ChloroStar™ Cell
Panel system



Measurement made easy

ChloroStar Cell
Panel system

Introduction

Drinking water, cooling water, and industrial wastewater are usually disinfected with chlorine, chlorine dioxide, or ozone. The level of disinfectant in these waters must be carefully controlled, because insufficient disinfection must be avoided and chlorine concentrations that are too high can cause undesirable tastes and corrosion of pipes.

This Commissioning Instruction provides the installation and setup procedures of the ChloroStar Cell panel system.

For more information

Further publications for the ChloroStar Cell are available for free download from:
abb.com/measurement
or by scanning this code:

Links and reference numbers for related sensor documents:

	Search for/click:
ACL410 – ChloroStar Cell Data Sheet	DS/ACL410
ACL410 – ChloroStar Cell Commissioning Instruction	CI/ACL410
AWT420 transmitter – Operating Instruction	OI/AWT420

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1 Health and safety

Document symbols

Symbols that appear in this document are explained below:

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

'Note' indicates operator tips, particularly useful information or important information about the product or its further uses. **'Note'** does not indicate a dangerous or harmful situation.

Safety precautions

Be sure to read, understand and follow the instructions contained within this manual before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.

⚠ WARNING

Installation, operation, maintenance and servicing must be performed:

- by suitably trained personnel only
- in accordance with the information provided in this manual
- in accordance with relevant local regulations in accordance with relevant local regulations Information on RoHS Directive 2011/65/EU (RoHS II)"

Safety standards

This product has been designed to satisfy the requirements of IEC61010-1:2010 3rd edition 'Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use' and complies with US NEC 500, NIST and OSHA.

Product symbols

Symbols that may appear on this product are shown below:

⎓ Direct current supply only.



This symbol identifies a risk of chemical harm and indicates that only individuals qualified and trained to work with chemicals should handle chemicals or perform maintenance on chemical delivery systems associated with the equipment.



This symbol indicates the need for protective eye wear.



This symbol indicates the need for protective hand wear.



Recycle separately from general waste under the WEEE directive.

Product recycling and disposal (Europe only)



ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible. The European Waste Electrical and Electronic Equipment (WEEE) Directive that initially came into force on August 13 2005 aims to reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic equipment. In conformity with European local and national regulations, electrical equipment marked with the above symbol may not be disposed of in European public disposal systems after 12 August 2005.

NOTICE

For return for recycling, please contact the equipment manufacturer or supplier for instructions on how to return end-of-life equipment for proper disposal.

Information on RoHS Directive 2011/65/EU (RoHS II)



ABB, Process Automation, Measurement & Analytics, UK, fully supports the objectives of the RoHS II directive. All in-scope products placed on the market by PAMA UK on and following the 22nd of July 2017, will be compliant to the RoHS directive, 2011/65/EU.

2 Cyber security

This product and the EZLink Connect™ app is designed to be connected to and to communicate information and data via a digital communication interface.

It is your sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be). You shall establish and maintain any appropriate measures (such as but not limited to the application of authentication measures etc.) to protect the product, the EZLink Connect app, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB Ltd and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Although ABB provides functionality testing on the products and updates that we release, you should institute your own testing program for any product updates or other major system updates (to include but not limited to code changes, configuration file changes, third-party software updates or patches, hardware change out, etc.) to ensure that the security measures that you have implemented have not been compromised and system functionality in your environment is as expected.

Communication protocol-specific security

The HART® protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

The Modbus® protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

The PROFIBUS® PA protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

The PROFIBUS DP protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

3 System overview

Figure 1 and Table 1 show the components of the ChloroStar Cell panel system:

