

Technical Information

Reliable and compact solutions for water quality monitoring

CDP20 Series Plug and play compact analytical panels for all your measurement tasks



Are you responsible for providing clean water as cost efficiently as possible? If so, then you will know what a Herculean task this can be given the need to provide consistent and seamless documentation on water quality. Different measuring points are required to monitor critical measuring parameters, which involves considerable time and expertise in relation to the correct installation and supervision of the measuring point. To help you achieve your goals, we have a range of standard water quality monitoring panels available or we can design and construct customised solutions to match your exact measurement requirements.

Application

- Drinking Water
- Clean Water

Our features





- Compact system
- Easy selection of sample preparation and analytical parameters
- Extendable for additional parameters
- Standardized and easy connection of plates
- Space optimized
- Equipped with state of the art Memosens technology incl. Liquiline platform











About this document

Symbols used

Safety symbols

Symbol	Meaning
	DANGER! This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.
	WARNING! This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
	CAUTION! This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
	NOTE! This symbol contains information on procedures and other facts which do not result in personal injury.

Symbols for certain types of information

Symbol	Meaning
	Permitted Procedures, processes or actions that are permitted.
	Preferred Procedures, processes or actions that are preferred.
	Forbidden Procedures, processes or actions that are forbidden.
	Tip Indicates additional information.
	Reference to documentation.
	Reference to page.
	Reference to graphic.
	Visual inspection.

Do you have space to give away?

More often than not, there is little space available in your intended panel install location, yet you need to measure multiple parameters somewhere. This is why we have emphasised a compact design when developing our panels, which means they fit on most walls. In cases where they do not, panel modules can be distributed in such a way that you are sure to be able to install all measurements logically.

Safe. And future-proof

We rely on our unique modular concept to help you get from the conceptual development phase to implementation and commissioning quickly. All you need to do is connect the sample inlet/outlet and you are up and running. We deliver a water analysis ready for installation, including all components from sample preparation to data transfer to your higher-level systems. Furthermore, you can trust Endress+Hauser's local support network to partner you throughout your panel's entire life cycle.

What is a panel?

A panel (or instrument panel) is a plate made of either plastic or stainless steel on which one or more measurement points are pre-assembled. The plate is secured onto a wall or a frame/rack from which sample lines are distributed. Measurement points can be virtually managed, from turbidity to disinfection and even organic load. Everything you need – the sensors, assemblies, valves, piping etc. – is fully installed, connected and wired to provide a plug and play solution.

How will I benefit from using a panel?

- Choose from over eight measurement parameters for maximised flexibility
- The installation and commissioning of measurement points could not be easier: mount the panel to a wall, connect to power and water and off you go
- No more worrying about the specific characteristics of each measurement parameter: all panels are optimally designed to provide accurate and reliable measurement values
- Repeatable in quality and dimensions: panels are easy to specify for small or large projects. Coupled with commissioning by our Service Team
- Panel modularity: systems can be flexibly extended with modular panels to include additional measurement parameters
- Simple probe maintenance: probes are plug and play thanks to Memosens® technology
- Heartbeat Technology provides sensor diagnostic information to enable condition-based maintenance and easy verification of the entire measurement point
- Seamless integration into your existing communication networks (HART, PROFIBUS DP, Modbus TCP/IP, remote monitoring via Web server as well as cloud-based dashboards), you can be assured of a great result

What's included with your panel solution?

Each panel solution (standard or customised) will be provided with the following scope of delivery:

- A Trespa mounting plate
 - Complete PVC-U tubing and associated fittings, valves etc.
 - Mounting of all components such as tubing, transmitter, flow assemblies and probes
 - Packing with secure wooden box for transport
 - Operating and installation instructions
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Customised solutions

Customised solutions

Do our standard panel solutions not fit your application? We also offer customised panels do suit your specific site needs.

For example, we can include a colorimetric analyser for ammonium measurement or an optical analyser for nitrate. You may also require an additional sample pump or a full enclosure to suit the harsh Australian climate or guard against unauthorised access. Work with our team of experts to develop a solution fit for your process, no matter the measurement task.

