

- **Comprehensive range of field-proven conductivity cells**
 - satisfies broad range of applications.
- **Comprehensive diagnostics facility with in-built software protection**
 - ensures security and confidence in operation.
- **Universal transmitter**
 - covers applications from ultra-pure water to liquids with conductivity up to 10,000 μ S/cm.
- **Ultra-pure water temperature compensation**
 - ensures accuracy at conductivities below 1 μ S/cm.
- **Second current or Modbus option**
 - enables temperature to be retransmitted
- **IP66/NEMA4X**
 - reliable operation in demanding environments.
- **Guaranteed cell constant**
 - ensures high accuracy and total interchangeability.
- **English, French, German and Spanish software**
 - simple, user-selection of display language.



A high specification conductivity analyzer offering advanced functionality, simple operation and reliability in harsh environments

4620 Series Conductivity Analyzer

The ABB 4620 Series conductivity analyzer comprises a transmitter and a sensing system to accurately, and reliably, measure and transmit the conductivity value in a range of water monitoring applications.

The 4620 Series analyzer offers high performance and advanced functionality in a compact cost effective package. It is rugged and reliable for safe operation in harsh environments, simple to install and use, and requires minimum maintenance.

Sensor System

The sensor system can be selected to suit a specific application from an extensive range of well proven conductivity cells. All cells have guaranteed $\pm 1\%$ cell constant and Pt100 temperature compensation elements. A variety of mounting configurations are offered to meet most industrial applications.

The cells are constructed in either epoxy resin with annular carbon electrodes, or stainless steel and are resistant to polarization, requiring virtually no maintenance.

The design and method of construction has resulted in a world class product with an enviable reputation for long life, quality and reliability.

The 4600 Series Universal Transmitter

The 4600 series universal transmitter provides the operator interface and communications to other devices. The signal from the sensing system is converted by the transmitter and the information is presented on a large custom designed, easy to read, back-lit liquid crystal display (LCD) as a conductivity value in one of seven programmable units of measure.

A process retransmission signal and two alarm relay outputs are provided as standard, while an optional RS485 serial interface allows the transmitter to be easily incorporated into the ABB PC30 supervisory system.

Available in a wall mounted or 1/4 DIN panel mounted version the transmitter is protected to IP66, ensuring reliable operation in the most demanding situations. The same level of protection is maintained during programming and calibration.

User Friendly Operation

An easy to read display is used in conjunction with the four tactile membrane key pads to prompt the user through the programming procedures. Included as standard is a five language software package, to display information in one of English, French, German, Italian or Spanish languages.

Easy Installation, Commissioning and Maintenance

Compact panel or wall mounting transmitter allows flexible and easy installation. The unique LCD is easy to read in all light conditions. Used in conjunction with the membrane key pad it simply prompts the user through the set up procedure. Range, alarm levels, set point adjustments and system calibration are easily set.

Confidence in Service

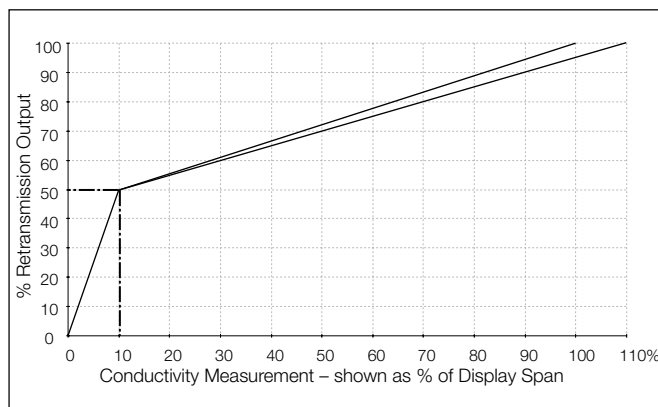
To complement the well proven design and unrivalled accuracy and reliability in service of the conductivity cells the entire sensing loop is regularly self monitored for short circuits and temperature element faults. The instrument includes non-volatile memory eliminating the need for battery back-up and line voltage supply filtering to minimize the effects of mains borne interference.