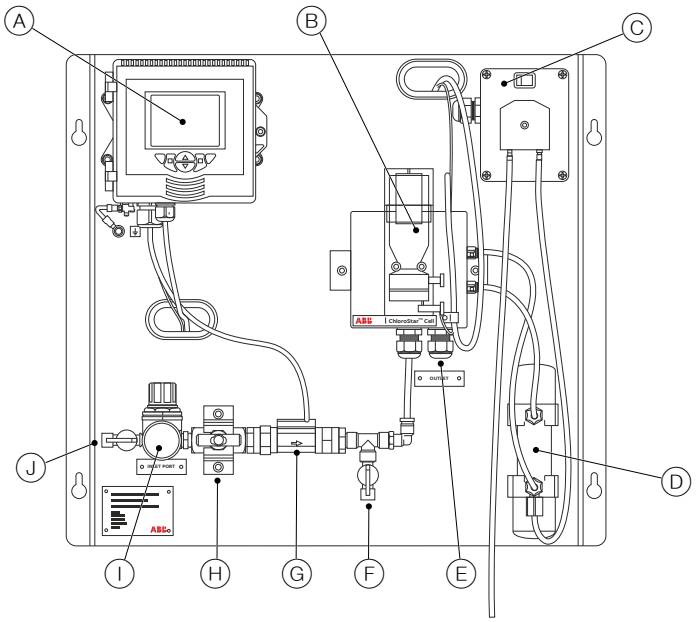


Figure 1 ChloroStar Cell panel system components

Table 1 ChloroStar Cell panel system component descriptions

Part	Description
A	AWT420 transmitter
B	ChloroStar Cell (ACL410)
C	Buffer pump (optional)
D	Mixer (optional)
E	Sample outlet (12 mm compression fitting)
F	Grab sample port
G	Flow switch
H	Flow regulator
I	Pressure regulator (optional)
J	Sample inlet (6 mm push-fit tubing)

4 Installation

Location

Install the panel system in a clean, dry, well-ventilated location that gives easy and safe access for operators to maintain and calibrate the analyzer.

The location must also comply with these conditions:
- It must have no vibrations.
- The cell must not be exposed to direct sunlight.
- It should be as far as possible from rotating devices and electrical communication devices.
- The transmitter should be near to the cell and above it for periodic calibration.

Preparation before installation

The ChloroStar Cell panel system is designed to be wall-mounted.
Attach the ChloroStar Cell panel system to the wall with the supplied mounting screws through the designated mounting holes.

Sample line connection

Sufficient water sample pressure must be available to keep water transfer time as short as possible and decrease system time lag.
For pressure over 4 bar, the pressure regulator should be chosen
When the sample enters the cell for gravity, allow a minimum hydraulic head of 2 m.
Use polyethylene tubing or PVC piping for water sample transfer.

Sample connection

1. To connect the sample line, use a 6 mm OD polyethylene or flexible PVC tubing.
2. Make sure that the hose is tightly in position.
3. Push the inlet hose into the ball valve.
4. Insert the drain hose (customer-supplied) approximately 10 to 15 cm (3.9 to 5.9 in) in a nonmetal pipe. This makes it easier to remove the hose when you collect a sample, which is necessary for periodic calibration.

Outlet connection

To reduce the risk of siphoning, make sure that the height difference between the outlet port on the flow cell and the exit of the 10 mm (⅜ in) OD tube is no greater than 150 mm (5.9 in).

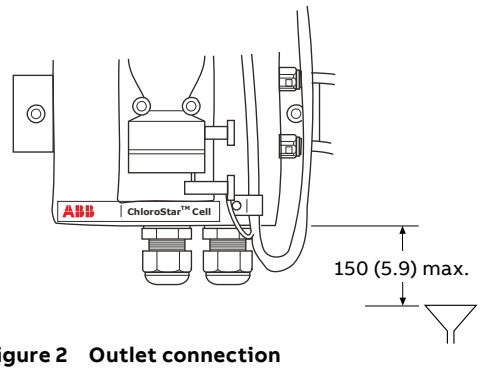


Figure 2 Outlet connection

Sampling requirements

The selection of a good, representative sampling point is important to make sure that you obtain optimum performance from the analyzer.

To decrease the sample dead time, install the analyzer as near to the sampling point as possible.

The sample must also conform to the conditions that follow:
- The sample flow must be continuous:
  – Min. sample flow rate: 60 to 75 L/h (0.26 to 0.33 galUS/min).
- The sample temperature must be between 2 and 50 °C (36 and 122 °F).
- Install a sample filter on the sample inlet line. A filter size of 50 µm is recommended.
- The pressure must be between 1 and 8 bar (14.5 and 116 psi).
- The sample must not have bubbles.
- The sample must be fully mixed and representative of the process.

For aggressive and fouling-prone applications, the AWT420 transmitter can be configured to activate a cleaning relay.

Refer to OI/AWT420 for configuration options. ABB also offers the automatic cleaning system (liquid) (IN/ANAINST/042).

5 Electrical connections

Refer to CI/AWT420 for electrical connections.

Module connections

Buffer feed power supply connection
Optional connection wiring to be confirmed via a dedicated supply 1 A MCB.
- Either 24 VDC Or 110 V AC (60 Hz),
- Or 230 V AC nominal (50 Hz).

The solenoid control valve should be connected to a single-phase power source. The solenoid control-valve buffer-feed motor can be wired to either a 24 V DC, 100 V AC, or 220/240 V AC supply as appropriate.