Space for everything that needs protection

- All of your measurements are located in one place and can be protected against heat, cold, rain, snow, dust, unauthorised access and vandalism
 - Reliable operation in the field thanks to customised data management and secure remote access to data and devices
 - Optional cooling ensures optimum conditions for the measuring technology, whatever the weather
 - Our project team will provide you with expert advice throughout the entire project and will find the best solution for your individual circumstances
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Potable water distribution networks

- Ball valve for sample inlet
- Flow measurement with turbine meter
- Assembly for up to four sensors (turbidity + three additional sensors)
- Air cleaning connection for turbidity sensor Turbimax CUS52D turbidity sensor
- Slot for one sensor (conductivity, total chlorine, free chlorine etc.)
- Slot for two sensors (pH, oxygen, conductivity, ORP etc.)
- Liquiline CM44x transmitter
- Needle valve for sample outlet

General panel specifications

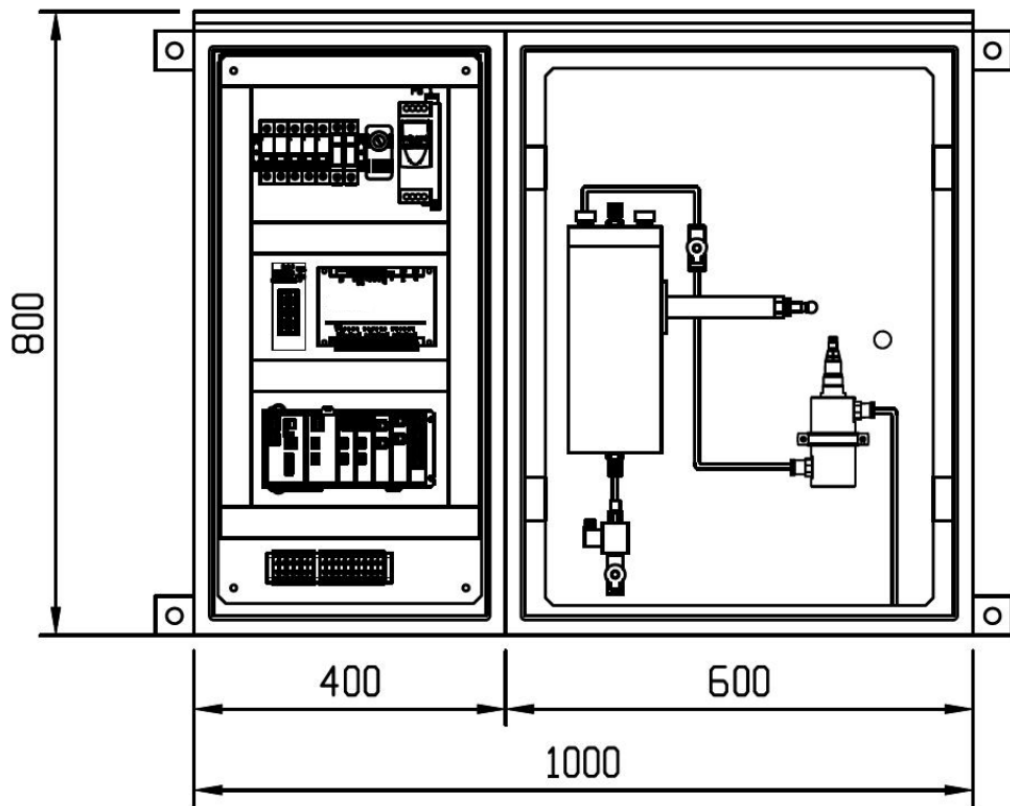
- Application Potable water distribution (turbidity < 10 NTU)
- Mounting plate material PVC
- Dimensions B600 x H1000 mm
- Inlet pressure 6 bar max.
- Outlet pressure Atmospheric
- Flow 30 L/h to 120 L/h
- Process connections d6/8 mm hose connection

