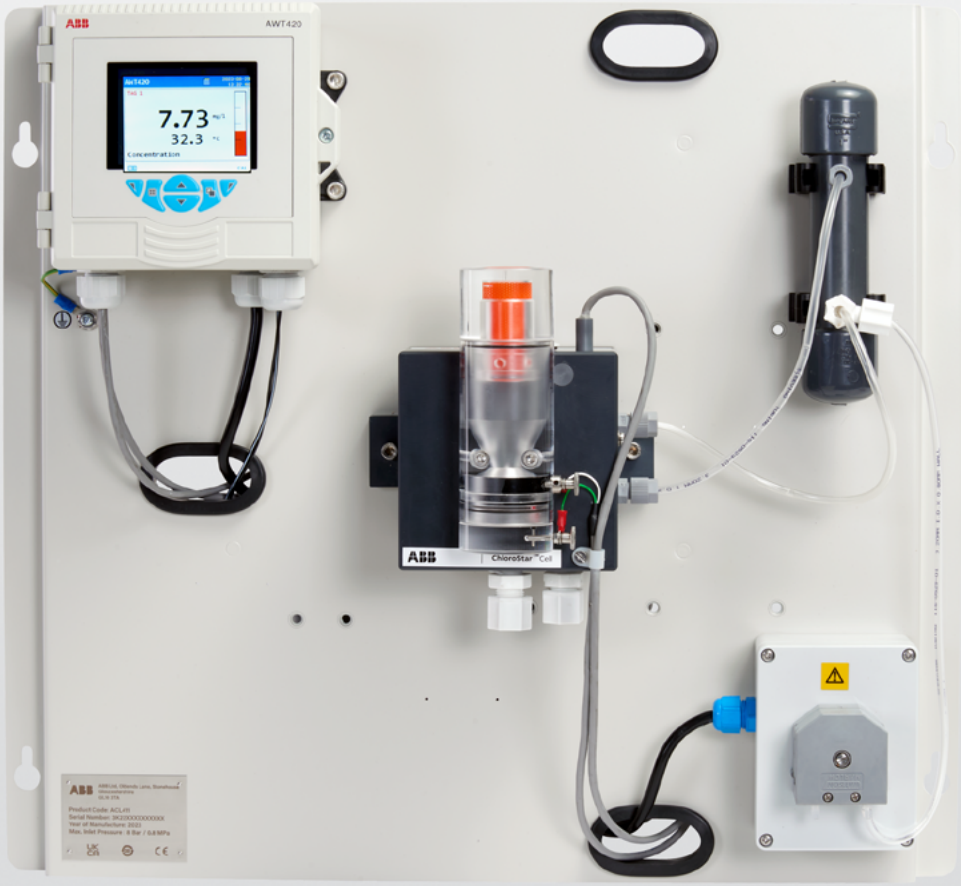
ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/ACL411-EN REV. B

CHLOROSTAR™ CELL

Chlorine panel system

ENGINEERED
TO OUTRUN



MEASUREMENT MADE EASY

Convenient panel system for confident chlorine measurement for municipal and industrial water and wastewater applications.

Easy integration
- All-in-one design featuring the necessary equipment to operate continuous online chlorine monitoring
- Simplified commissioning requirements

Flexibility
- Optional reagent dosing system for samples containing elevated pH levels or total chlorine measurement requirements
- Optional pH compensated measurement for improved and accurate readings
- Pressure regulator valve available for applications above 4 bar (60 psi)

Measurement confidence
- Stable measurement with optional pH compensation and drift alarm notification
- Optional dual measurement verification for improved measurement insight

Introduction

Chlorine is a common and useful measurement used in a wide range of disinfection schemes. To achieve accurate and reliable results with minimal intervention, careful equipment and installation requirements need to be considered.

ABB's ChloroStar Cell panel makes measurement easy with a convenient, all-in-one panel system making installation and operation simple and less time-consuming while delivering accurate and reliable chlorine data.



01 ChloroStar Cell Panel System

The ChloroStar Cell panel system

Part of the ChloroStar family of products, the ChloroStar Cell panel features a durable powder-coated steel panel that includes;

- ChloroStar Cell (ACL410)
- Dual-channel transmitter (AWT420)

Each panel can be configured to include additional features like reagent dosing, pressure regulator or additional pH measurement with the aim of providing adaptability to a wider range of applications.