Two Current Outputs

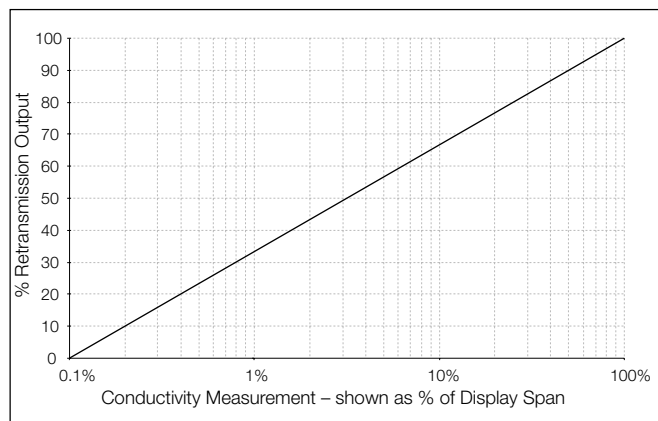
All 4620/25 Conductivity Analyzers can be supplied with an additional current output to enable both the conductivity and temperature to be retransmitted.

Alternatively a Modbus serial communication can be supplied.

Analog outputs configured for conductivity can be set by the user as linear, bi-linear or logarithmic. Selecting linear provides an output in direct proportion to the measuring range. Selecting bi-linear or logarithmic enables excellent discrimination at low conductivity levels, yet permits a readable output during high level excursions.



Bi-linear Output



3-decade Logarithmic Output

Specification – Transmitter

Display

Measured value

5-digit x 7-segment back-lit LCD

Information

16-character, single line, dot matrix, back-lit LCD

Ranges

Programmable 0 to 0.5µS/cm up to 10,000µS/cm (with various cell constants)

Scaling

µS/cm, µS/m, mS/cm, mS/m, Mohm-cm, TDS and PPM
Conductivity ranges configurable as linear, bi-linear, 2- or 3-decade logarithmic

Accuracy

±1.0% f.s.d., ±1 digit

Linearity

±0.1% f.s.d.

Temperature measuring range

-10°C to 150°C (14° to 302°F).

Temperature compensation

-10°C to 130°C (14° to 266°F) automatic

Temperature coefficient

Programmable 0 to 3.0%/°C (0 to 1.5%/°F)

Temperature sensor

Pt100 resistance thermometer

Reference temperature

20°C (68°F) or 25°C (77°F) programmable

Environmental Data

Operating temperature limits

-20° to 55°C (-4° to 131°F)

Storage temperature limits

-25° to 55°C (-13° to 131°F)

Operating humidity limits

Up to 95% RH non-condensing

Power Supply

Voltage requirements

100 to 130V, 200 to 260V, 50/60Hz

Power consumption

< 6VA AC

Error due to power supply variation

Less than 0.1% for +6% -20% variation from nominal supply voltage

Insulation

Mains to earth (line to ground) 2kV RMS

Outputs and Set Points

No. of relays

Two

No. of set points

Two

Set point adjustment

Programmable

Set point hysteresis

±1% fixed

Local set point annunciation

Red l.e.d.

Relay contacts

Single pole changeover

Rating	250V AC	250V DC max.
	3A AC	3A DC max.
Loading (non-inductive)	750VA	30W max.
(inductive)	75VA	3W max.

Insulation

2kV RMS contacts to earth (ground)

...Specification – Transmitter

Retransmission

No. of retransmission signals

- One fully isolated – standard
- Two fully isolated – optional

Output current

0 to 10mA, 0 to 20mA or 4 to 20mA programmable

Output ranges

Retransmission 1

- Zero 0 fixed
- Span 10 to 100% of the display range

Retransmission 2 (optional)

- Programmable conductivity or temperature
- Conductivity as Retransmission 1
- Temperature -10° to 150°C (14° to 302°F)
min. span 20°C (36°F)

Accuracy

±0.25% FSD ±0.5% reading

Resolution

0.1% at 10mA, 0.05% at 20mA

Max. load resistance

750Ω (20mA max.)

