Turnkey solutions for disinfection measurement
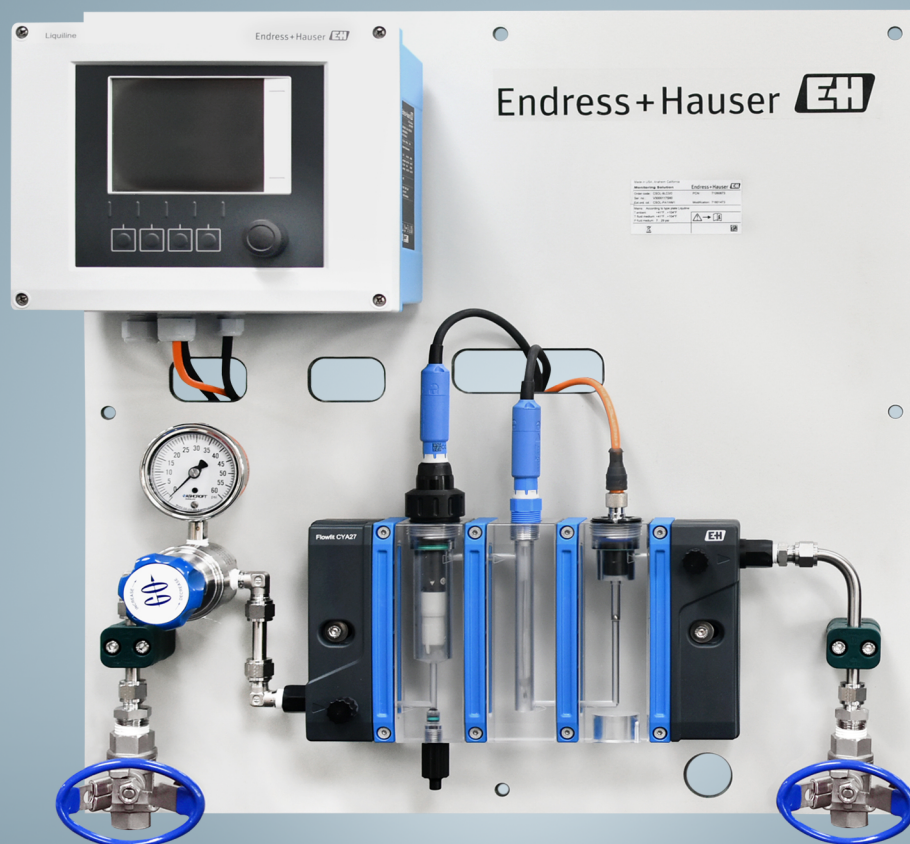
Reagent-less systems for free chlorine, free bromine, chlorine dioxide or total chlorine

Endress+Hauser

People for Process Automation

Disinfection Measurement Systems

Free chlorine, free bromine, chlorine dioxide or total chlorine measurement systems eliminate reagents by using amperometric sensor technology.

Complete panel solutions

- Systems for free chlorine, free bromine, chlorine dioxide or total chlorine
- Reagent-less systems using amperometric sensor technology
- Accurate measurement with a choice of sensor measurement ranges
- EPA compliant free chlorine systems according to Method 334.0
- Free chlorine systems and free bromine include pH compensation to ensure proper measurement and accurate DPD verification
- Easy DPD verification with built-in sample valve
- Inlet and outlet valves allow for easy installation and isolation for routine sensor maintenance
- Expansion panels facilitate installation of additional disinfection sensors, while leveraging a transmitter from an existing system

Integrated flow assembly and pressure regulation

- Integrated flow cell is designed to properly hold the disinfection and pH sensors
- Built-in flow regulation valve for control between 30 and 120 L/hr
- An integral inductive switch activates an alarm when flow is too low for proper measurement
- Constant pressure is maintained in the flow assembly thanks to an integral pressure regulator

Liquiline and Memosens® technology

- Plug-and-play Memosens digital sensors eliminate problems associated with analog sensor technology
- Free configuration of the Liquiline transmitter with a range of I/O simplifies system integration
- Optional Memobase Plus hardware and software enables remote calibration and intelligent lifecycle sensor management

Each disinfection analysis system is designed to provide a turnkey panel-mounted solution for free chlorine, free bromine, chlorine dioxide or total chlorine. Each complete panel system incorporates a Memosens amperometric disinfection sensor while the free chlorine and free bromine systems include a Memosens pH probe for accurate and reliable disinfection measurement. Each panel is equipped with a Liquiline transmitter that is freely configurable to meet the needs of the application.