Applications

The ChloroStar Cell has been designed to measure oxidants in a wide range of applications, in particular, ones challenged with fouling-prone samples. These applications include:

- Municipal and industrial water and wastewater
- Cooling water for power stations and industrial facilities
- Food and beverage
- Distribution monitoring

Easy integration

The ChloroStar Cell panel was designed with the end-user in mind, by making installation and operation simple and easy.

All ChloroStar panels come pre-assembled and pressure-tested from the factory, saving time and cost when it comes to installation and commissioning.



02 Panel mounting and cable entry points

The panel can be installed with four conveniently located mounting points, and includes soft-edge cable entry points keeping the working area clear of unnecessary wiring.

Flexibility

We understand that customers face unique challenges which might require a degree of flexibility with their measurement needs.

The ChloroStar Cell panel offers a number of customizations making it better suited for a wider range of applications.

Improved stability
Chlorine measurement is susceptible to fluctuation in sample flow rate and pressure often resulting in unstable and inaccurate results.

ABB's ChloroStar Cell panel offers an optional pressure regulator (Figure 03) which can help reduce the effects of sudden process changes. In addition, it can also extend the operating pressure of the panel above 4 bar (60 psi).



03 Pressure regulator kit

Convenient sample analysis
Measurement verification is a common practice making the need for quick and easy sample collection vital for operation.

The ChloroStar Cell panel offers a convenient grab sample port through a three-way valve just before the measuring cell.

When samples are collected, verification can be performed using ABB's EZTest handheld chlorine calibrator, for accurate and reliable results on the go, removing the need for bench-top or remote testing.



04 EZTest 100 handheld chlorine calibrator

For additional information on the EZTest 100 Chlorine handheld calibrator, refer to the data sheet: DS/AWQ101.

Process control
In applications experiencing high and variable pH values, which can impact chlorine measurement, or if total chlorine concentrations are required, the ChloroStar Cell panel can be equipped with a buffer assembly capable of delivering the necessary reagents at the required doses to achieve stable results.

Measurement confidence

The ChloroStar Cell panel comes equipped with the AWT420 universal multi-channel transmitter. This platform offers unique features for chlorine measurement which improve measurement confidence and accuracy.



05 AWT420 universal multi-channel transmitter

pH compensation
Chlorine measurement is susceptible to variations in pH, especially at higher pH values. Traditionally, customers would either buffer the sample to control changes in pH, but this requires additional hardware like pumps and chemicals to control the level of pH.

When the ChloroStar Cell panel is equipped with an additional pH sensor, the dual-channel AWT420 transmitter is able to compensate the chlorine reading by use of an internal algorithm, ensuring measurement accuracy without the use of additional pumps or reagents

