ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AWT420-EN REV. J

AWT420

Universal 4-wire, dual-input transmitter

Measurement made easy

The most versatile general process transmitter for water analysis

Universal modular design
- mix-and-match a wide range of analog and advanced digital EZLink™ sensors
- factory-calibrated sensor and communication modules minimize stock holding, and maximize operation uptime
- wall, panel, or pipe-mountable

Easy to use
- intuitive software with full-color graphical display
- plug-and-play digital sensor connection using EZLink technology
- 'Easy Setup' menus provide step-by-step guidance

High functionality at minimum cost
- dual-channel PID control
- full audit trail capability for improved regulatory compliance
- secure data archiving to SD™ card

Integrated Bluetooth® for direct connection to your smart device
- view device data in real time, or analyze later in offline mode
- access the latest software updates and essential sensor information
- keep track of maintenance tasks and view maintenance logs at a glance

Robust and reliable
- SIL approved[1]

Flexible communications
- HART®, Ethernet, PROFIBUS® DP or Modbus® digital communications
- advanced self-diagnostics conforming to NAMUR NE 107 provide harmonized indication of device status

1 Conforms to IEC61508. Refer to SI/AWT420

The AWT420 dual-input transmitter

The AWT420 dual-channel transmitter provides true flexibility for measuring a wide variety of parameters in a single device. Packed with a host of features including Bluetooth® connectivity, dual PID control and EZLink sensor connection, water analysis has never been easier.

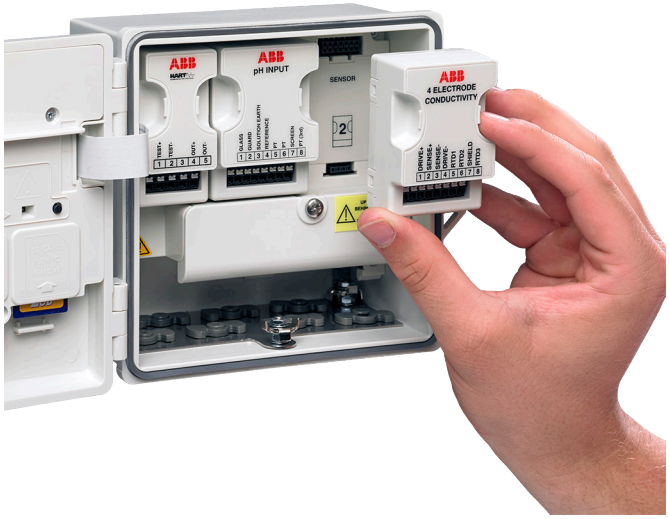
Operation simplicity is a key feature of the AWT420 with its powerful, yet intuitive software, advanced self-diagnostics, and its unique modular design that enables users to achieve increased efficiency through greater user flexibility, reduced process downtime, and simplified maintenance.

The robust IP66 enclosure can be easily wall, pipe, or panel mounted. The hinged door with tamper indicator provides unrestricted access to the communication and sensor modules for simplified commissioning and maintenance.

The AWT420 transmitter can be used with either analog or digital EZLink sensors for a wide range of applications including drinking water, wastewater, industrial water and power.

Versatile modular design
The unique modular design of the AWT420 enables the same unit to be used with any of the available or future sensor and communication modules, minimizing stock holding and maximizing operational uptime.

Each module is factory calibrated and can be quickly and securely installed by hand in seconds, providing the ultimate in transmitter adaptability.



Sensor compatibility

pH and redox (ORP) measurement
The AWT420 pH/ORP module is compatible with ABB's full range of analog pH, redox (ORP) sensors in addition to most competitors' sensors.

For measuring process liquids that change pH value based on temperature, a pH solution coefficient can be entered that compensates the Nernstian value for pH measurements, and the raw voltage value for ORP measurements, by a fixed value per each 10 °C (18 °F).

Conductivity measurement
The AWT420 fully supports ABB's range of 2-electrode and 4-electrode sensors for conductivity, resistivity, concentration and inferred pH measurement making the AWT420 suitable for installations ranging from ultra-pure water to harsh chemical applications.

For users that use conductivity to infer liquid concentration a concentration curve can be entered using the 6-point linearizer table.

Universal Input Module
The AWT420 supports the Universal Input Module (UIM). This flexible module provides support for a wide range of bespoke or nonstandard sensors. The UIM can support the ACL410 chlorine sensor, or measure:

- current
- voltage
- frequency
- resistance
- temperature

EZLink digital sensors
The AWT420 EZLink module is compatible with ABB's range of EZLink digital sensors providing plug-and-play sensor connectivity, automatic sensor recognition/set-up and advanced predictive diagnostics.

Table 1 Compatible EZLink digital sensors:

Parameter	Sensor
pH/ORP	100 GP-D, 100 ULTRA-D, 500 PRO-D, 700 ULTRA-D
Turbidity/Suspended solids	ATS430
Dissolved oxygen	ADS420
Chlorine	ACL420

Turbidity measurement
The AWT420 fully supports ABB's 4690 range of turbidity systems for use throughout the potable water treatment process.

With the product verification process the user is notified when a primary calibration is required, this promotes minimal product maintenance while maintaining product accuracy.

Flexible communications

The AWT420 transmitter is available with a wide choice of user-selectable communication modules including HART, Ethernet, PROFIBUS DP V1.0 or Modbus RS485; enabling simple device integration.

The Ethernet module contains an embedded web server that enables the unit to be viewed remotely and fully controlled securely via a web browser. Configuration data and process data can be downloaded via secure FTP connection.

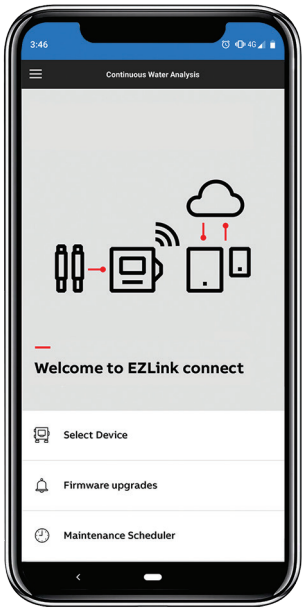
Communication modules can be configured when purchased or easily retrofitted in the field.

Direct connection to your smart device

Connect to any iOS™ or Android™ device via Bluetooth using the EZLink Connect app to access essential sensor information wherever and whenever you need it to ensure your process is continually operating at maximum efficiency.

From checking your audit logs to downloading the latest software through your smartphone, we are confident that EZLink Connect will make your life that little bit easier by providing you with a wealth of information and services to support you wherever and whenever you need it.