Serial communication

RS485 (optional extra)

Mechanical Data

Model 4620

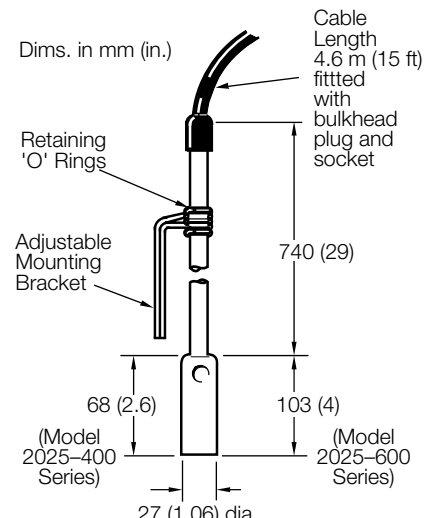
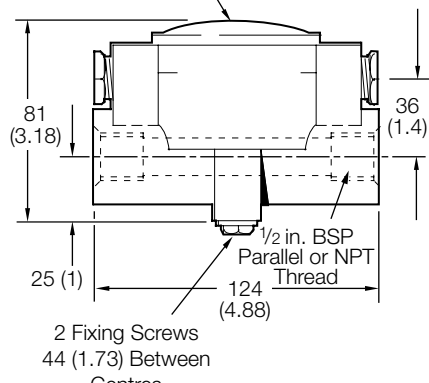
- Wall-mounting
- Protection IP66
- Dimensions 160mm (6.30 in.) wide x 214mm (8.43 in.) high
x 68mm (2.68 in.) deep
- Weight 2kg (4½ lb)

Model 4625

- Panel-mounting
- Protection IP66 front
- Dimensions 96mm (3.78 in.) wide x 96mm (3.78 in.) high
x 191mm (7.52 in.) deep
- Weight 1.5kg (3¼ lb)
- Panel cut-out: 92^{+0.8}₋₀ mm x 92^{+0.8}₋₀ mm
(3.62^{+0.03}₋₀ in. x 3.62^{+0.03}₋₀ in.)

Specification – Sensing System (Conductivity Cells)

Select the required model number from those listed below.

<p>Dip Cell Model 2025</p>  <p>Dims. in mm (in.)</p> <p>Cable Length 4.6 m (15 ft) fitted with bulkhead plug and socket</p> <p>Retaining 'O' Rings</p> <p>Adjustable Mounting Bracket</p> <p>740 (29)</p> <p>68 (2.6) (Model 2025-400 Series)</p> <p>103 (4) (Model 2025-600 Series)</p> <p>27 (1.06) dia.</p>	<p>Specification</p> <p>Cell constant available 0.1 or 1.0</p> <p>Type Dip type</p> <p>Cell body Loaded epoxy resin</p> <p>Electrode matl. Carbon</p> <p>Fixing detail Adjustable with bracket provided</p> <p>Maximum press. bar (psi) N/A</p> <p>Maximum temp. 90°C (194°F)</p>	<p>Ordering Information</p> <p>Order under part number 2025-000</p> <p>Cell constant K = 0.1 4</p> <p>Cell constant K = 1.0 6</p> <p>Non-temperature compensated 0</p> <p>Temperature compensated Pt100 5</p>
<p>Flow Cell Model 2045</p>  <p>Dims. in mm (in.)</p> <p>Quick release cover on watertight terminal box</p> <p>81 (3.18)</p> <p>36 (1.4)</p> <p>25 (1)</p> <p>124 (4.88)</p> <p>1/2 in. BSP Parallel or NPT Thread</p> <p>2 Fixing Screws 44 (1.73) Between Centres</p>	<p>Specification</p> <p>Cell constant available 0.1 or 1.0</p> <p>Type Flow-line</p> <p>Cell body Loaded epoxy resin</p> <p>Electrode matl. Carbon</p> <p>Fixing detail Threaded 1/2 in. BSP parallel or NPT</p> <p>Maximum press. bar (psi) 6.6 (100)</p> <p>Maximum temp. 100°C (212°F)</p>	<p>Ordering Information</p> <p>Order under part number 2045-000</p> <p>Cell constant K= 0.1 4</p> <p>Cell constant K = 1.0 6</p> <p>Threaded 1/2 in. BSP 0</p> <p>Threaded 1/2 in. NPT 8</p> <p>Non-temperature compensated 0</p> <p>Temperature compensated Pt100 5</p>

