# Assist Direct – Instrumentation Catalogue

Major new products / Complete new temperature range / New service offering

**Reducing your Carbon Footprint**

**ABB Limited**
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PB/ASSIST Issue 20

# Bringing the power of ABB Instrumentation closer to you.

Welcome to the latest edition of ABB's Assist Direct catalogue. We hope you'll find it to be the most useful instrumentation selection guide from any manufacturer.

**ABB's Industry-leading Commitment**
Increased product range, easy ordering, rapid delivery, technical expertise and nationwide coverage are all part of our commitment to making the Assist Direct service the most compelling in the market and a direct way to put you in touch with the Best Available Technology for your requirements. For example, check out our new, world-leading temperature transmitter range (page 16 - 25) and our enhanced instrumentation support service package (page 67).

**The Big Issues**
Today, we all face increasing demands on our business. Reducing an organisation's Carbon Footprint is now a key issue on the industry agenda, bringing increased pressures for energy saving and environmental compliance. In response we are developing ABB's Assist Direct service, from the ABB Instrumentation Alliance, to help you achieve your targets – with maximum efficiency and minimum cost. Find out more about these issues on page 68, and information on current legislation in particular ATEX, IPPC and MCERTS.

**Creating Value for Customers**
In recent years, we have proudly integrated the products and process knowledge of several global instrumentation companies (see left) within ABB to create one of the world's largest application focused instrumentation suppliers. Together with a strong commitment to ABB's customer-focused approach to business, they sum up the value we add for you.

Please do not hesitate to contact us for any further information. Our details can be found on the back cover or contact your local Alliance partners.

Thank you,

**Gareth Dean**
General Manager, ABB Instrumentation

**Kent-Taylor**
**Fischer & Porter**
**Hartmann & Braun**
**TBI**
**Sensycon**
**Bush Beach**
**Bailey Controls**

## How Alliance serves you
ABB is working with leading instrumentation distributors to deliver the quality service you have come to expect from Assist Direct.

The ABB Instrumentation Alliance Partners are fully trained to meet all your instrumentation and control needs, with a comprehensive selection of products, service, applications experience and consumables. All backed up by ABB's unrivalled technical knowledge and expertise.

Responsive. Reliable. Supportive. You can count on rapid assistance and delivery, no matter where you are.

## Alliance services

**Installation and commissioning**
Checking, advice and training on how to achieve optimum performance.

**Instrumentation assessment**
What your needs are, what's best for your application and whether your existing instruments meet today's energy saving and regulatory compliance needs.

**Stock Management**
Assisting you with management of inventory, consumables and parts.

**Training**
Access to expert training is available in subjects as diverse as flowmetering, MCERTS and IPPC compliance, ATEX, Pressure measurement and Temperature measurement.

**On-line help**
Why not visit **www.abbiap.com**, which details the products and services available from ABB Instrumentation Alliance Partners, with contact details, documentation and technical downloads.

## Your Local ABB Instrumentation Alliance Partner

### SCOTLAND

**JWF Process Solutions**
120 Woodneuk Road,
Darnley Industrial Estate,
Glasgow. G53 7QS

Tel: 0141 880 7455
Fax: 0141 880 5290
sales@jwfltd.com
**www.jwfltd.com**

### NORTHERN ENGLAND

**JWF Instrumentation**
Belasis Business Centre,
Belasis Hall Technology Park,
Billingham, Teesside. TS23 4EA

Tel: 01642 680 020
Fax: 01642 680 021
eric@jwfltd.com
**www.jwfltd.com**

### NORTH WEST

**WH Good
(Instrumentation) Ltd**
Carrs Industrial Estate,
Haslingden, Rossendale,
Lancashire. BB4 5JT

Tel: 01706 211 416
Fax: 01706 216 681
instruments@whgood.co.uk
**www.whgood.co.uk**

### WALES & SOUTH WEST

**AM Sensors Ltd**
The Old Creamery,
Huntspill Road, Highbridge,
Somerset. TA9 3DE

Tel: 01278 784747
Fax: 01278 783425
abb@amsensors.com
**www.amsensors.com**

### MIDLANDS & SOUTH EAST

**KC Controls Ltd**
Head Office, 17 Bell Centre,
Newton Road, Crawley,
West Sussex. RH10 9FZ

Tel: 01293 538 940
Fax: 01293 538 833
sales@kccontrols.co.uk
**www.kccontrols.co.uk**

**KC Controls Ltd**
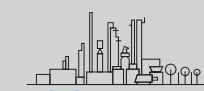2nd Floor, The Portergate,
Eccleshall Road,
Sheffield. S11 8NX

Tel: 0114 209 6203
Fax: 0114 209 6001
sales@kccontrols.co.uk
**www.kccontrols.co.uk**

**ABB** Instrumentation *alliance*

KC Controls Ltd
Application Solutions from Choice

# Easy ordering, local service.

## How to Order

### Step 1

Select your product then note the catalogue number, description and price – this appears as shown below.

| Catalogue No. | Description | Price |
|---|---|---|
| C 50 | 1/16 DIN process controller | £0000 |
| | All prices shown are ex-VAT | |

### Step 2

Choose your preferred method of ordering.

**By Phone**
Phone your local **ABB Instrumentation Alliance Partner** and provide the details of your order and pay using your preferred method (see Step 3).

**By Fax**
Fax your local **ABB Instrumentation Alliance Partner** the details of your order and pay using your preferred method (see Step 3).

### Step 3

**Account Customers**
Account customers will be invoiced as normal.

**By Credit Card**
Quote your credit card number and expiry date. Please note, we can only deliver to the address of the card holder.

