ensure safe and reliable processing and the trouble-free operation of the device. These communication processes are not designed for external communication with the customer. Therefore, with the exception of the transmitter's web server functionality, do not connect the interfaces of the transmitter to other interfaces.

You can choose from the following communication options in the CDC90 control unit:


- Analog current output, current signals (0/4 to 20 mA)
Via AO modules in the CDC90 control unit. The settings can be made via the web server or local display.
Power transmission is via the current input/output modules of the CDC90 control unit. The web server or the optional CM44x display unit can be used to configure the control unit.
- EtherNet/IP
- PROFIBUS DP (slave) via additional Modbus TCP / PROFIBUS DP coupler
- Modbus TCP (client)
- PROFINET via Modbus TCP/Profibus DP coupler
- OPC UA



More detailed information on fieldbus communication is provided on the product pages on the Internet (→ [SD01518C](#)).

Dependability**Reliability**

- Level and consumption indicator
The level and amount of buffer or cleaning solution are displayed.
- Information about the current program step
Transparent status indication with time information
- Sensor verification
Sensor accuracy is verified. If a tolerance range is exceeded during calibration, Liquiline Control rejects the calibration values. Therefore you are guaranteed that your measured value is always accurate.
- Seal condition monitoring
Monitoring of the seals on the assembly and check valves. With this function, the system can predict when the assembly and check valves will require new sealing rings.
- System pressure monitoring to activate the assembly and pumps. If the pressure drops below the minimum level, the system signals an alarm.

Memosens 

Memosens makes your measuring point safer and more reliable:

- Non-contact, digital signal transmission enables optimum galvanic isolation
- Completely watertight
- Sensor can be calibrated in a lab, thus increasing the availability of the measuring point in the process
- Predictive maintenance thanks to recording of sensor data, e.g.:
 - Total hours of operation
 - Hours of operation with very high or very low measured values
 - Hours of operation at high temperatures
 - Number of steam sterilizations
 - Sensor condition

Input

Measured variables → Documentation of the connected sensor

Measuring ranges → Documentation of the connected sensor

Digital inputs, passive in pneumatic control unit

Span

- High: 11 to 30 V DC
- Low: 0 to 5 V DC

Nominal input current

max. 8 mA

Cable specification

Max. 2.5 mm² (14 AWG)

Analog inputs, passive in CM44R

Span

> 0 to 20 mA

Signal characteristic

Linear

Internal resistance

Non-linear

Output

Analog outputs, active in CM44R

Signal on alarm

Adjustable, as per NAMUR Recommendation NE 43

- In measuring range 0 to 20 mA:
Error current from 20 to 23 mA
- In measuring range 4 to 20 mA:
Error current from 2.4 to 23 mA
- Factory setting for error current for both measuring ranges:
21.5 mA

Load

Max. 500 Ω

Linearization/transmission behavior

Linear

Electrical specification

- Passive
- Open collector, max. 30 V, 15 mA

PFM function

Minimum pulse width: 500 μ s (1 kHz)

Digital outputs, passive in pneumatic control unit

Electrical specification

- Outputs:16
- Max. current: 0.5 A per output
- Total current: max. 8A

Cable specification

Max. 2.5 mm² (14 AWG)

Protocol-specific data

IPC output signals

	Ethernet	Modbus TCP	EtherNet/IP	PROFIBUS DP (via fieldbus coupler)	PROFINET (via fieldbus coupler)
Signal encoding	IEEE 802.3 (Ethernet)	IEEE 802.3 (Ethernet)	IEEE 802.3 (Ethernet)	PRIBUS-DP-compliant as per IEC 61158	IEEE 802.3 (Ethernet), IEC 61131-3-Code
Data transmission rate	10 / 100 Mbit/s	10 / 100 Mbit/s	10 / 100 Mbit/s	9.6 kBit/s - 12 MBit/s autodetect	10/100 Mbit
Galvanic isolation	Yes	Yes	Yes	Yes	Yes
Connection	M12	M12	M12	D-sub 9-pin female	M12
IP address	192.168.0.1	192.168.0.1	192.168.0.1		192.168.0.7
Protocol			CIP		
Address				5	

EtherNet/IP

Name	EtherNet/IP adapter	
Manufacturer	3S-Smart Software Solutions GmbH	
Categories	EtherNet/IP local adapter	
Log	EtherNet/IP	
ODVA certification	Yes	
Device profile	Generic device	
Manufacturer ID	1285	
Device type ID	120	
ID	0000 1016	
Polarity	Auto-MIDI-X	
Minimum RPI	300 ms (default)	
Maximum RPI	10000 ms	
System integration	EtherNet/IP	EDS
IO data	Input (T → O)	<ul style="list-style-type: none"> ▪ Program control of parameters ▪ Limit values
	Output (O → T)	<ul style="list-style-type: none"> ▪ Pneumatic control unit parameters ▪ Program feedback ▪ Assembly signals ▪ Measured values from transmitter ▪ Sensor calibration