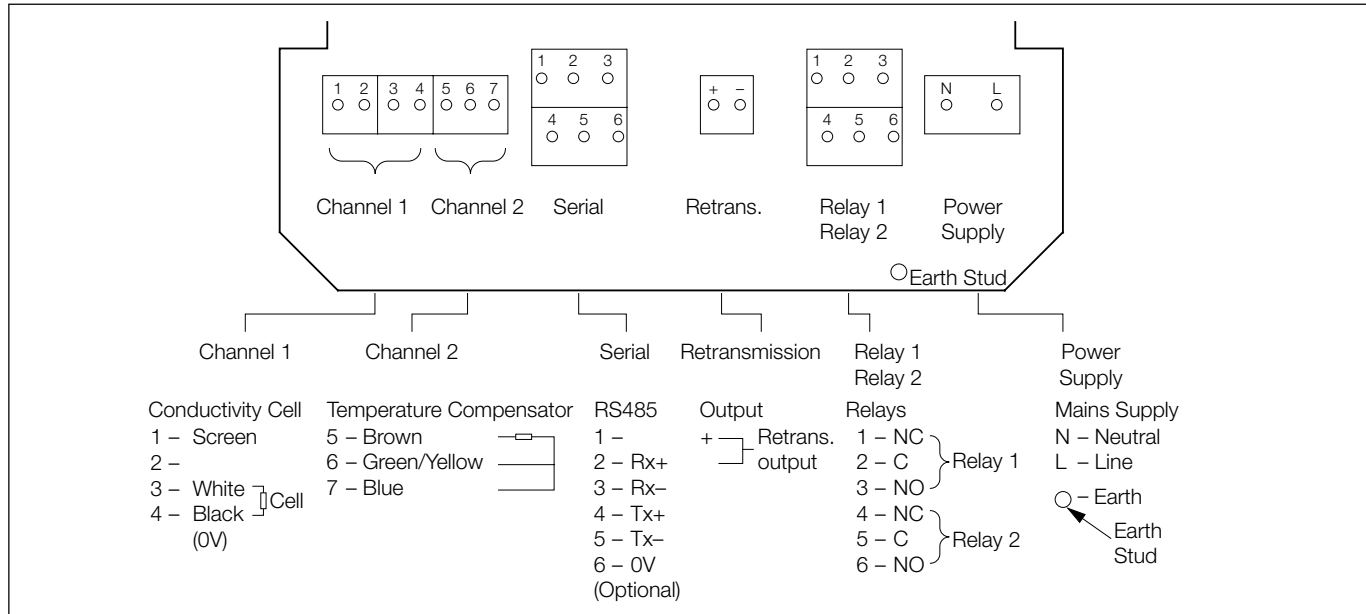
...Specification – Sensing System (Conductivity Cells)