Disinfection expansion panels are also available to add additional sensor measurements to an existing system, without the need for an additional transmitter. Sensors installed in a disinfection expansion panel are simply connected to a CM44x transmitter on an existing system with the addition of additional sensor input channels, thereby leveraging the transmitter across multiple disinfection measurement points.

All free chlorine panels are EPA compliant according to Method 334.0, which recognizes both reagent-based systems or amperometric measurement systems for online free chlorine analysis. Endress+Hauser disinfection systems accomplish analysis using amperometric sensor technology, eliminating the need for costly reagents or the maintenance reagent-based systems require. These systems are ideally suited for applications in drinking water, industrial water or power.

System Design

A disinfection system is comprised of a Liquiline transmitter, an amperometric disinfection sensor and in the case of free chlorine or free bromine, a pH sensor. A free chlorine system or free bromine system includes a CYA27 flow assembly, a disinfection sensor and a pH sensor. A total chlorine or chlorine dioxide system includes the CYA27 flow assembly and disinfection sensor without the need for a pH sensor. All panels include an integral flow switch to monitor for proper sample flow and an alarm indication through the transmitter if flow is interrupted. All systems include sensor cables, stainless steel tubing and an integral lead-free pressure regulator to maintain system pressure at 15 psi. All disinfection components are mounted on a 23½" x 22¾" TRESPA panel. An expansion panel can obtained by ordering a system without a transmitter. All panels are ready to be mounted to a secure vertical surface with mounting holes. Stainless steel inlet and outlet valves, with ½-inch female NPT fittings, allow for system isolation during routine maintenance. A separate sample valve in each system allows for ease of performing a DPD verification test without interrupting system operation.

The transmitter has a NEMA 4X (IP66) rating and all other components are water-proof for installation indoors, outdoors or in an enclosure.

Disinfection measurement systems panels

Inlet
1/2" FNPT

Outlet 1/2" FNPT
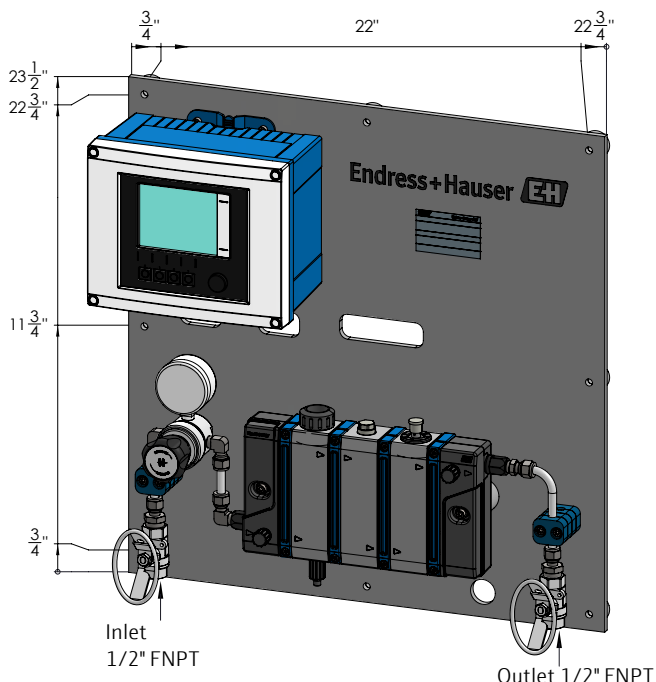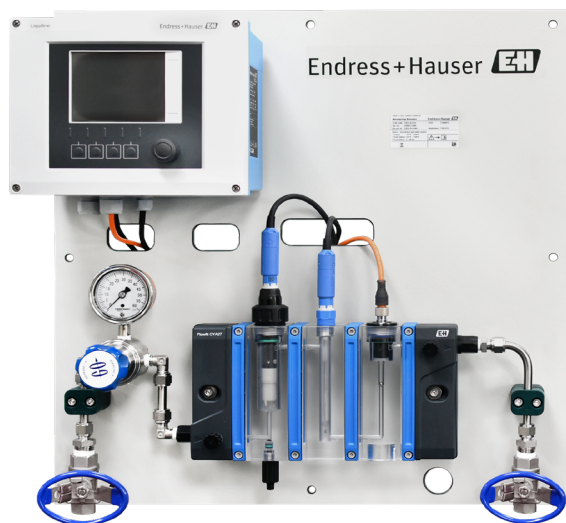
System Components