- Easily and securely connect to your device to view all measurement, diagnostic and audit data in real time or analyze later in offline mode
- Access the latest software updates and essential sensor information direct through your smartphone
- Keep track of all current and upcoming maintenance tasks and view completed maintenance logs at a glance

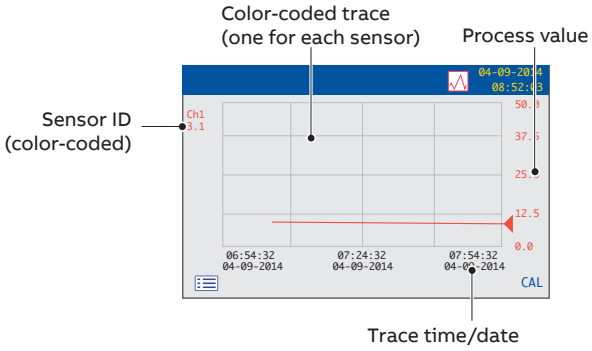


Easy to use

ABB's intuitive HMI is both powerful, yet user-friendly with simple navigation and clear menus presented on the large, easy-to-read, full-color graphical display. **Easy Setup** sensor configuration menus provide step-by-step guidance for commissioning new sensors, and the advanced self-diagnostics conforming to NAMUR NE 107 provide harmonized indication of device status.

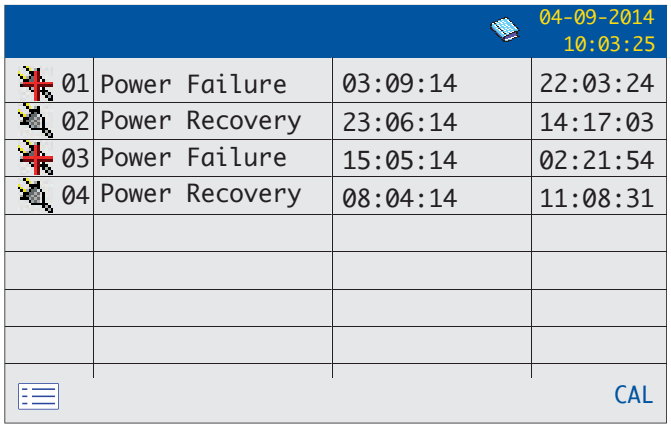
Graphical trending

Measurement trends of each sensor can be viewed locally easily and clearly on the graphical color display.



Full audit trail capability

The AWT420 transmitter records all data to its internal memory continuously. This includes both event log/ configuration data in addition to measurement data. The transmitter's event log files contain audit log, alarm log, diagnostic log and calibration log data that is time and date-stamped, providing the operator with full audit trail capability.



Secure data archiving to SD card

Process data and historical logs can be securely archived to an SD card for record keeping or analysis using ABB's DataManager Pro data analysis software.

Simplified calibration

With the AWT420 **One-Button Calibration** feature, sensor calibration can be initiated directly without the need to access the device menu, reducing overall time spent calibrating sensors.

Secure process control

Multi-level security access prevents unauthorized modification of process control data by enabling separate read-only, calibrate and advanced security access levels to users.

Advanced process control functionality as standard

Dual-channel PID control
The AWT420 transmitter incorporates three-term PID control, offering three modes of sophisticated control:

- analog
- pulse length (time proportional)
- pulse frequency.

Control functionality is available for both channels of the AWT420 transmitter, and are configurable for reverse or direct-acting control. pH channels are configurable for reverse-acting, direct-acting, or dual (acid/base) control.

Dual measurement verification
When required, the AWT420 transmitter can perform dual-sensor input verification to better understand trends in the process. When using this function, customers can derive calculations based on average, difference, and maximum/minimum between two sensor inputs.

Cation conductivity and inferred pH measurement
In low conductivity, ammoniated boiler waters, the AWT420 transmitter can calculate an inferred pH measurement from the conductivity and a preset ammonia concentration.

For inferred pH measurement calculations, the AWT420 uses the inputs from two conductivity sensors, i.e., before and after cation exchange column. The AWT420 software contains a number of inferred pH calculations to allow for different chemical conditions, i.e., whether or not the system is an NH_3, NH_3+NaCl or NaOH dosed system.

Self-monitoring of the validity of the pH measurement is achieved by checking that an after-cation conductivity value is sufficiently low. This measurement is provided by the second input of the AWT420 transmitter. Alarm contacts can be configured for cation conductivity, invalid pH, and exhausted resin.

Advanced dual-conductivity calculations
In addition to inferred pH measurement, the AWT420 provides advanced dual-conductivity calculations used across a range of industrial processes including demineralization and reverse osmosis control.

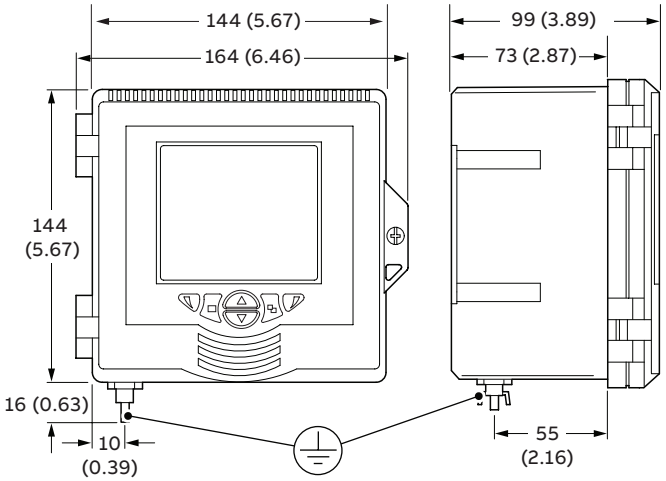
The AWT420 is able to calculate, display and transmit the difference, ratio, % passage or % rejection between two conductivity sensors.

Automated sensor cleaning
The AWT420 transmitter can automate sensor cleaning regimes to reduce operational expenditure and ensure effective sensor measurement. Pulsed or continuous cleaning routines can be assigned to any of the relays or digital output. The frequency and duration of the cleaning can be tuned to meet the specific requirements of the application.