<p>Screw-in Model 2077</p> <p>Dims. in mm (in.)</p>	<p>Specification</p> <p>Cell constant available 0.1 or 1.0</p> <p>Type Screw type</p> <p>Cell body Loaded epoxy resin</p> <p>Electrode matl. Carbon</p> <p>Fixing detail Threaded 1 in. BSP parallel or NPT</p> <p>Maximum press. bar (psi) 6.6 (100)</p> <p>Maximum temp. 100°C (212°F)</p>	<p>Ordering Information</p> <p>Order under part number 2077-000</p> <p>Cell constant K= 0.1 4</p> <p>Cell constant K = 1.0 6</p> <p>Threaded 1 in. BSP 0</p> <p>Threaded 1 in. NPT 8</p> <p>Non-temperature compensated 0</p> <p>Temperature compensated Pt100 5</p>									
<p>Screw-in Model 2078</p> <p>Dims. in mm (in.) 915mm (36 in.) length of connecting cable fitted with watertight plug and socket</p> <table border="1" data-bbox="92 1256 507 1379"> <thead> <tr> <th>Model</th> <th>A mm (in)</th> <th>B mm (in)</th> </tr> </thead> <tbody> <tr> <td>2078-4</td> <td>184 (7.24)</td> <td>102 (4.0)</td> </tr> <tr> <td>2078-3</td> <td>184 (7.24)</td> <td>102 (4.0)</td> </tr> </tbody> </table>	Model	A mm (in)	B mm (in)	2078-4	184 (7.24)	102 (4.0)	2078-3	184 (7.24)	102 (4.0)	<p>Specification</p> <p>Cell constant available 0.05 or 0.1</p> <p>Type Screw-in</p> <p>Cell body 316 St. Steel</p> <p>Electrode matl. 316 St. Steel</p> <p>Fixing detail Threaded 3/4 in. BSP parallel or NPT</p> <p>Maximum press. bar (psi) 10.5 (150)</p> <p>Maximum temp. 110°C (230°F)</p>	<p>Ordering Information</p> <p>Order under part number 2078-000</p> <p>Cell constant K= 0.05 3</p> <p>Cell constant K = 0.1 4</p> <p>Threaded 3/4 in. BSP fitted with plug & socket 0</p> <p>Threaded 3/4 in. BSP 1</p> <p>Threaded 3/4 in. NPT 7</p> <p>Threaded 3/4 in. NPT fitted with plug & socket 8</p> <p>Non-temperature compensated 0</p> <p>Temperature compensated Pt100 5</p>
Model	A mm (in)	B mm (in)									
2078-4	184 (7.24)	102 (4.0)									
2078-3	184 (7.24)	102 (4.0)									

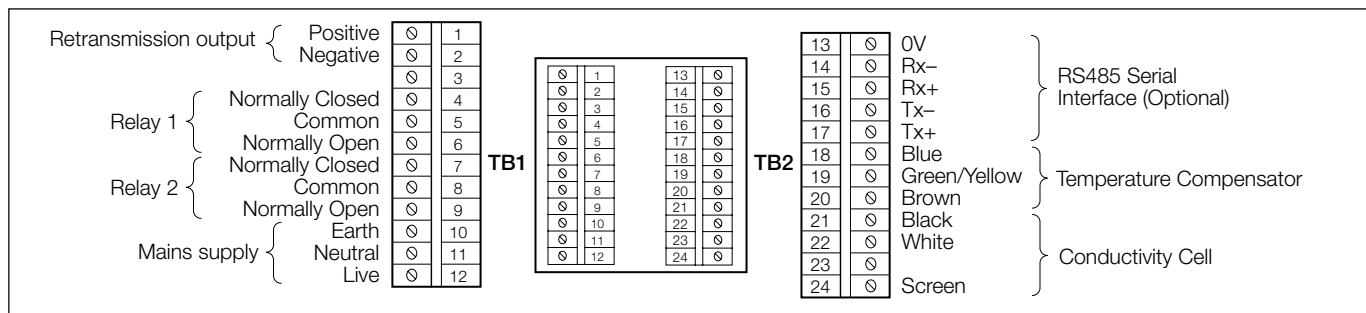
<p>Withdrawable Cell Model 2085</p> <p>Dims. in mm (in.)</p> <p>0.9m (36 in.) Cable length with watertight plug and socket</p> <p>Clearance for Removal 130 (5.1)</p> <p>178 (7) Valve Closed</p> <p>140 (5.5) Valve Open</p> <p>25 (1)</p> <p>1 1/2 in. BSPP 89 (3.5)</p> <p>35 (1.38)</p>	<p>Specification</p> <p>Cell constant available 0.05 or 0.1</p> <p>Type Withdrawable</p> <p>Cell body Naval brass and 316 St. Steel</p> <p>Electrode matl. 316 St. Steel</p> <p>Fixing detail Used with Model 2089 valve assembly 1 1/2 in. BSP parallel or NPT</p> <p>Maximum press. bar (PSI) 10.5 (150)</p> <p>Maximum temp. 110°C (230°F)</p>	<p>Ordering Information</p> <p>Order under part number 2085-000</p> <p>Cell constant K = 0.05 3</p> <p>Cell constant K = 0.1 4</p> <p>Non-temperature compensated 0</p> <p>Temperature compensated Pt100 5</p> <p>Order withdrawable valve for this cell under part number 2089-800.</p>
--	---	---