Modbus TCP

TCP port	502
TCP connections	3
Protocol	TCP
Function codes	03, 04, 06, 08, 16, 23
Broadcast support for function codes	06, 16, 23
Output data	16 measured values (value, unit, status), 8 digital values (value, status)
Input data	4 setpoints (value, unit, status), 8 digital values (value, status), diagnostic information
Supported features	Address can be configured using DHCP or software

Web server

The Liquiline Control's IPC features a web server that allows users to configure the device, visualize measured values and check the status of the entire system.

The web server of the CDC90 control unit enables the direct configuration of the connected sensor and peripheral modules for digital/analog inputs and outputs. The two Web servers can be accessed via separate IP addresses.

CM44R

TCP port	80
Supported features	<ul style="list-style-type: none"> ▪ Remote-controlled device configuration ▪ Save/restore device configuration (via SD card) ▪ Logbook export (file formats: CSV, FDM) ▪ Access to web server via Internet browser

IPC

TCP port	80
Supported features	<ul style="list-style-type: none">▪ Remote-controlled device configuration▪ Save/restore device configuration (via SD card)▪ Access to web server via Internet browser

Power supply

Supply voltage	100 to 230 V AC
Frequency	50/60 Hz
Power consumption	Max. 50 VA
Cable specification	Power supply cable (mains) Cable cross-section: <ul style="list-style-type: none">▪ Minimum cross-section 3 x 0.75 mm² to 10 m length▪ Minimum cross-section 3 x 1.5 mm² to 20 m length
Overvoltage protection	Integrated overvoltage protection according to EN 61326 Protection category 1 and 3

Performance characteristics

Response time	Current outputs t_{90} = max. 500 ms for an increase from 0 to 20 mA Current inputs t_{90} = max. 330 ms for an increase from 0 to 20 mA Digital inputs and outputs t_{90} = max. 330 ms for an increase from low to high
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Reference temperature	25 °C (77 °F)
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Measured error for sensor inputs	→ Documentation of the connected sensor
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Measured error for current inputs and outputs	Typical measured errors: < 20 μ A (with current values < 4 mA) < 50 μ A (with current values 4 to 20 mA) at 25 °C (77 °F) each Additional measured error depending on the temperature: < 1.5 μ A/K
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Frequency tolerance of digital inputs and outputs	\leq 1%
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Resolution of current inputs and outputs	< 5 μ A
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Repeatability	→ Documentation of the connected sensor
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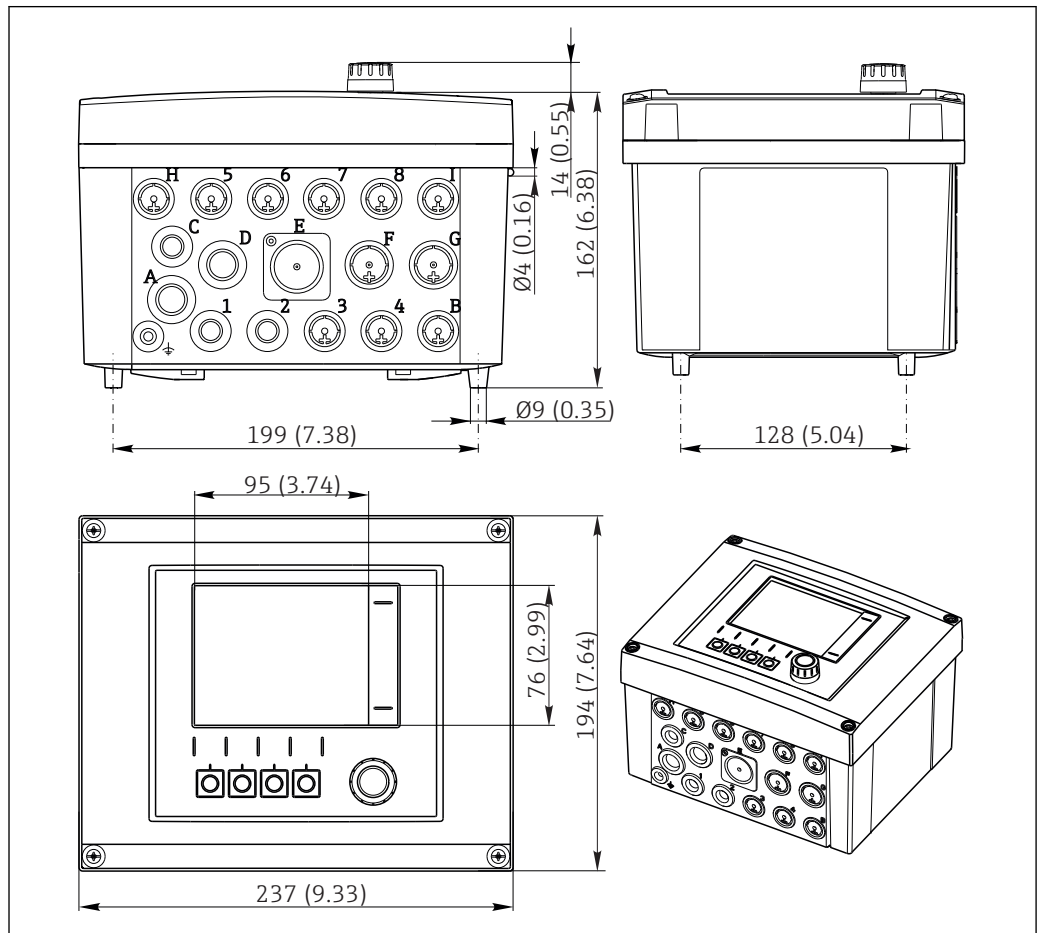
Environment