Applications and Parameters

Products and solutions for analytical measuring points in water applications		
Parameter	Instrument	Information
Turbidity	CUS52D	For low detection of particles according EN ISO 7027
Disinfection	CCS50D	For chlorine dioxide concentration
	CCS51D	For free chlorine concentration
	CCS120D	For total chlorine concentration
	CPS31D	For pH compensation
	CPS11D	
Multi parameter measurement	CPS11D	Monitoring of pH, pH/ORP, conductivity, oxygen and turbidity in one measuring application
	CPS16D	
	CPS31D	
	CLS21D	
	CLS82D	
	COS22D	
	COS81D	
	CUS52D	
All-in solutions and tools		
Solution	Instrument	Information
Panel	As per customer specification	See drinking water catalog
Measurement cabinet /container	As per customer specification	Request via center of competence
Transmitter	CM442, CM444, CM448	For up to 8 sensors for all parameter
Handheld	Liquiline To Go CYM290	Quick on-site measurement and calibration
Laboratory software	Memobase Plus CYZ71D	Measure, calibrate, document
Measured value simulator	Memocheck Sim CYP03D	For quick and easy commissioning
Reporting software	Field Data Manager MS20	Process data visualization and storage
Asset management software	W@M	Life cycle management

Drinking water monitoring panel

Turbidity + pH + Free Chlorine + Conductivity



Compact drinking water monitoring panel CSOL-DC1WP1 + 71519476



Flow-through assemblies

Technical Specifications

Dimensions	<p>CPS201 CSOL-DC1WP1 + 71519476</p> <p>1,000 mm wide x 800mm high x 350mm deep</p>
Material	<p>Material mounting plate TESPA / Stainless steel</p> <p>Material wetted parts PP/POM / Stainless steel</p>
Process pressure	<p>Inlet Pressure max. 1bar (14 psi)</p> <p>Outlet Pressure Pressure Free</p>
Process flow rate	<p>Optimum 30 l/h (7.9 gal/h)</p> <p>Flow meter 0.1 to 2.5 LPM , turbine, pulse signal</p>
Process connection inlet	<p>Hose connection DN06/08 (PP)</p>
Communication and data processing	<p>Communication protocols: Fieldbus systems</p> <ul style="list-style-type: none"> ▪ HART ▪ PROFIBUS DP (Profile 3.02) ▪ Modbus TCP or RS485 ▪ PROFINET ▪ Ethernet/IP <p><i>Only one type of Fieldbus communication can ever be active. The last activation code entered decides which bus is used. The device drivers available make it possible to perform a basic setup and display measured values and diagnostics information via the fieldbus. A full device configuration via the fieldbus is not possible.</i></p> <p>Extension module 485 and current outputs For PROFIBUS DP, and Modbus RS485 communication protocols:</p> <ul style="list-style-type: none"> ▪ CM442R <p>Current outputs cannot be used in parallel. Any existing current outputs are deactivated with the installation of 485.</p> <ul style="list-style-type: none"> ▪ CM444R/CM448R <p>A maximum of 2 current outputs can be used in parallel. Ethernet functionality via Base2 module and current outputs</p> <ul style="list-style-type: none"> ▪ CM442R <p>A maximum of 2 current outputs can be used in parallel.</p> <ul style="list-style-type: none"> ▪ CM444R and CM448R <p>A maximum of 6 current outputs can be used in parallel. Bus termination on the device</p> <ul style="list-style-type: none"> ▪ Via slide switch at bus module 485 ▪ Displayed via LED "T" on bus module 485

Reliability**Memosens**

Memosens makes your measuring point safer and more reliable:

- Non-contact, digital signal transmission enables optimum galvanic isolation
- No contact corrosion
- Completely watertight
- Sensor can be calibrated in a lab, thus increasing the availability of the measuring point in the process
- Intrinsically safe electronics mean operation in hazardous areas is not a problem.
- 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

Heartbeat diagnostics

- Heartbeat diagnostics screen with graphic indicators for the health of the device and sensor and with a maintenance or (sensor-dependent) calibration timer
- Heartbeat status information on the health of the device and the condition of the sensor
 - ☺ Sensor/device condition or maintenance timer > 20 %; no action is required
 - ☹ Sensor/device condition or maintenance timer > 5 ≤ 20 %, maintenance not yet urgent but should be scheduled
 - ☹ Sensor/device condition or maintenance timer < 5 %, maintenance is recommended
- The Heartbeat sensor condition is the assessment of the calibration results and the sensor diagnostic functions.