<p>Dims in mm (in.)</p> <p>For Process Connections see adjacent table</p> <p>64 (2 17/32)</p> <p>135 (5 5/16)</p> <p>51 (2)</p> <p>70 (2 3/4)</p>	<p>Model 2999</p> <p>A range of stainless steel flow chambers is available for flow applications which require the use of a screw-in type cell (e.g. ultrapure water applications). These are available as the 2999 Series, the most common versions of which are detailed below. Special requirements can be catered for under certain circumstances.</p> <p>Ordering Information</p> <table border="1"> <thead> <tr> <th>Part No.</th> <th>Description</th> <th>Process Connections</th> </tr> </thead> <tbody> <tr> <td>2999-015</td> <td>Flow jacket to fit Model 2078 cell</td> <td>10mm tube connections</td> </tr> <tr> <td>2999-020</td> <td>Flow jacket to fit Model 2078 cell</td> <td>3/8 in. BSP parallel</td> </tr> <tr> <td>2999-025</td> <td>Flow jacket to fit Model 2073/76 cell</td> <td>3/8 in. BSP parallel</td> </tr> <tr> <td>2999-100</td> <td>Flow jacket to fit Model 2271 cell</td> <td>10mm tube connections</td> </tr> <tr> <td>2999-115</td> <td>Flow jacket to fit Model 2072 cell</td> <td>10mm tube connections</td> </tr> <tr> <td>2999-190</td> <td>Flow jacket to fit Model 2078 cell</td> <td>3/8 in. NPT</td> </tr> </tbody> </table> <p>Note.</p> <p>This is only a selection of flow chambers available. If your requirements are not listed above, please contact our Sales Department stating your needs as fully as possible.</p>	Part No.	Description	Process Connections	2999-015	Flow jacket to fit Model 2078 cell	10mm tube connections	2999-020	Flow jacket to fit Model 2078 cell	3/8 in. BSP parallel	2999-025	Flow jacket to fit Model 2073/76 cell	3/8 in. BSP parallel	2999-100	Flow jacket to fit Model 2271 cell	10mm tube connections	2999-115	Flow jacket to fit Model 2072 cell	10mm tube connections	2999-190	Flow jacket to fit Model 2078 cell	3/8 in. NPT
Part No.	Description	Process Connections																				
2999-015	Flow jacket to fit Model 2078 cell	10mm tube connections																				
2999-020	Flow jacket to fit Model 2078 cell	3/8 in. BSP parallel																				
2999-025	Flow jacket to fit Model 2073/76 cell	3/8 in. BSP parallel																				
2999-100	Flow jacket to fit Model 2271 cell	10mm tube connections																				
2999-115	Flow jacket to fit Model 2072 cell	10mm tube connections																				
2999-190	Flow jacket to fit Model 2078 cell	3/8 in. NPT																				

Electrical Connections



Model 4620 Wall-mounting Version using Cells Fitted with Bulkhead Plug and Socket*



Model 4625 Panel-mounting Version using Cells Fitted with Bulkhead Plug and Socket*

* **Note.** When using cells supplied **without** bulkhead plug and socket connect as follows:

- Model 4620** Yellow = terminal 5
 Red = terminal 3
 Green = terminal 6
 Blue = terminal 7 - In addition connect screen to the earth stud and link terminals 6 and 7

- Model 4625** Yellow = terminal 8
 Red = terminal 22
 Green = terminal 19
 Blue = terminal 18 - In addition connect screen to the earth stud and link terminals 18 and 19

Note.