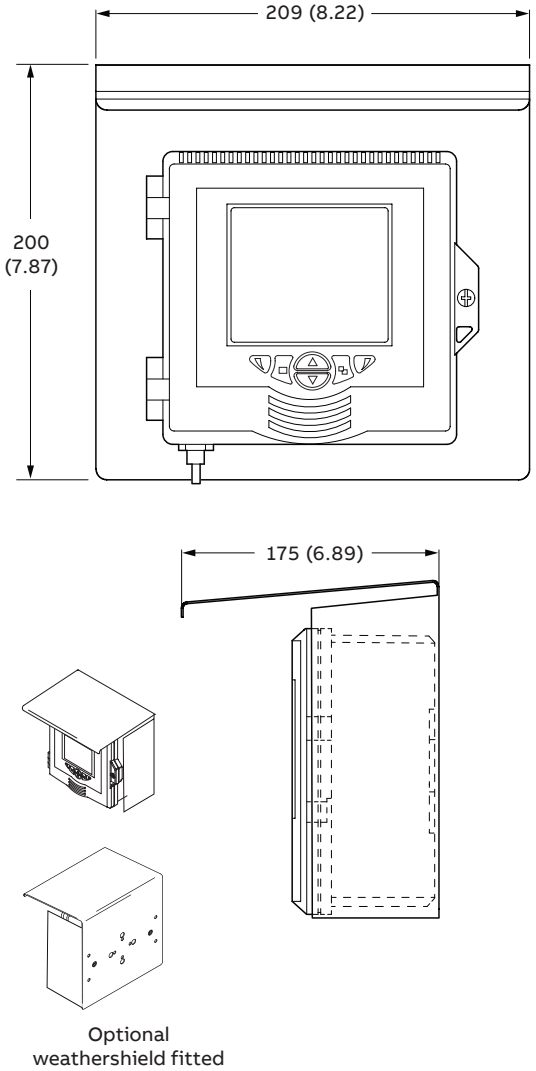
Dimensions

Dimensions in mm (in)

Transmitter



Optional weathershield

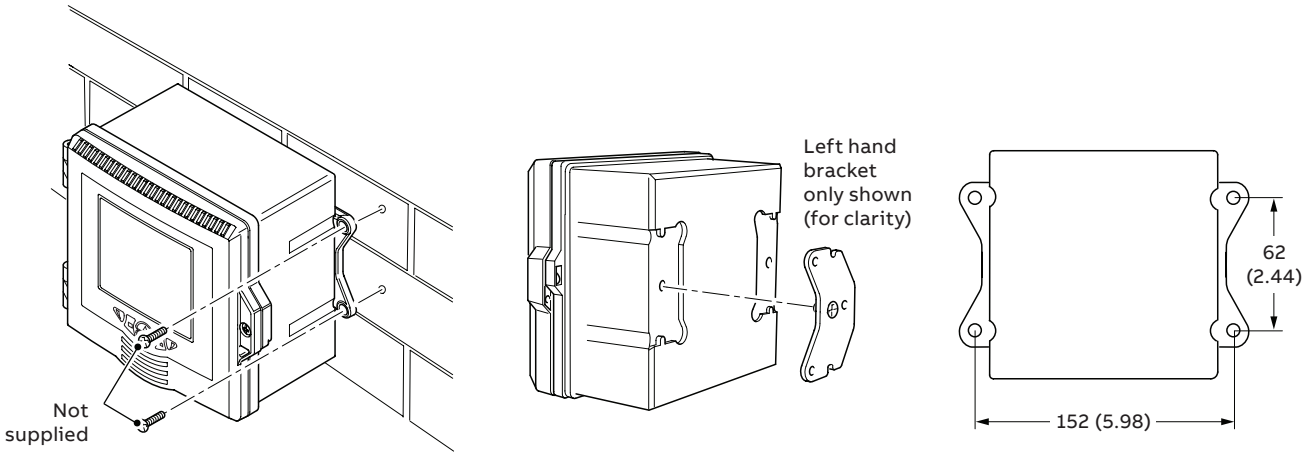


Optional weathershield fitted

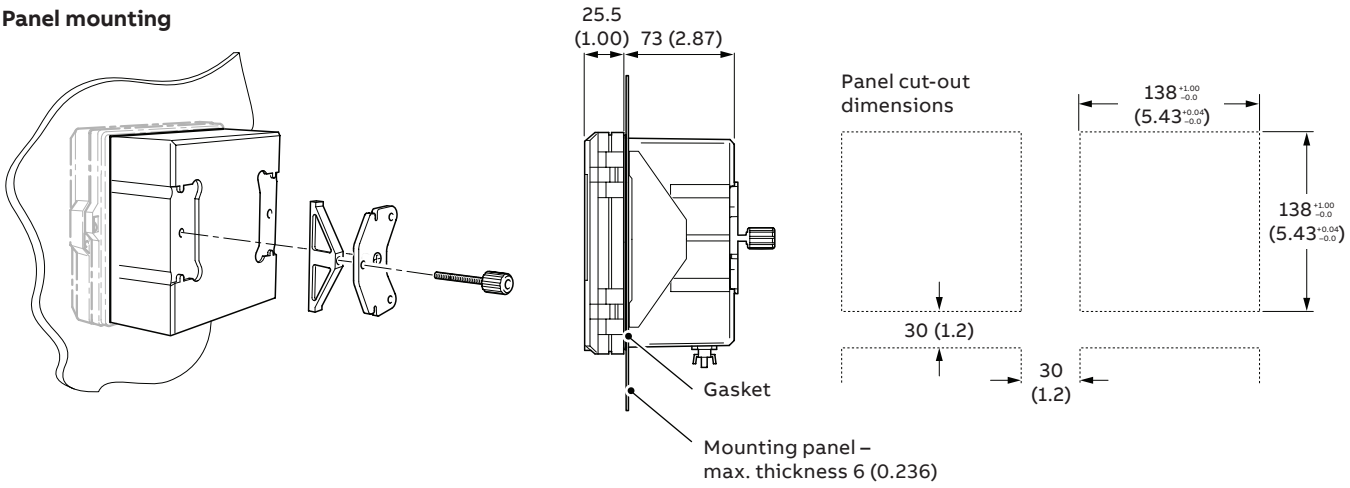
Mounting options

Dimensions in mm (in)