Note:
All models require a cable and plug to be fitted before use.

The voltage to ground from either pole of the power source must not exceed the maximum operating voltage:
- 36 for 24 V DC
- 130 for 110 V AC supply
- 264 V AC for 220 to 240 V AC supply.

Before you make the connection to the power source, make sure that the voltage of the power source is correct.

The power source must have a fuse or circuit breaker that is rated no higher than 1 A, and be supplied by a suitable disconnection device, for example, a switch.

6 Start the panel system

Start the panel system (Pressure-regulated)

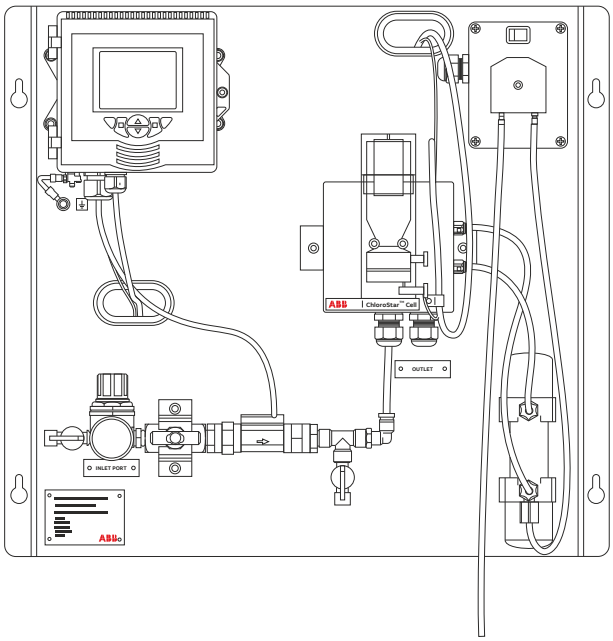


Figure 3 Pressure-regulated panel (Note: inlet and outlet sample lines not shown)

1. Make sure that the inlet and oulet are connected correctly. Refer to Figure 3.
2. Open the sample inlet valve in the sample line.
3. Operate pressure regulator to be within 1 to 8 bar.
4. Using the flow rate regulator, turn it clockwise until the necessary flow rate is obtained (or until the flow alarm disappears from the AWT420 alarms).

Start the panel system (Non pressure-regulated)

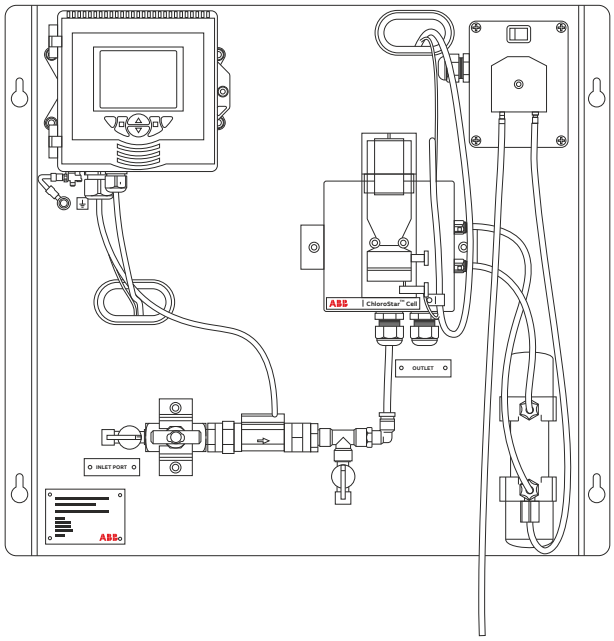


Figure 4 Non pressure-regulated panel (Note: inlet and outlet sample lines not shown)

1. Make sure that the inlet and outlet are connected correctly. Refer to Figure 4.
2. Open the sample inlet valve in the sample line.
3. Using the flow rate regulator, turn it clockwise until the necessary flow rate is obtained (or until the flow alarm disappears from the AWT420 alarms).

Trademarks

- ChloroStar is a trademark of ABB Limited.
- EZLink is a trademark of ABB Limited.
- HART is a registered trademark of FieldComm Group.
- Modbus is a registered trademark of Schneider Electric USA, Inc.
- PROFIBUS is a registered trademark of PROFIBUS Nutzerorganisation, e.V.

Notes

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ABB Measurement & Analytics

For your local ABB contact, visit:
abb.com/contacts

For more product information, visit:
abb.com/measurement

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3KXA843405R4401 (P)

CI/ACL411-EN Rev. A 02.2025