Ambient temperature	0 to 45 °C (32 to 113 °F)
Storage temperature	-20 to +70 °C (0 to 160 °F)
Humidity	10 to 90 %, non-condensating
Degree of protection	CDC90 control unit IP66/Type 4X Pneumatic control unit IP54/Type 12
Climate class	As per IEC 60654-1: B2
Electromagnetic compatibility	Interference emission and interference immunity as per EN 61326-1:2013, Class A for Industry
Electrical safety	IEC 61010-1, Class I equipment Low voltage: overvoltage category II Environment < 2000 m (< 6562 ft) above MSL
Max. altitude above MSL	< 2000 m (< 6562 ft) above MSL
Degree of contamination	The product is suitable for pollution degree 2.

Mechanical construction

Dimensions

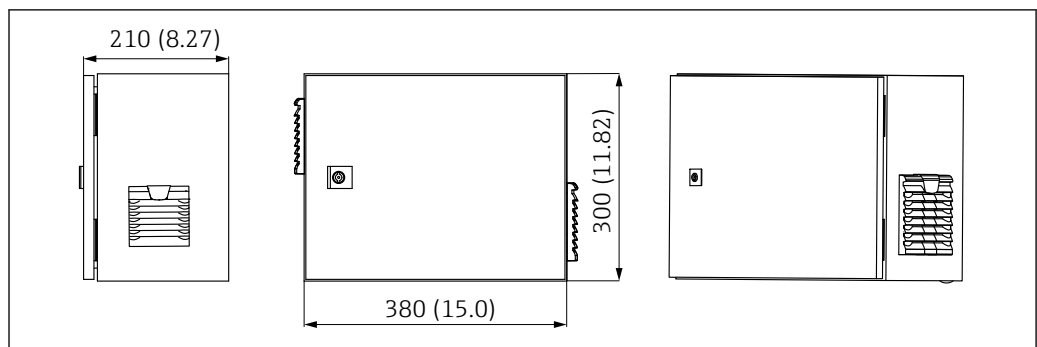
Dimensions of CDC90 control unit



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8 Dimensions of field housing in mm (inch)