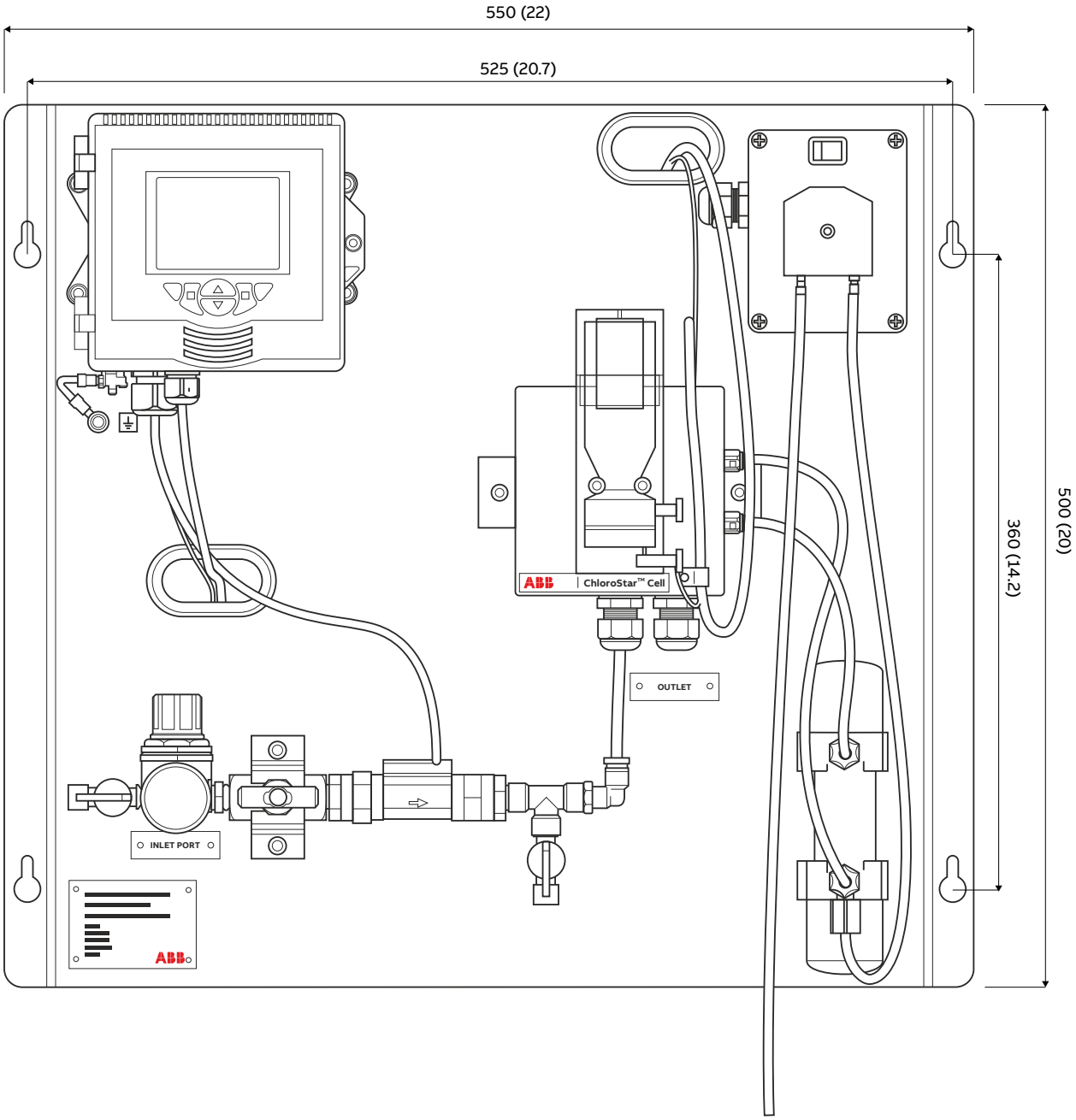
pH drift alarm
As chlorine measurement is influenced by pH variants, the AWT420 allows users to provide notification of any drift by a user-defined level, when using an additional pH sensor. This provides advanced warning for any corrective actions to be taken ensuring measurement accuracy

Dual verification
Drift in chlorine measurements can be difficult to identify. Changes in the process or in the sensor can contribute to drift.

Dual-verification allows customer to select an additional chlorine measurement which can be monitored against another chlorine input notifying you when drift between the two inputs exceeds a certain level

Dimensions

All dimensions in mm (in)



06 ChloroStar Cell Panel dimensions

Note:
The mounting holes use M6 bolts.

Specifications

Environmental data

Ambient operating temperature

0 to 60 °C (32 to 140 °F)

Sample operating temperature

0 to 50 °C (32 to 122 °F)

Maximum sample pressure

8 bar (116 psi) (with pressure-reducing valve fitted)

4.5 bar (65 psi) (without pressure-reducing valve)

Wetted materials

- Copper gold (electrodes)
- PLEXIGLAS® (electrode chamber)
- Polyethylene (flexible tubing)
- PVC (flexible tubing)
- Polypropylene (isolation valve)
- EPDM (seal)
- 316 stainless steel (threaded fittings and T-piece)
- Polyoxymethylene (push-fit)
- Brass (pressure regulator)

Dimensions

Overall dimensions

550 × 500 mm (22 × 20 in)

Sample connections inlet/outlet

⅜ in OD push-fit tubing

Maintenance

Maintenance interval

Recommended annual replacement of O-rings and membrane cell

Calibration

Single- or two-point manual calibration

Mechanical data

Ingress protection

- Transmitter: Refer to DS/AWT420

Sample connections

Inlet/outlet: ⅜ in OD polyethylene, or flexible PVC tubing if carbon filter is fitted. It is recommended that the inlet is filtered to 5 µm to prevent blockages in the carbon filter.