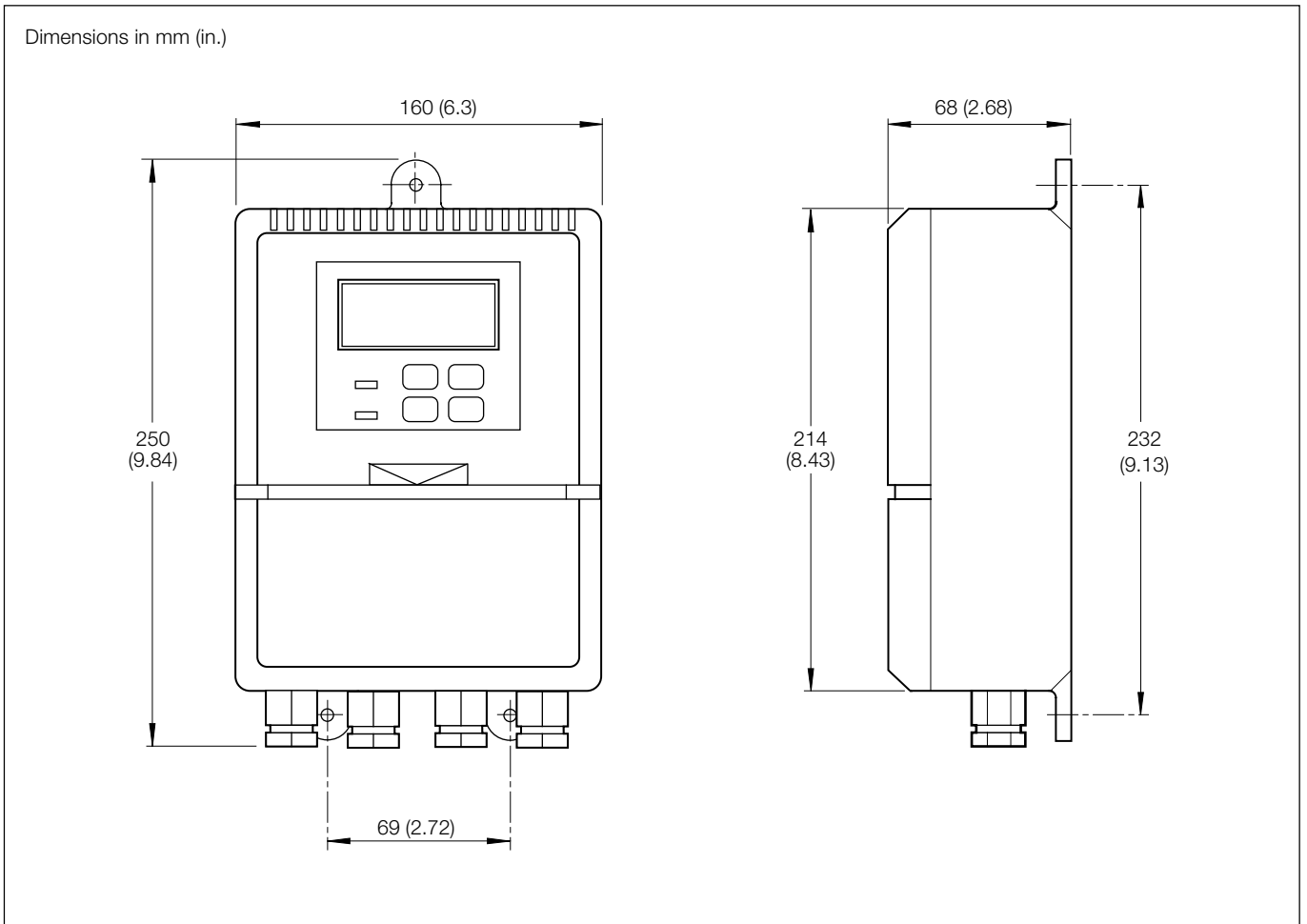
To select the most suitable cell constant for the desired working range use the following criteria:

- Minimum range 10 x cell constant
- Maximum range 10,000 x cell constant

e.g. cell constant k = 0.1 Minimum range = 10 x 0.1 = 1.00µS/cm
 Maximum range = 10,000 x 0.1 = 1000µS/cm

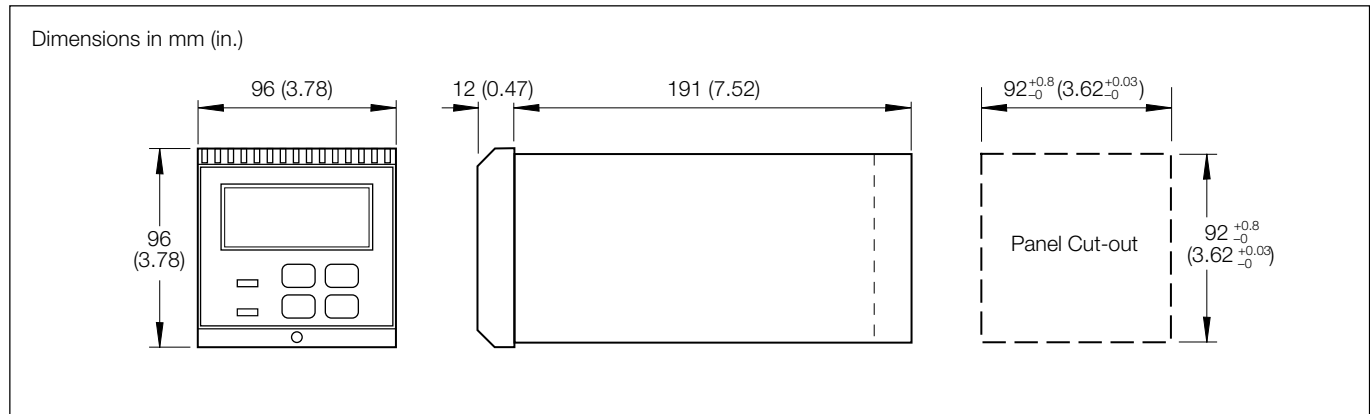
For ultrapure water applications (less than 1.00µS/cm) a cell constant of 0.05 or 0.1 must be used.

Overall Dimensions



Model 4620 Wall-mounting Version

...Overall Dimensions



Model 4625 Panel-mounting Version

Ordering Information

To order a 4600 Conductivity Analyzer select the Transmitter, Sensing System and Connecting Cables from the following information.

Models 4620 & 4625 Conductivity Analyzers	462	X -	X	0	0
Range 0 to 10,000µS/cm, power supply 110V/240V 50/60Hz, high and low alarms					
Case					
Wall-mounting IP66			0		
Panel-mounting IP66 front			5		
Output					
Single isolated current output				5	
Modbus serial data interface				7	
Two isolated current outputs				8	

Conductivity Cell

Select the appropriate Conductivity Cell – see pages 4 and 5.

Connection Cables

Cell connection cable part no. 0233-811

Temperature compensation connection cable part no. 0233-819

(Maximum length 100m (325ft) when using cell constants K = 0.1 and K =1.0 and 50m when using cell constant K = 0.05.)

The 4600 Series transmitters are so friendly and easy to program they are normally supplied with standard factory settings. If specific programming requirements are stated at the time of ordering, units can be despatched suitably customized. Please apply to the nearest ABB office for details.

ABB has Sales & Customer Support
expertise in over 100 countries worldwide

www.abb.com

The Company's policy is one of continuous product
improvement and the right is reserved to modify the
information contained herein without notice.

Printed in UK (05.04)

© ABB 2004



ABB Limited

Oldends Lane, Stonehouse
Gloucestershire, GL10 3TA
UK

Tel: +44 (0)1453 826661
Fax: +44 (0)1453 829671

ABB Inc.

Analytical Instruments
9716 S. Virginia St., Ste. E
Reno, Nevada 89521
USA

Tel: +1 775 850 4800
Fax: +1 775 850 4808