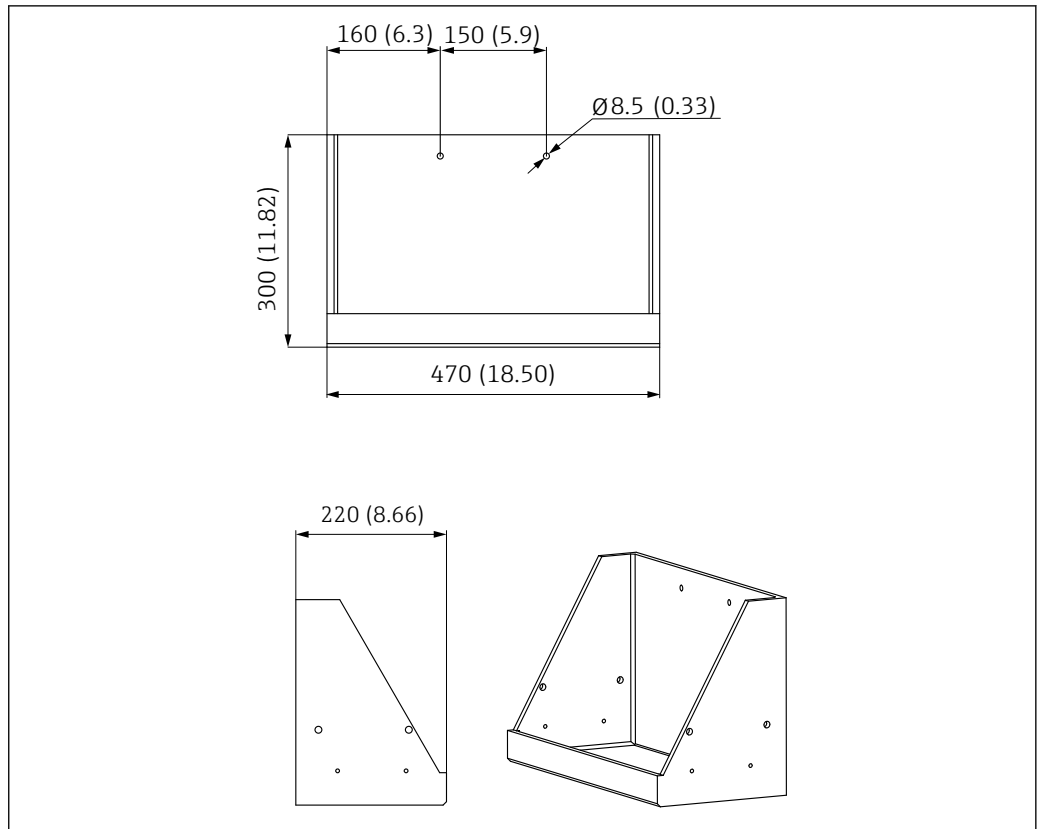
Dimensions of pneumatic control unit



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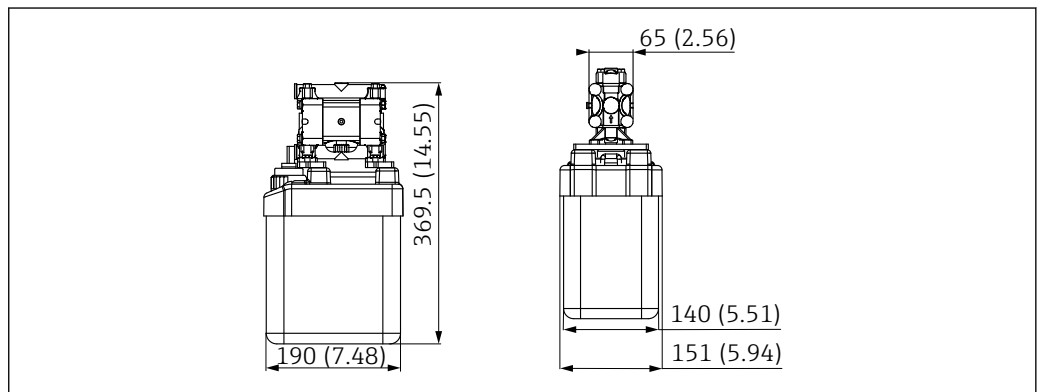
9 Dimensions of pneumatic control unit in mm (in)

Dimensions of canister holder



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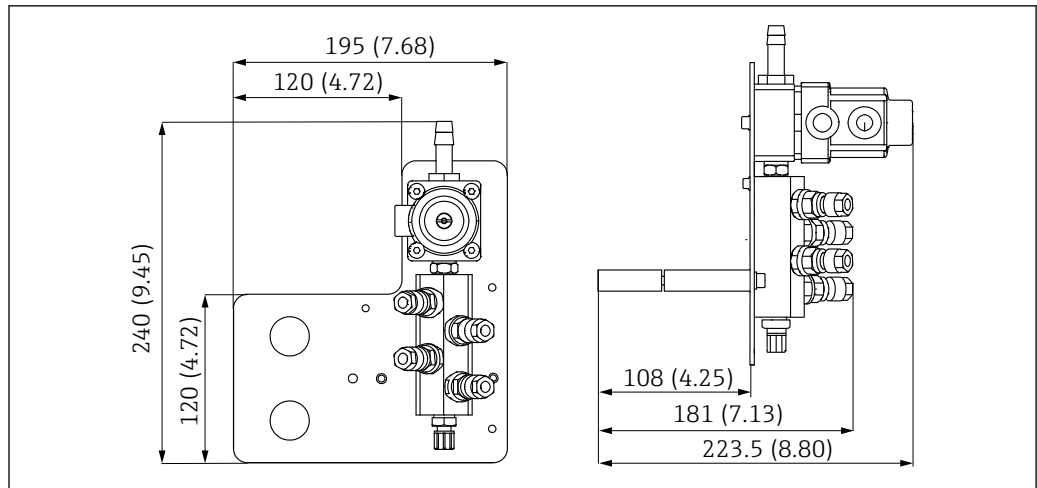
10 Dimensions of canister holder in mm (in)