Liquiline transmitters: CM442, CM444 or CM448
- Total chlorine, free chlorine, free bromine or chlorine dioxide systems
  - Freely configurable with a CM442, CM444 or CM448 transmitter
  - At least two sensors inputs to accommodate a disinfection sensor and a pH sensor
  - A DIO (Discrete Input/Output) module for flow switch indication input
  - Can be configured for 100–230 VAC or 24 VDC

Flowfit CYA27 flow assembly for total chlorine, free chlorine, free bromine and chlorine dioxide
- CYA27-AA1A12A11AAAAAAAAAAAAA1 +NCNDQHRA
- G1/4 to 1/4" process adaption
- Integral flow switch
- Integral DPT test sample valve

Memosens free chlorine
- CCS51E-AA11ADNA: 0–5 mg/L, non-hazardous
- CCS51E-AA11BFNA: 0–20 mg/L, non-hazardous
- CCS51E-AA11CJNA: 0–200 mg/L, non-hazardous

Memosens free bromine
- CCS55E-AA31ADNA: 0–5 mg/L, non-hazardous
- CCS55E-AA31BFNA: 0–20 mg/L, non-hazardous
- CCS55E-AA31CJNA: 0–200 mg/L, non-hazardous

Memosens chlorine dioxide
- CCS50E-AA11ADNA: 0–5 mg/L, non-hazardous
- CCS50E-AA11BFNA: 0–20 mg/L, non-hazardous
- CCS50E-AA1CJNA: 0–200 mg/L, non-hazardous

Memosens total chlorine
- CCS53E-AA11ADNA: 0-5 mg/, non-hazardous
- CCS53E-AA11BFNA: 0-20 mg/L, non-hazardous

Memosens pH sensor (default) – CPS31E
- CPS31E-AA7ASB2: Non-hazardous, basic version, 1-12 pH, 1 ceramic junctions, salt store, 120 mm

Memosens measurement cable
- CYK10-A011: Non-hazardous, 1.5 m, wire terminal

Panel Features
- Pressure regulator with gauge: Lead-free, 0-30 PSIG, 15 PSIG nominal operating pressure
- Inlet and outlet valves: 316 SS ball valve, ½" NPT fitting
- DPD test valve: integral to the CYA27 flow assembly

Order a free chlorine, total chlorine, free bromine or chlorine dioxide system using the following process:

A complete system is based on a Custom Solution CSOL-PA1WM1 (P=panel, A1=Pure water and WM1= Wetted parts (metal)) with modification selection 71601473. The process of ordering a system begins with the CSOL panel with the modification number as the initial line item on order. Following the CSOL line item the Liquiline transmitter is defined followed by the CYA27 flow assembly, disinfection sensor, pH sensor and finally CYK10 cables.

Example

Line 10: CSOL-PA1WM1 with modification 71601473

Line 20: Liquiline transmitter (CM442, CM444 or CM448). The transmitter may be configured as non-hazardous or CSA C/US general purpose. Two sensor inputs and a DIO module are required. Other than the two sensor inputs and DIO module, the transmitter may be freely configured for any other I/O needs.
Example: **CM444-AA###A1FG11BAA+AA**

Line 30: Include the CYA27 flow assembly. The assembly configuration must match the following configuration. The configuration must not deviate from the following.
Required: **CYA27-AA1A12A10AAAAAAAAAAAAA1 +NCNDQHRA**

Line 40: Configure the desired disinfection sensor with the appropriate range and CYA27 flow assembly adaptor (NA under Accessory Mounted). (Currently does not include Total Chlorine.)
Example: **CCS51D-AA11##+NA**

Line 50: Configure the desired Memosens pH sensor. The default sensor is the CPS31E-AA7ASB2. A pH sensor is not required with total chlorine or chlorine dioxide.
Example: **CPS31E-AA7ASB2**

Line 60: Configure one or two CYK10 Memosens cables. One cable is used when a pH sensor is not required and two cables are required when both a disinfection and pH sensor are specified.
Example: **CYK10-A011**

When organized on an order in the manner outlined above, the system will be shipped with all components panel-mounted with the sensors shipped uninstalled. All that will be required is to mount the system, connect inlet and outlet sample lines, install sensors and power the system.

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