Electrical

Mains voltage

Electrical supply voltage: 100 to 240 V AC ±10 %, 50/60 Hz

24 V DC (18 min. to 36 V DC max.)

Power consumption

< 15 W

Ordering information

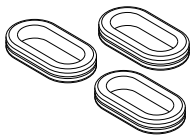
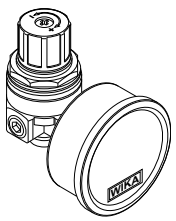
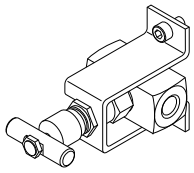
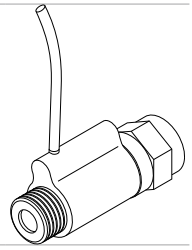
ACL411 Chlorine panel system	**ACL411/**	**A1**	**XX**	**XX**	**XX**	**Option**
AWT420 transmitter type						
AC version			A1			
DC version			D1			
Additional parameters						
Without				Y0		
100E pH sensor (analog pH electrode, PT100, 3 m tinned cable)				B1		
Reagent feed assembly*						
Without					Y0	
230 V pump system					R1	
115 V pump system					R2	

Optional ordering code:	
Pressure regulator	
High pressure – max. 8 bar (116 psi)	P1

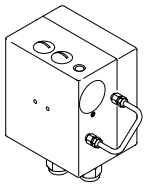
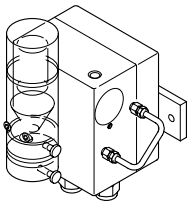
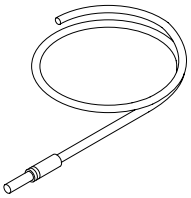
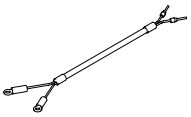
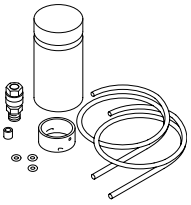
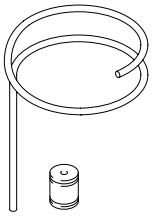
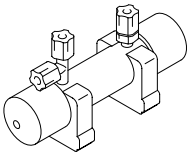
* To include buffer pump and bottles – reagent sold separately.

Spares and accessories

PANEL ACCESSORIES

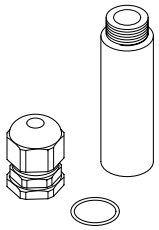
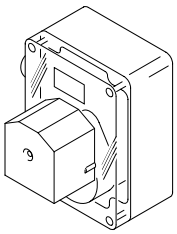
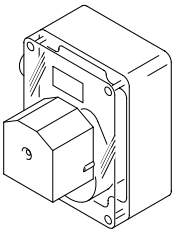
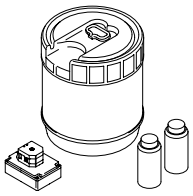
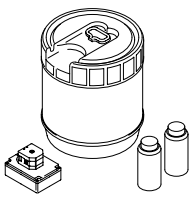
Part number	Description	
3KXA080000L0028	Edge trim kit	
3KXA080000L0030	Pressure regulator upgrade kit	
3KXA080000L0031	Flow regulator kit	
3KXA080000L0032	Flow indicator kit	
3KXA080000L0033	Plumbing kit (excl. tubing)	