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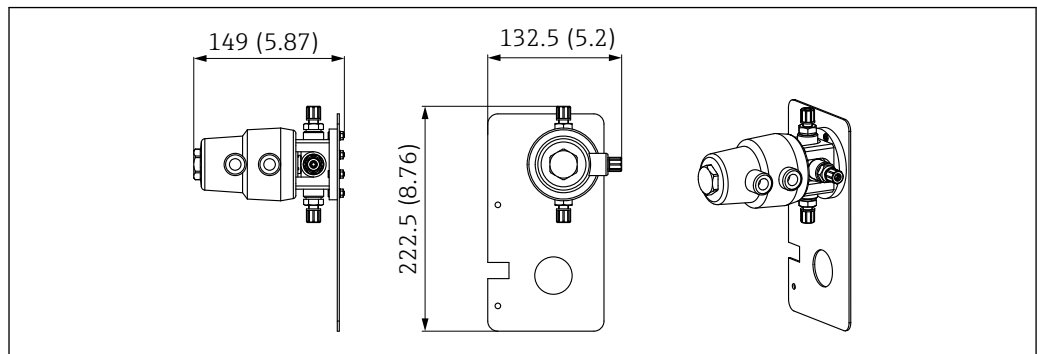
11 Dimensions of canister with pump in mm (in)

Dimensions of rinsing block



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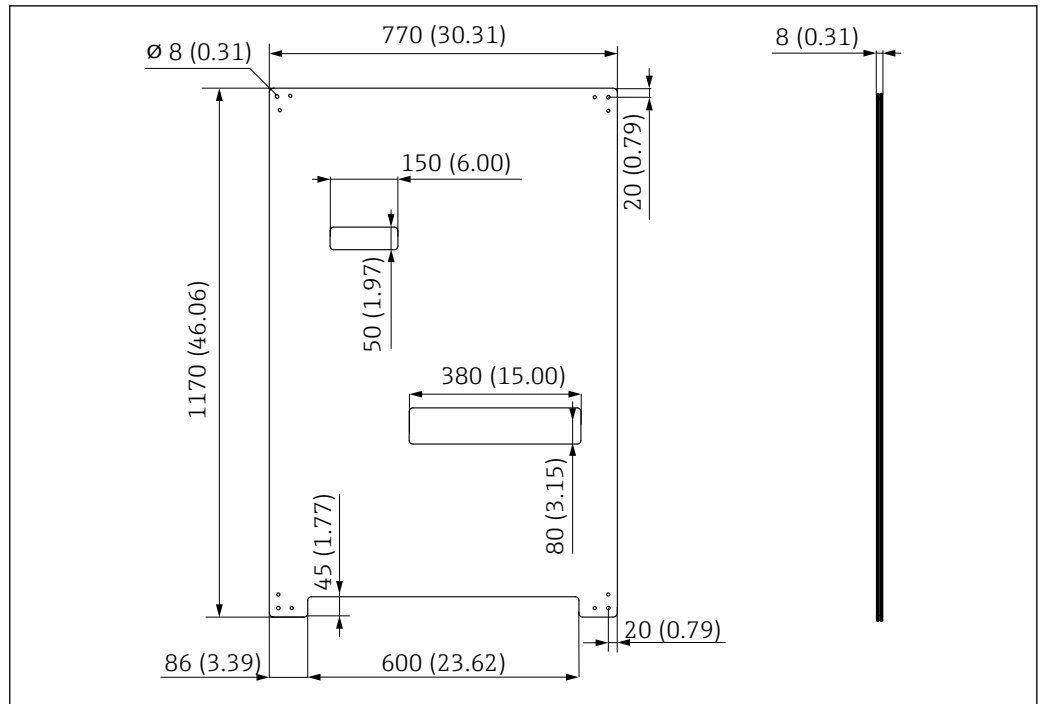
12 Dimensions of rinsing block PVDF, in mm (in)



A0033402

13 Dimensions of changeover valve, second measuring point in mm (in)

Dimensions of mounting plate



A0031946

14 Dimensions of mounting plate in mm (in)

Weight

Device	Weight
Complete device on mounting plate	Approx. 52 kg (114.64 lbs)
CDC90 control unit	Approx. 2.1 kg (4.63 lbs) depending on the version
Pneumatic control unit painted	7.5 kg (16.53 lbs) (empty)
Pump canister unit	Approx. 1.5 kg (3.30 lbs)
Mounting plate (Trespa)	Approx. 10 kg (22 lbs)
Canister shelf	Approx. 3.2 kg (7.05 lbs)
SD card	Max. 5 g (0.17 oz)