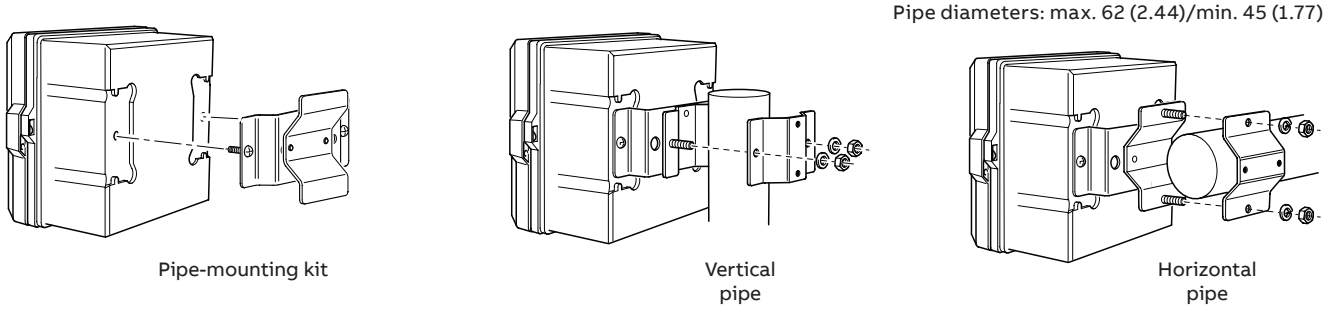
Wall mounting



Panel mounting



Pipe mounting



Specifications

Operation

Display

89 mm (3.5 in) color ¼ VGA TFT, liquid crystal display (LCD) with built-in backlight and brightness/contrast adjustment

Languages

English, German, French, Italian, Spanish, Portuguese, Russian, Turkish, Chinese, Polish

Keypad

6 tactile membrane keys:

- Group select/Left cursor
- View select/Right cursor
- Menu key
- Up
- Down
- Enter key

Number of inputs

Up to 2 analog or digital sensors

Mechanical data

Protection

IP66/NEMA 4X

Dimensions

- Height: 144 mm (5.67 in) minimum (excluding glands)
- Width: 144 mm (5.67 in) door closed – min.
- Depth: 99 mm (3.89 in) door closed – min. (excluding fixing brackets)
- Weight: aluminum enclosure
  1.36 kg (3 lb) approx. (unpacked)
- Weight: polycarbonate enclosure
  1 kg (2.2 lb) approx. (unpacked)

Panel dimensions

- Cut-out height: 138 +1 –0 mm (5.43 +0.04 –0 in)
- Cut-out width: 138 +1 –0 mm (5.43 +0.04 –0 in)
- Thickness: 6.35 mm (0.25 in) max.
- Depth behind panel: 100 mm (4 in) min. (after fixing with brackets to panel)
- Distance between cut-outs: 40 mm (1.57 in) min.

Materials of construction

- Aluminum enclosure – LM20 aluminum
- Polycarbonate enclosure – LEXAN™ 505RU 10 % glass-filled polycarbonate

Cable entries

- Five holes to accept M20 or ½ in cable glands or conduit hubs
- Two holes to accept M16 cable glands or conduit hubs or EZLink connectors

Security

Password protection

Access to configuration levels is enabled only after the user has entered a password:

- Calibrate level: user-assigned password
- Advanced level: user-assigned password
- Service level: service level user-assigned password

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

Terminal connections rating

Solid/Flexible wire: AWG 24 to 16 (0.2 to 1.5 mm^2)
Ferrule with plastic sleeve 0.2 to 0.75 mm^2
Ferrule without plastic sleeve 0.2 to 1.5 mm^2

Cable specification

Cable glands:

- M20: 5 to 9 mm (0.20 to 0.35 in)
- M16: 5 to 10 mm (0.20 to 0.39 in)
- ½ in NPT: 6 to 12 mm (0.24 to 0.47 in)
- Ethernet: 4.7 to 6.35 mm (0.187 to 0.25 in)

Analog outputs

Number

- Two supplied as standard
- Four with module board fitted

Output ranges

Analog output programmable to any value between 0 and 22 mA to indicate system failure

Accuracy

±0.25 % of reading or 10 µA (whichever is the greater)

Maximum load resistance

500 Ω at 20 mA

Configuration

Can be assigned to either primary variable or secondary variable

Isolation

- Revision A:
  500 V DC from any other circuitry but not from each other
- Revision B:
  500 V DC from any other circuitry

Relay outputs

- 4 standard single-pole changeover
- Fully-programmable
  - Contacts rating: 5 A @ 110/240 V AC
    (Non-inductive) 5 A @ 30 V DC

Digital input/output

- 1 standard, user-programmable as input or output
- Minimum input pulse duration: 125 ms
- Input – volt-free
- Output – open-collector, 12 to 24 V, 250 mA max.

Connectivity/communications (optional)

Ethernet

HTTP, HTTPS, FTP, Secure FTP

PROFIBUS DP

DPV0, DPV1

Modbus

RTU RS485

HART

- FieldComm-certified version – HART 7
- Configured range
  - 4 to 20 mA, user-programmable across measurement range
- Dynamic range
  - 3.8 to 20.5 mA with 3.6 mA low alarm level, 21 mA high alarm level
- Accuracy
  - ±0.25 % of reading
- Maximum load resistance
  - 500 Ω at 20 mA
- Configuration
  - Can be assigned to either measured variable
- Isolation
  - 500 V DC from any other circuitry

Data logging

Storage

- Measurement value storage (programmable sample rate)
- Audit log[1], Alarm log[1], Calibration log, Diagnostics log

Storage media

SD™ card, up to 32 GB capacity

Chart view

On local display

Historical review

Of data

Data transfer

SD card interface – Windows-compatible FAT file system, data and log files in Excel® and DataManager Pro compatible formats

Environmental data

Ambient operating temperature:

-10 to 55 °C (14 to 131 °F)

Hazardous area ambient temperature range

-10 to 45 °C (14 to 113 °F)

Refer to INF/ANAINST/012 for full hazardous area specifications

Ambient operating humidity:

Up to 95 % RH non-condensing

Storage temperature:

-20 to 70 °C (-4 to 158 °F)

Altitude:

2,000 m (6,562 ft) max. above sea level

2-electrode conductivity

Conductivity input

Measurement range and resolution

Cell constant	Conductivity range	Display resolution	Accuracy repeatability
0.01	0 to 200 µS/cm	0.001 µS/cm	±1.0 % of measurement range per decade
0.05	0 to 1,000 µS/cm	0.001 µS/cm	
0.1	0 to 2,000 µS/cm	0.01 µS/cm	
1	0 to 20,000 µS/cm	0.1 µS/cm	

Dynamic response

<3 s for 90 % step change when damping is off

Damping

Configurable: off, low, medium and high

Temperature input

Temperature element types

- Automatic temperature sensor recognition for Pt100, Pt1000 and 3k Balco RTDs in either 2-lead or 3-lead configurations
- Temperature element can be used for automatic temperature compensation of the conductivity solution