Input signal**Depending on version:**

- Max. 8 x binary sensor signal
- 2 x 0/4 to 20 mA (optional), passive, potentially isolated from one another and from the sensor inputs
- 0 to 30 V

Supply voltage**CM442 R**

Depending on version:

- 100 to 230 V AC, 50/60 Hz
- Maximum permitted fluctuation of mains supply voltage: ± 15 % of nominal voltage
- 24 V AC/DC, 50/60 Hz
- Maximum permitted fluctuation of mains supply voltage: + 20/- 15 % of nominal voltage



CM444 R and CM448 R

Depending on the version, via external DIN rail power unit:

- 100 to 230 V AC, 50/60 Hz
- Maximum permitted fluctuation of mains supply voltage: ± 15 % of nominal voltage 1)
- 24 V DC
- Maximum permitted fluctuation of mains supply voltage: + 20/- 15 % of nominal voltage 1)

The device does not have a power switch!

- ▶ *Provide a protected circuit breaker in the vicinity of the device at the place of installation.*
- ▶ *The circuit breaker must be a switch or power switch, and must be labeled as the circuit breaker for the device.*
- ▶ *At the supply point, the power supply must be isolated from dangerous live cables by double or reinforced insulation in the case of devices with a 24 V supply voltage.*

Power consumption	<p>CM442 R Depending on supply voltage</p> <ul style="list-style-type: none"> ▪ 100 to 230 V AC and 24 V AC: Max. 55 VA ▪ 24 V DC: Max. 22 W <p>CM444 R and CM448 R Depending on supply voltage</p> <ul style="list-style-type: none"> ▪ 100 to 230 V AC: Max. 150 VA 1) ▪ 24 V DC: Max. 59 W 1)
Overvoltage protection	Integrated overvoltage/lightning protection as per EN 61326 Protection category 1 and 3
Installation	<p>Make sure the packaging is undamaged!</p> <ul style="list-style-type: none"> ▪ Inform the supplier about damages to the packaging. ▪ Keep the damaged packaging until the matter has been settled. <p>Make sure the contents are undamaged!</p> <ul style="list-style-type: none"> ▪ Inform the supplier about damage to the delivery contents. ▪ Keep the damaged products until the matter has been settled. ▪ Check that the scope of delivery is complete and agrees with your order and the shipping documents. ▪ The packaging material used to store or to transport the product must provide shock protection and humidity protection. The original packaging offers best protection. ▪ Keep to the approved ambient conditions. <p>In case of any questions, please contact your supplier or your sales center contact person.</p> <p>12.2 Installation Requirements</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="527 955 909 1144" style="width: 48%;"> <p> DANGER</p> <p>The mounting panels shall be wall mounted in dry rooms (Non-Ex Areas) protected from frosty ambient conditions.</p> <p>They can also be installed in monitoring containers or on free standing racks. Please avoid direct sunshine / UV on the panel</p> </div> <div data-bbox="925 955 1323 1144" style="width: 48%;"> <p> NOTICE</p> <p>For installation, commissioning and operation of the panels with third party products, respect the separate documentation which comes with these panels and can also be found in the CER record.</p> </div> </div>
Connections	<p>Electrical Connection</p> <p>Please read the operating instructions of the mounted transmitter for connecting the power supply and the sensors.</p>

Operational Safety

The Analytical Panels have been designed and tested according to the state of the art and left the factory in perfect functioning order.

The instruments mounted on the panels have been tested for electromagnetic compatibility in industrial use according to applicable European standards. Protection against interference as specified above is valid only for an instrument connected according to the instructions in these Standard operating instructions.

- The User is responsible for complying with the safety conditions.
- Relevant regulations and European standards have been met.
- National and local law standards and regulations have priority.
- Due to low sample amounts, pressure and temperature the PED (Pressure equipment directive) does not apply on the panels.


 **NOTICE**

To wire the switching contacts of the optional flow meters, the fittings of the flow meter can be loosened to rotate them 90 degrees. Then the angle plug of the flow meter can be wired. Rotate the flow meter back into the original position and retighten the fittings again. Please assure via a pressure test that the connection is leak-proof.

Ensure that the protective earth is connected.

The operation of the instruments is described in detail in the operating instructions of the instruments.

Ensure the maximum allowed process pressure, process temperature, flow rate and ambient conditions comply with the requirements of the different instruments.

 **WARNING**

For maximum pressure and temperature conditions for the media at the sample inlet, refer to the technical data. The operating limits of the entire system are determined by the operating limit of the individual components used (sensors, cables, etc.).

The outlet of the measurement plates should have no counter pressure.