Materials

Device	Material
CDC90 control unit	
Module housing	PC (polycarbonate)
Soft keys	TPE (thermoplastic elastomers)
LED	POM
Cable mounting rail	Stainless steel 1.4301 (AISI 304)
Display glass	Plastic capacitive touchscreen
Cable glands	PA (polyamide) V0 as per UL94
M12 cable glands	PA (polyamide)
Housing seals	EPDM
Cable gland O-ring	EPDM

Device	Material
Pneumatic control unit	
Housing	Stainless steel 1.4301 (AISI 304), painted steel
Housing seals	EPDM (ethylene propylene diene rubber)
Cable glands	PA (polyamide) V0 as per UL94
Housing seals	EPDM
Pump canister unit	
Pump	PVDF+CF/PP/NBR+PTFE/PTFE/PP
Canister	PE
Float switch	PVC/EPDM/PE
Canister fitting	ABS/PMMA
Bracket M5 L110*B40 W8	PP
O-ring	EPDM
Coupling DMG/8*6 1/4	PVDF
Canister shelf	PP
Rinsing block	
Process valve	EPDM/PP/stainless steel:1.4408/PTFE
Rinsing body	PVDF/1.4401
Rinse connection	PP
Check valves	PVDF+FKM/PVDF+FFKM/1.4571+FKM
Bracket, metal plate	1.4571
Bracket, clamp	1.4404
Hose bracket/cable gland	PA
Sealing plug	Teflon
Double nipple	PVDF
O-ring	FKM/FFKM
Hoses	
Compressed air	PUN-A
Liquid type	PUN-A+/PTFE

Hose specification**Medium hoses**

Max. 6 bar

Compressed air hoses

Pressure ratings of pilot valve manifold:

Max. 10 bar

Pressure switch:

Max. 12 bar

Pump

Vacuum pump:

Max. 8 bar (8 bar corresponds to a feed rate of 8 l/min)

Pipes:

Max. 10 bar

Connections

Water connection	Size
Water connection, rinsing block	Hose barb D12 PP
Inlet and outlet	Hose coupling D6/8 mm PVDF

Hose diameter	Size
Medium	DN 3/4 mm
Compressed air	DN 6/8 mm
Hose connection nipple	D12

Operability

Local operation

Illuminated graphic touch screen with LED display

Local operation allows users to monitor and configure the entire measuring point. You can choose from a range of comprehensive views for measurements and peripheral modules, such as pumps. The integrated configuration menu contains helpful information to assist you when configuring the device. Entries can be made easily using your fingers or a stylus pen.

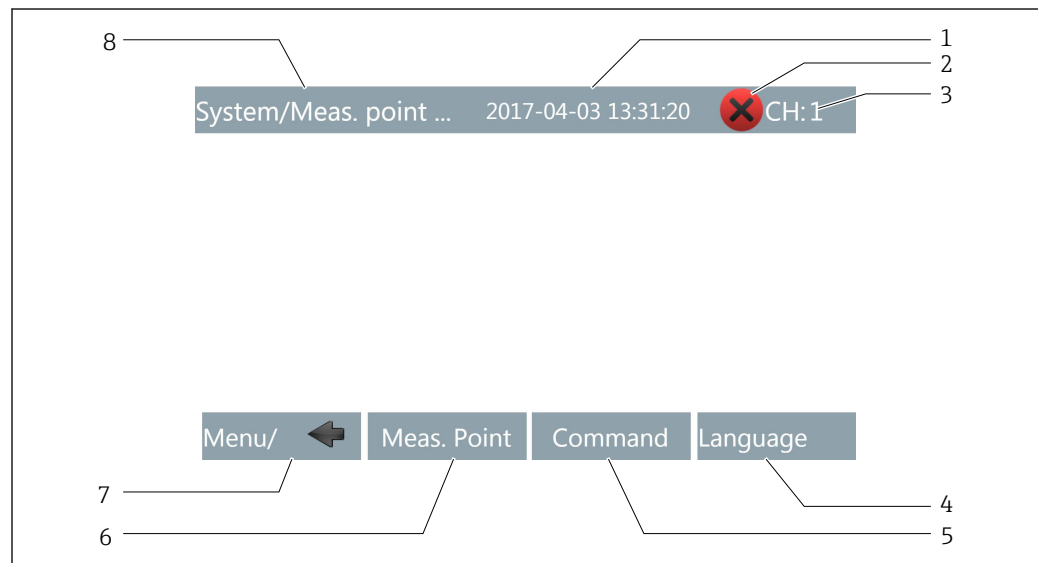
The LED display signals the alarm or service status with a red light.