Measurement range and resolution

Sensor group	Temperature range	Display resolution	Accuracy repeatability
Pt100 Pt1000 3K Balco	-20 to 200 °C (-4 to 392 °F)	0.1 °C (0.1 °F)	0.1 °C (0.18 °F)
None	User-programmable -20 to 300 °C (-4 to 572 °F)		—

Temperature compensation modes

Linear, UPW, NaCl, HCl and NH_3

Reference temperature

25 °C (77 °F)

Configured output range

Cell constant	Min. span	Max. span
0.01	1 µS/cm	200 µS/cm
0.05	5 µS/cm	1,000 µS/cm
0.1	10 µS/cm	2,000 µS/cm
1	100 µS/cm	20,000 µS/cm

1 Audit log and Alarm log data are stored in the same log file.

...Specifications

4-electrode conductivity

Conductivity input

Measurement range and resolution

Sensor group	Conductivity range	Display resolution	Accuracy repeatability
A	0 to 2,000 mS/cm	0.1 µS/cm	±0.5 % of measurement range per decade
B	0 to 2,000 µS/cm	0.01 µS/cm	

Dynamic response

<3 s for 90 % step change when damping is off

Damping

Configurable: off, low, medium, and high

Temperature input

Temperature element types

- Automatic temperature sensor recognition for Pt100, Pt1000 and 3k Balco RTDs in either 2-lead or 3-lead configurations
- Temperature element can be used for automatic temperature compensation of the conductivity solution

Measurement range and resolution

Sensor group	Temperature range	Display resolution	Accuracy repeatability
Pt100 Pt1000	-20 to 200 °C (-4 to 392 °F)		0.1 °C (0.18 °F)
3K Balco		0.1 °C (0.1 °F)	
None	User-programmable -20 to 300 °C (-4 to 572 °F)		—

Temperature compensation modes

- 0 to 15 % NaOH
- 0 to 18 % HCl
- 0 to 20 % H_2SO_4
- 0 to 40 % H_3PO_4
- 0 to 20 % NaCl
- 0 to 50 % KOH
- User-defined table

Reference temperature

25 °C (77 °F)

Configured output range

Sensor group	Min. span	Max. span
A	100 µS/cm	2,000 mS/cm
B	10 µS/cm	2,000 µS/cm

pH/ORP (Redox) input

Sensor types

pH: Glass, antimony (Sb)

ORP (Redox): Platinum (Pt), gold (Au)

Input impedance

>1 × 10^{13} Ω

Measurement range and resolution

Type	Range	Display resolution	Accuracy repeatability
pH	0 to 14 pH	0.01 pH	±0.01 pH
ORP	±2,000 mV	1 mV	±1,800 MV: ±1 mV ±2,000 MV: ±3 MV

Dynamic response

<3 s for 90 % step change when damping is off

Damping

Configurable: off, low, medium and high

pH/ORP (Redox) temperature input

Temperature element types

- Automatic temperature sensor recognition for Pt100, Pt1000 and 3k Balco RTDs in either 2-lead or 3-lead configurations
- Temperature element can be used for automatic temperature compensation of the conductivity solution

Measurement range and resolution

Sensor group	Temperature range	Display resolution	Accuracy repeatability
Pt100 Pt1000	-20 to 200 °C (-4 to 392 °F)		0.1 °C (0.18 °F)
3K Balco		0.1 °C (0.1 °F)	
None	User-programmable -20 to 300 °C (-4 to 572 °F)		—

Temperature compensation modes

- pH: Manual, Automatic Nernstian, Nernstian with solution coefficient
- ORP: Manual, solution compensation coefficient

Reference temperature

25 °C (77 °F)

pH/ORP (Redox) configured output range

Type	Min. span	Max. span
pH	1 pH	14 pH
ORP	100 mV	4,000 mV

Turbidity

Measurement range and resolution

Sensor No.	Type of sensor	Display resolution (NTU)	Range (NTU)
ATS410/ A.1.P1	Low range (without wiper unit)	0.001 (< 5) 0.01 (> 5)	0 to 40
ATS410/ A.1.P2	Low range (with wiper unit)	0.001 (< 5) 0.01 (> 5)	0 to 40
ATS410/ A.1.P3	High range (with wiper unit)	0.1	0 to 400

Measurement Principle

90° scattered light measurement.
Compliant to ISO 7027

Maximum Linearity

Typically, <1.0 %

Accuracy[1, 2]

Low range version ±2 % of reading
High range version ±5 % of reading or 0.3 NTU (whichever is greater)

Repeatability[3]

0 to 200 NTU: < 1 %
200 to 400 NTU: 2 %

Limit of Detection[4]

Low range version: 0.003 NTU
High range version: 0.3 NTU

Response time

T90 < 1 min at 1 L/min

Flow Rate

0.5 to 1.5 L/min (0.13 to 0.39 galUS/min)

Integral wiper cleaning system

Programmable operational frequency every 15, 30, 45 minutes or multiples of 1 hour up to 24 hours

Sample operating temperature

0 to 50 °C (32 to 122 °F)

Sample pressure

Up to 3 bar (43.5 psi)

Ambient operating temperature

0 to 50 °C (32 to 122 °F)

Ambient operating humidity

Up to 95 % RH (non-condensing)

Damping

Configurable: Off, Low, Medium and High

Bubble Filter

Configurable: Off, Low, Medium and High

1 Maximum measured error across full measurement range (limited by uncertainty in Formazine standards).

2 Tested in accordance with IEC 61298 Parts 1-4: Edition 2.0 2008-10.

3 Tested in accordance with MCERTS: Performance Standards and Test Procedures for Continuous Water Monitoring Equipment. Version 3.1: Environment Agency 2010.