CHLOROSTAR CELL ACCESSORIES

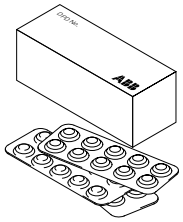
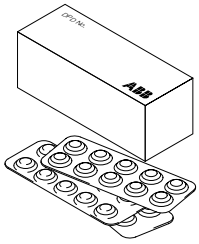
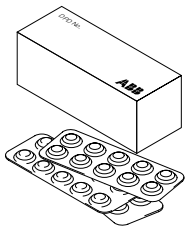
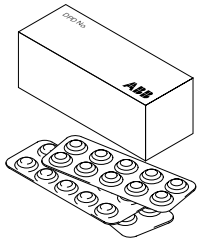
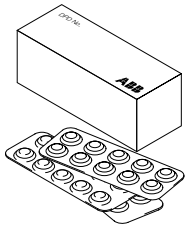
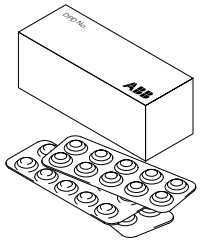
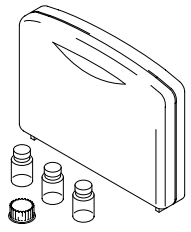
Part number	Description	
3KXA843400L0035	Regulator assembly	
3KXA843400L0036	Cell assembly	
3KXA843400L0041	PT100 with cable, 3 m (standard)	
3KXA843400L0042	Cell signal cable, 3 m (standard)	
3KXA843400L0073	ChloroStar Cell maintenance kit	
3KXA843400L0074	Replacement gold electrode kit	
3KXA843400L0076	ACL410 mixer assembly	

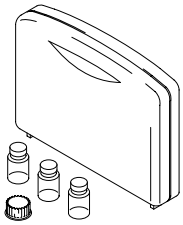
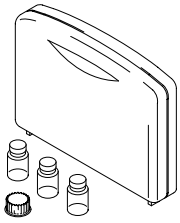
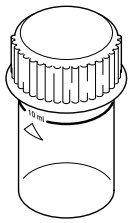
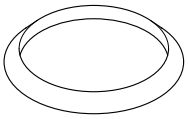
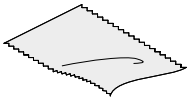
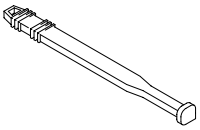
...Spares and accessories

...CHLOROSTAR CELL ACCESSORIES

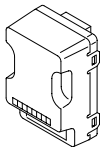
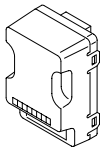
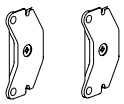
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3KXA843400L0077	Reagent bottle and tubing kit	
3KXA843400L0078	ACL410 pH/ORP PG13.5 upgrade kit	
3KXA843400L0087	Buffer pump – 230 V	
3KXA843400L0088	Buffer pump – 110 V	
3KXA843400L0089	Buffer pump upgrade kit – 230 V	
3KXA843400L0090	Buffer pump upgrade kit – 110 V	

EZTEST HANDHELD CALIBRATOR ACCESSORIES

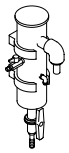
Part number	Description	
3KXA843402L0001	DPD 1 tablet (pk 100)	
3KXA843402L0002	DPD 4 tablet (pk 100)	
3KXA843402L0003	DPD No. 1 HR (pk 100)	
3KXA843402L0004	DPD No. 3 HR (pk 100)	
3KXA843402L0005	Vario chlorine free-DPD/ F10 (pk 100)	
3KXA843402L0006	Vario chlorine total-DPD/ F10 (pk 100)	
3KXA843402L0007	Reference standard kit tablet/liquid set 0/0.2/1.0 mg/L	

Part number	Description	
3KXA843402L0008	Reference standard kit table/liquid set 0/1/4 mg/L	
3KXA843402L0009	Reference standard kit powder set 0/0.2/1.0 mg/L	
3KXA843402L0010	Cells with cap (pk 12)	
3KXA843402L0011	Sealing rings (pk 12)	
3KXA843402L0012	Cleaning cloth for vials	
3KXA843402L0013	Crushing rod (pk 10)	

AWT420 TRANSMITTER ACCESSORIES

Part number	Description	
3KXA877420L0014	AWT420 pH/ORP module	
3KXA877420L0019	AWT420 Universal Input Module	
3KXA877420L0016	Wall-mount kit	

SAMPLE HANDLING ACCESSORIES

Part number	Description	
7997 500	De-bubbler assembly	
01-0107-A	Sample header pot	

Trademarks

- ChloroStar is a trademark of ABB Limited.
- PLEXIGLAS is a registered trademark of Röhm GmbH.

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