15 CDC90 touchscreen display

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Menu overview



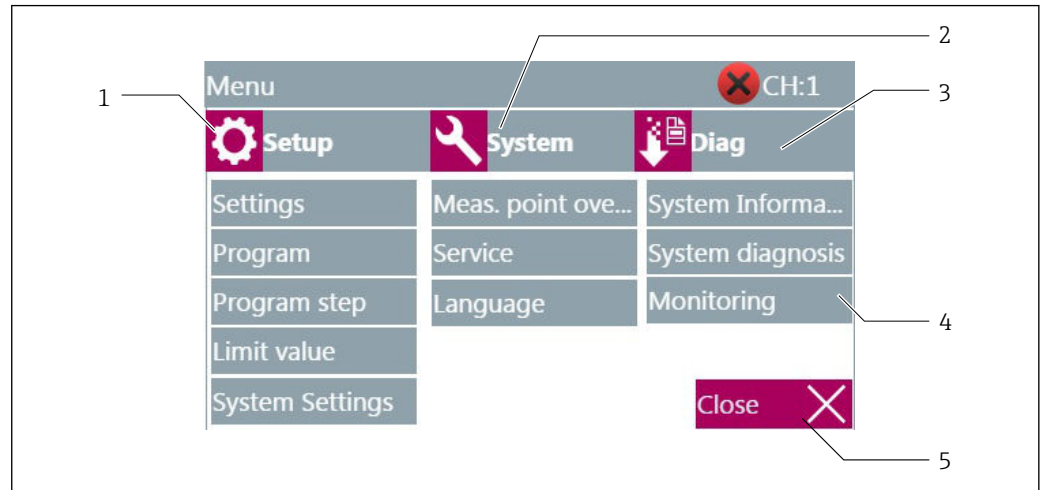
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Item	Function
1	Date and time
2	Error message
3	Display and navigation to measuring point
4	Language selection
5	Command, fast access
6	Overview of measuring points
7	Navigation overview
8	Menu path

Three main menus are available to operate the device:

- Setup
- System
- Diagnostics

The submenus are displayed under the main menus.



A0033712

Item	Function
1	Main Setup menu, settings options for system and program configuration
2	Main System menu, overview of measuring points, maintenance activities and administration
3	Main Diagnosis menu, diagnostic list and system monitoring
4	Submenu
5	Back to navigation overview

Certificates and approvals


CE mark	The product meets the requirements of the harmonized European standards. As such, it complies with the legal specifications of the EU directives. The manufacturer confirms successful testing of the product by affixing to it the CE mark.
cCSAus	The product meets the requirements as per "CLASS 2252 06 - Process Control Equipment" and "CLASS 2252 86 - Process Control Equipment". It is tested to Canada and USA standards: CAN/CSA-C22.2 No. 61010-1-12 UL Std. No. 61010-1 (3 rd Edition).

Ordering information

Product page www.endress.com/cdc90


Product Configurator On the product page there is a "Configure" button to the right of the product image **Configure**.

1. Click this button.
 - ↳ The Configurator opens in a separate window.
2. Select all the options to configure the device in line with your requirements.
 - ↳ In this way, you receive a valid and complete order code for the device.
3. Export the order code as a PDF or Excel file. To do so, click the appropriate button on the right above the selection window.

 For many products you also have the option of downloading CAD or 2D drawings of the selected product version. Click the tab for this **CAD** and select the desired file type using picklists.

Scope of delivery The scope of delivery comprises:

- 1 CDC90 control unit in the version ordered
- 1 pneumatic control unit
- Up to 3 pumps for transporting cleaner and buffer with canisters
- Up to 3 float switches, complete with cable to canisters
- 1 rinsing block with bracket for mounting on the process assembly
- 2 hose packages for compressed air and liquid; 3 hose packages if there is more than one measuring point
- 1 printed copy of the Brief Operating Instructions in the language ordered

 The assemblies are pre-assembled on a mounting plate and pre-wired.

Accessories

The following are the most important accessories available at the time this documentation was issued.

- ▶ For accessories not listed here, please contact your Service or Sales Center.

Assemblies

Cleanfit CPA471

- Compact stainless steel retractable assembly for installation in tanks and pipes, for manual or pneumatically remote-controlled operation
- Product Configurator on the product page: www.endress.com/cpa471



Technical Information TI00217C

Cleanfit CPA472

- Compact plastic retractable assembly for installation in tanks and pipes
- For manual or pneumatic, remote-controlled operation
- Product Configurator on the product page: www.endress.com/cpa472



Technical Information TI00223C

Cleanfit CPA472D

- Robust retractable assembly for pH, ORP and other industrial sensors
- Heavy-duty version made of durable materials
- For manual or pneumatic, remote-controlled operation
- Product Configurator on the product page: www.endress.com/cpa472d