4 Tested in accordance with BS ISO 15839: 2003.

Universal Input Module

Analog inputs

Input 1

Type:
- Voltage
- Current
- Frequency

Input 2

Type:
- Resistance
- 2/3 wire RTD (supports PT100, PT1000, Balco 3K)

Digital filter

Programmable 0 to 900s

Display range

-9999 to 9999

Update rate

1 s

Input impedance

>10 MΩ (voltage/frequency inputs)
20 Ω (50 mA range)
1 kΩ (1 mA range)
10 kΩ (100 µA range)
100 kΩ (10 µA range)

Inputs

RTD	Maximum range °C (°F)	Accuracy/repeatability
PT100	-40 to 200	0.1 °C
PT1000	-40 to 200	0.1 °C
Balco 3K	-40 to 200	0.1 °C

Linear inputs	Standard analog input	Accuracy (% of reading)
Millivolt	0 to 2,000 mV	2 %
Current	0 to 50 mA (autoscaling range for µA inputs)	2 %
Frequency	0.5 to 1000 Hz	2 %
Resistance	50 to 10 kΩ	2 %
Sample interval		1 s per sample

Power outputs

Voltage	Power
24 V	1 W
12 V	0.5 W
5 V	1 W
Millivolts (0 to 1,000 mV)	1 mA (for biasing electrochemical sensors)

EZLink

Power consumption (maximum)

150 mA @ 24 V DC (3.75 W max)

Fixed length cable

1 or 10 m (3.28 or 32.8 ft)

Digital sensor connector IP rating

IP67 (when connected)

Extension cable (options)

1, 5, 10, 15, 25, 50 m (3.2, 16.4, 32, 49.2, 82, 164 ft)

Maximum length (including optional extension cable)

Up to 210 m (689 ft)

...Specifications

EZLink HazLoc

Refer to INF/ANAINST/012

HazLoc approved sensors

ACL420
500 PRO

EMC

Emissions & immunity

Meets requirements of IEC61326 for an industrial environment

Approvals, certification and safety

Safety approval

cULus

CE mark/UKCA

Covers EMC & LV Directives
(including latest version IEC 61010)

MCERTS

Certificate No: Sira MC220375/00

General safety

- IEC 61010-1
- Pollution degree 2
- Insulation class 1

IECeX/ATEX

Non-incendive
For models with EZLink channels:

- II 3(3) G Ex ic ec nC [ic Gc] IIC T4 Gc

For models without EZLink channels:

- II 3 G Ex ic ec nC IIC T4 Gc

cULus

Non-incendive
For models with EZLink channels:

- Class I Division 2 Groups A, B, C, D T4 (providing non-incendive field wiring outputs for Class I Division 2 Groups A, B, C, D hazardous locations)

For models without EZLink channels:

- Class I Division 2 Groups A, B, C, D T4

Marine Approval

Lloyd's Register approved for marine applications (category ENV2).
Tested according to IACS UR E10, Rev. 7, Oct. 2018.

SIL

Conforms to IEC61508. Refer to SI/AWT420

Bluetooth

The Bluetooth Low Energy Module within the AWT420 transmitter has received the regulatory approval for the following countries:

- Europe/CE

Europe
CE
0197

- Japan/MIC: 005-101150

Japan
Contains transmitter module with certificate number:
R 005-101150

- Korea/KCC: MSIP-CRM-mcp-BM71BLES1FC2

Korea
MSIP-CRM-mcp-BM71BLES1FC2

- China/SRRC: CMIIT ID: 2016DJ5890

China
CMIIT ID: 2016DJ5890

- United States/FCC ID: A8TBM71S2

U.S.
Contains FCC ID: A8TBM71S2
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference recieved, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

- Canada/ISED
  - IC: 12246A-BM71S2
  - HVIN: BM71BLES1FC2

Canada
Contains transmitter module
IC: 12246A-BM71S2

This device complies with Industry Canada's license-exempt RSS standard(s).

Operation is subject to the following two conditions:

- This device may not cause interference, and
- This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

- l'appareil ne doit pas produire de brouillage, et
- l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

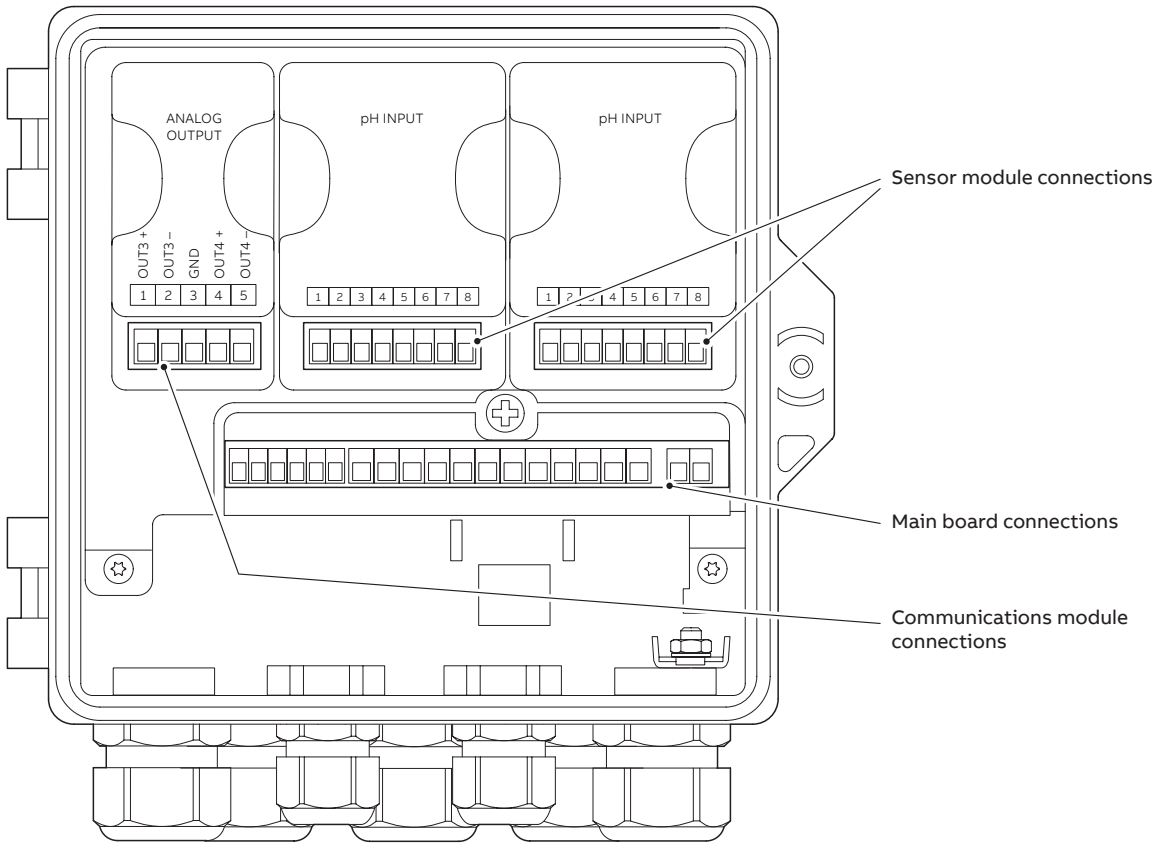
- Taiwan/NCC No: CCAN16LP0011T7

Taiwan
CCAN16LP0011T7

注意！
依據 低功率電波輻射性電機管理辦法
第十二條 經型式認證合格之低功率射頻電機,
非經許可,
公司、商號或使用者均不得擅自變更頻率、加大
功率或變更原設計
之特性及功能。
第十四條 低功率射頻電機之使用不得影響飛航安
全及干擾合法通信;
經發現有干擾現象時, 應立即停用, 並改善至無
干擾時方得繼續使用。
前項合法通信, 指依電信規定作業之無線電信。
低功率射頻電機須忍受合法通信或工業、科學及
醫療用電波輻射性
電機設備之干擾。

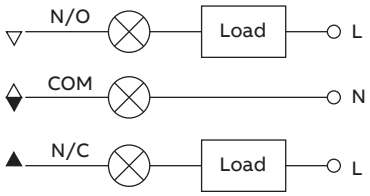
Electrical connections

Overview

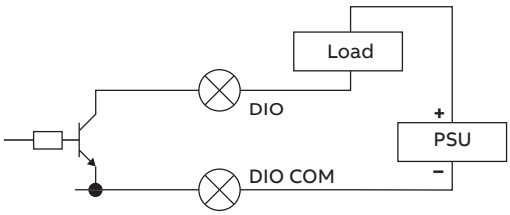


Relays and analog outputs

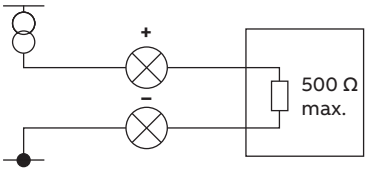
Relays (1 to 4)



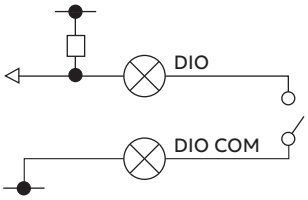
Digital output (open collector)
EXT PSU 12 to 24 V DC (250 mA max.)



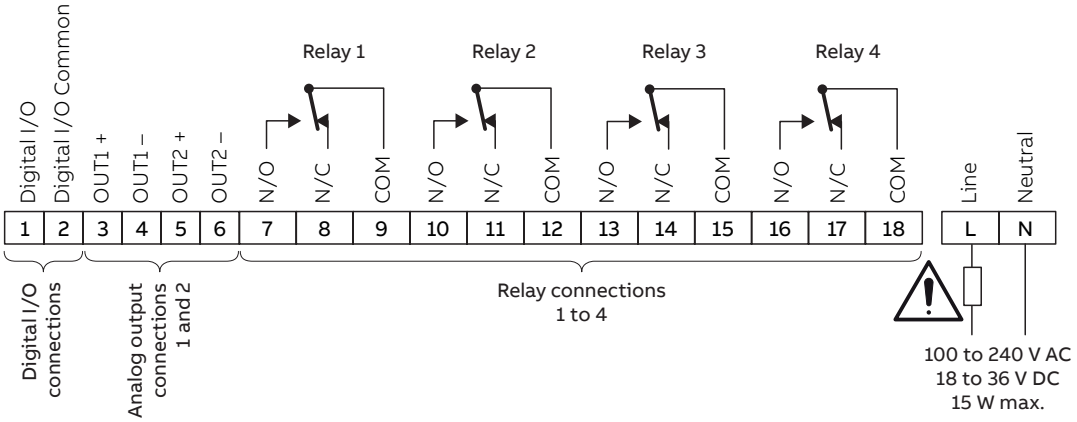
Analog outputs (1 to 4)



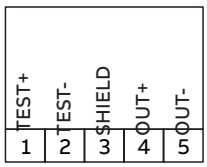
Digital input (volt-free)



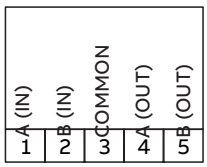
Main board connections



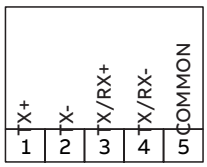
Communications module connections



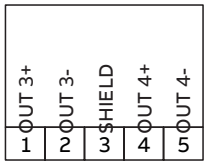
HART



PROFIBUS

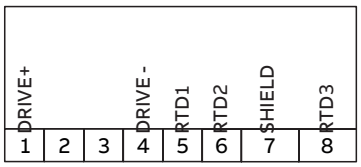


Modbus

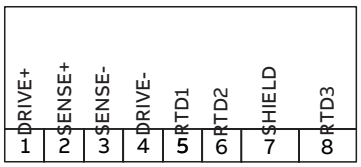


Analog output

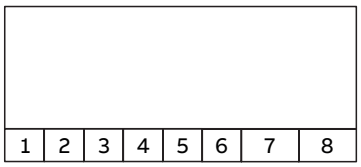
Sensor module connections



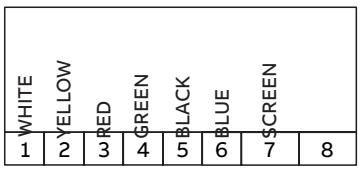
TE (2-electrode) modules



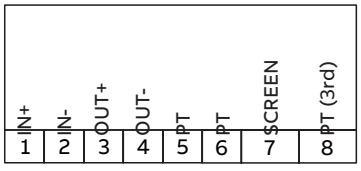
EC (4-electrode) modules



pH/ORP (Redox) modules (no descriptions)



Turbidity module



Universal Input Module

Refer to the Commissioning Instruction CI/AWT420 for wiring connections.

Ordering information

AWT420 dual channel transmitter	AWT420/	X	X	XX	XX	XX	XX	XX	Options
Build revision									
Non-isolated outputs		A							
Isolated outputs		B							
Enclosure type									
Polycarbonate			1						
Aluminum			2						
Power supply									
90 to 265 V AC, 50/60 Hz				A1					
18 to 36 V DC				D1					
Sensor input module – channel 1									
No sensor module (base unit only)					Y0				
Conductivity 2-electrode					C2				
Conductivity 4-electrode					C4				
Digital EZLink					D1				
pH/ORP (Redox)					P1				
4690 turbidity[1]					T1				
Universal Input Module					U1				
Sensor input module – channel 2									
No sensor module						Y0			
Conductivity 2-electrode						C2			
Conductivity 4-electrode						C4			
Digital EZLink						D1			
pH/ORP (Redox)						P1			
4690 turbidity[2]						T1			
Universal Input Module						U1			
Communications module									
No communications module							Y0		
Additional dual analog output							A1		
Ethernet							E1		
HART							H1		
Modbus							M1		
PROFIBUS DPV1							D1		
Agency approvals									
Class I Div. 2, Zone 2 (cULus, ATEX/IECEx/UKEx)[3]								E3	
cULus general safety								E5	