Technical Information TI00403C

Cleanfit CPA473

- Stainless steel process retractable assembly with ball valve shutoff for particularly reliable separation of the medium from the environment
- Product Configurator on the product page: www.endress.com/cpa473



Technical Information TI00344C

Cleanfit CPA474

- Plastic process retractable assembly with ball valve shutoff for particularly reliable separation of the medium from the environment
- Product Configurator on the product page: www.endress.com/cpa474



Technical Information TI00345C

Cleanfit CPA475

- Retractable assembly for pH/ORP measurement in tanks and pipes under sterile measuring conditions
- Product Configurator on the product page: www.endress.com/cpa475



Technical Information TI00240C

Cleanfit CPA871

- Flexible process retractable assembly for water, wastewater and the chemical industry
- For applications with standard 12mm sensors
- Product Configurator on the product page: www.endress.com/cpa871



Technical Information TI01191C

Cleanfit CPA875

- Retractable process assembly for sterile and hygienic applications
- For in-line measurement with standard 12 mm sensors, e.g. for pH, ORP and oxygen
- Product Configurator on the product page: www.endress.com/cpa875



Technical Information TI01168C

Sensors

Glass electrodes

Orbisint CPS11D

- pH electrode for process technology
- Optional SIL version for connecting to SIL transmitter
- With dirt-repellent PTFE diaphragm

 Technical Information TI00028C

Memosens CPS31D

- pH electrode with gel-filled reference system with ceramic diaphragm
- Product Configurator on the product page: www.endress.com/cps31d

 Technical Information TI00030C

Ceraliquid CPS41D

pH electrode with ceramic junction and KCl liquid electrolyte

 Technical Information TI00079C

Ceragel CPS71D

pH electrode with reference system including ion trap

 Technical Information TI00245C

Memosens CPS171D

- pH electrode for bio-fermenters with digital Memosens technology
- Product Configurator on the product page: www.endress.com/cps171d

 Technical Information TI01254C

Orbipore CPS91D

pH electrode with open aperture for media with high dirt load

 Technical Information TI00375C

Orbipac CPF81D

- Compact pH sensor for installation or immersion operation
- In industrial water and wastewater
- Product Configurator on the product page: www.endress.com/cpf81d

 Technical Information TI00191C

ORP sensors

Orbisint CPS12D

ORP sensor for process technology

 Technical Information TI00367C


Ceraliquid CPS42D

ORP electrode with ceramic junction and KCl liquid electrolyte

 Technical Information TI00373C


Ceragel CPS72D

ORP electrode with reference system including ion trap

 Technical Information TI00374C

Orbipac CPF82D

- Compact ORP sensor for installation or immersion operation in process water and wastewater
- Product Configurator on the product page: www.endress.com/cpf82d

 Technical Information TI00191C

Orbipore CPS92D

ORP electrode with open aperture for media with high dirt load

 Technical Information TI00435C

pH ISFET sensors**Tophit CPS441D**

- Sterilizable ISFET sensor for low-conductivity media
- Liquid KCl electrolyte



Technical Information TI00352C

Tophit CPS471D

- Sterilizable and autoclavable ISFET sensor for food and pharmaceuticals, process engineering
- Water treatment and biotechnology



Technical Information TI00283C

Tophit CPS491D

ISFET sensor with open aperture for media with high dirt load



Technical Information TI00377C

pH and ORP combined sensors**Memosens CPS16D**

- Combined pH/ORP sensor for process technology
- With dirt-repellent PTFE diaphragm
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cps16d



Technical Information TI00503C

Memosens CPS76D

- Combined pH/ORP sensor for process technology
- Hygienic and sterile applications
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cps76d



Technical Information TI00506C

Memosens CPS96D

- Combined pH/ORP sensor for chemical processes
- With poison-resistant reference with ion trap
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cps96d



Technical Information TI00507C

Additional functionality**Hardware extension modules****Kit, extension module 2AI**

- 2 x 0/4 to 20 mA analog input
- Order No. 71135639

Kit, extension module DIO

- 2 x digital input
- 2 x digital output
- Auxiliary voltage supply for digital output
- Order No. 71135638

Kit, extension module ETH

- Ethernet configuration
- Can be extended to Modbus TCP or EtherNet/IP. This requires an additional activation code which can be ordered separately.
- Order No. 71279810

Other accessories

Cable

CYK10 Memosens data cable

- For digital sensors with Memosens technology
- Product Configurator on the product page: www.endress.com/cyk10



Technical Information TI00118C

SD card

- Industrial Flash Drive, 1 GB
- Weight: 2 g
- Order No. 71110815

Water filter

Kit, water filter

Order No. 71390988

Kit, filter element for water filter

Order No. 71390990

Kit, pressure-reducing valve with manometer

Order No. 71390993

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