Optional ordering codes
Add 1 or more of the following codes after the standard ordering information to select any additional options if required:

Mounting kits	
Pipe mount kit	A1
Panel mount kit	A2
Weathershield	A3
Pipe mount and weathershield kit	A4
Cable entry options	
M20 cable gland pack	U1
NPT cable gland pack	U3
SD card option	
SD card	D1
Identification tag	
316 stainless steel	T1
Documentation language (supplied as standard in English)	
German	M1
Italian	M2
Spanish	M3
French	M4
English	M5
Chinese	M6
Polish	M9
Portuguese	MA
Turkish	MT

1 Only E5 agency approval is available as an option.

2 Only E5 agency approval is available as an option.

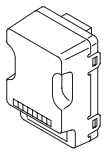
3 Available only with aluminum enclosure.

Spares

Sensor module assemblies

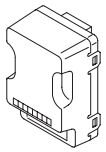
AWT420 pH/ORP PCB upgrade/spares kit

Part number
3KXA877420L0014



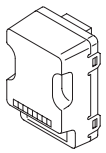
AWT420 2-electrode conductivity PCB upgrade/ spares kit

Part number
3KXA877420L0013



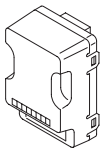
AWT420 4-electrode conductivity PCB upgrade/ spares kit

Part number
3KXA877420L0011



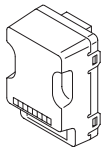
AWT420 Turbidity PCB upgrade/spares kit

Part number
3KXA877420L0016



AWT420 Universal Input Module upgrade/spares kit

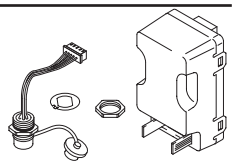
Part number
3KXA877420L0019



EZLink module assemblies

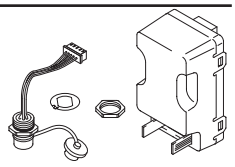
AWT420 EZLink PCB upgrade/spares kit

Part number
3KXA877420L0015



AWT420 EZLink HazLoc PCB upgrade/ spares kit

Part number
3KXA877420L0018

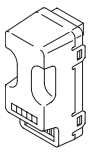


...Spares

Communications module assemblies

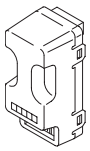
AWT420 HART PCB upgrade/spares kit

Part number
3KXA877420L0051



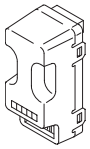
AWT420 PROFIBUS PCB upgrade/spares kit

Part number
3KXA877420L0052



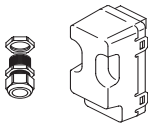
AWT420 Modbus PCB upgrade/spares kit

Part number
3KXA877420L0054



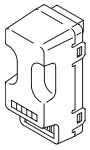
AWT420 Ethernet PCB upgrade/spares kit

Part number
3KXA877420L0065



AWT420 analog output PCB upgrade/spares kit

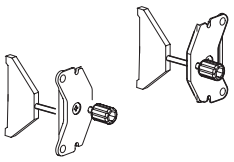
Part number
3KXA877420L0056



Mounting kits

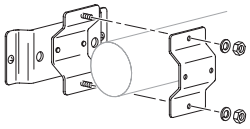
Panel-mount kit

Part number	Description
3KXA877210L0101	Panel-mount kit, including fixings, flanges, clamps and seal



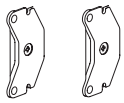
Pipe-mount kit

Part number	Description
3KXA877210L0102	Pipe-mount kit, including pipe-mount adapter plate, brackets and fixings (excludes pipe)



Wall-mount kit

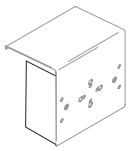
Part number	Description
3KXA877210L0105	Wall-mount kit



Weathershield kits

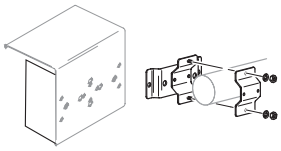
Weathershield kit

Part number
3KXA877210L0103



Weathershield and pipe-mount kit

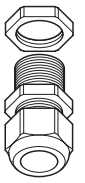
Part number
3KXA877210L0104



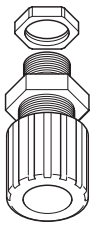
Gland packs/EZLink connectors

Gland packs

Part number	Description
3KXA877420L0111	M20 (qty. 5), M16 (qty. 2)
3KXA877420L0112	½ in NPT (qty. 5), M16 (qty. 2)
3KXA877420L0113	M20 (qty. 4), M16 (qty. 2) Ethernet (qty. 1)
3KXA877420L0114	½ in NPT (qty. 4), M16 (qty. 2) Ethernet (qty. 1)
3KXA877420L0115	Ethernet gland (qty. 1)
3KXA877420L0116	Ex-E gland pack (5 × M20, 2 × M16)
3KXA877420L0117	Ex-E gland pack (5 × ½ in NPT, 2 × M16)
3KXA877420L0118	Ex-E gland pack (4 × M20, 2 × M16, 1 × Ethernet)
3KXA877420L0119	Ex-E gland pack (4 × ½ in NPT, 2 × M16, 1 × Ethernet)



M20 | ½ in

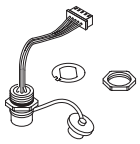


Ethernet

M16

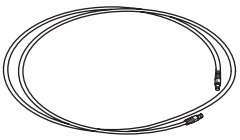
EZLink and EZLink HazLoc connector assembly

Part number
3KXA877420L0066



EZLink extension cable assembly

Part number	Description
AWT4009010	1 m (3.3 ft)
AWT4009050	5 m (16.4 ft)
AWT4009100	10 m (32.8 ft)
AWT4009150	15 m (49.2 ft)
AWT4009250	25 m (82.0 ft)
AWT4009500	50 m (164.0 ft)
AWT4009000	100 m (328.0 ft)



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- Bluetooth is a registered trademark of Bluetooth SIG, Inc.
- EZLink is a trademark of ABB Limited.
- HART is a registered trademark of the FieldComm Group.
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- PROFIBUS is a registered trademark of PROFIBUS Nutzeroganisation, e.V.
- SD is a trademark of SD-3C.

Notes

Notes

ABB Measurement & Analytics

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

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

DS/AWT420-EN Rev. J 06.2023