**By Switch or Delta**
Quote your Switch or Delta card number and expiry date.

**By Cheque**
Please make your company cheque payable, including VAT, to your local **ABB Instrumentation Alliance Partner** and post it together with your order form.

**Cash Orders**
May be telephoned or faxed to your local **ABB Instrumentation Alliance Partner** and personally collected with the appropriate cash payment. Please add VAT.

## Opening an account

Please contact your Local **ABB Instrumentation Alliance Partner** for details on how to open an account.

## Free Delivery

All products identified with this icon are available on free, next working day delivery. All other products are subject to packaging and delivery charges, except where otherwise stated.

**Visit us at www.abbiap.com**

## Key:

To help make your selection easier these icons will provide important information at a glance.

Water Treatment

General Industry

Chemical, Oil & Gas

Food & Beverage

Pharmaceutical

Power

Free Next Day Delivery

General purpose applications

**ABB Instrumentation Services**
Where you see this symbol ABB can offer a range of off-the-shelf or customised support, service and spares options, see page 67 for full details.

## Contents

Page No.

# Analytical
## pH

The **AX400 Series** single or dual input pH and Redox (ORP) analysers are high functionality, high accuracy instruments, with features to match analysis applications across a wide spectrum of industries. The high reliability and exceptional performance meets the wide range of process monitoring and control requirements of today's modern industries.

# Analytical
## pH/ORP

The **TB82 Series** is designed for rugged duties under the most demanding industrial and process conditions. Outputs are programmable and can be configured for advanced digital communications.

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## AX400 Series pH/Redox Analysers

- Wall, pipe and panel mount versions
- Range 0 to 14pH
- True high purity temperature compensation for all pure water applications
- Versatile power, 85-265V AC or 12-30V DC – automatic sensing
- 2 fully isolated current outputs and 3 alarm relays as standard
- Option board to provide additional 2 isolated current outputs and 2 alarm relays
- High visibility, energy saving display
- IP66 / NEMA 4X protection
- On-line diagnostics
- P, PI, PID Control (AX460)
- Uses standard ABB pH/Redox sensors
- Water wash or chemical clean
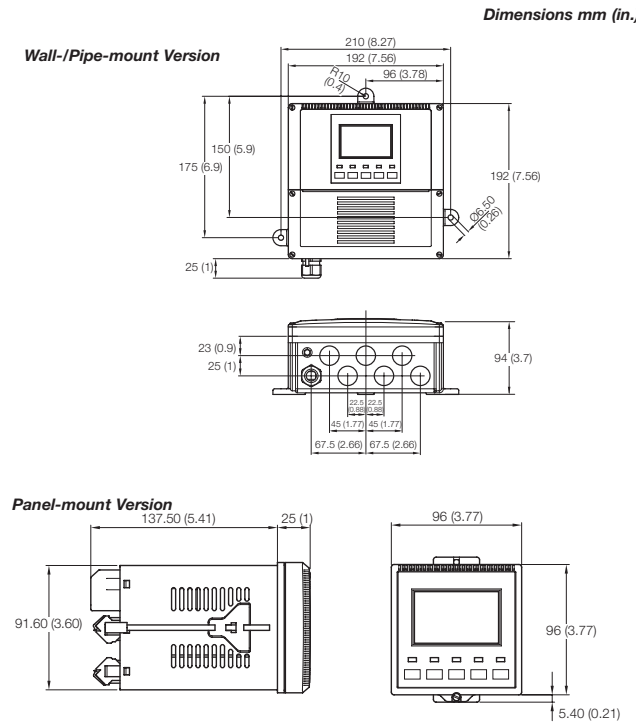- Dual input configurable for 2 pH/ORP inputs or pH/ORP and conductivity inputs

**Dimensions mm (in.)**

*Wall-/Pipe-mount Version*

*Panel-mount Version*

### Transmitters

| Cat. No. | Description | Price |
|---|---|---|
| AX460/10001 | Single input pH/Redox analyser inc PID control | £590.00 |
| AX466/10001 | Dual input pH/Redox analyser | £724.00 |
| AX416/10001 | Dual input pH/Redox and conductivity analyser | £724.00 |

### Electrode systems (also see p8-9)

| Cat. No. | Description | Price |
|---|---|---|
| 2867/600A complete | 3' dip system complete with 1912/400 electrode and 0400/170 KCl filling solution | £372.00 |
| 2867/600B complete | 3' dip system complete with 1912/500 electrode and 0400/170 KCl filling solution | £372.00 |
| AP202/11-1-0-0-00-1 Exc. sensor and cable – see consumable section | 1" BSP flow-thru polypropylene system with ss rod/spray jet | £221.00 |
| AP303/21030001 | Standard glass immersion/insertion combination electrode inc 9m tagged cable | £166.00 |

### Extension Cables

| Cat. No. | Description | Price | |
|---|---|---|---|
| 9170/300X for use with 2867/600A electrode system | 6m cable tags + BNC socket for use with 1912/400 electrode | £61.00 | |
| 7690/050 for use with AP200 | 5m cable with Variopin connector | £134.00 | * |
| 7690/051 for use with AP200 | 10m cable with Variopin connector | £160.00 | |
| 7690/053 for use with AP200 | 20m cable with Variopin connector | £209.00 | * |
| 1015/160 for use with AP300 | 5m length | £28.00 | * |
| 1015/161 for use with AP300 | 10m length | £56.00 | * |
| 1015/163 for use with AP300 | 30m length | £167.00 | * |

\* Call for deliver

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## TB82 pH/ORP 2-Wire Advantage Series

- Wall or pipe mounting transmitter, IP66 / NEMA 4X housing
- Intrinsically safe ATEX certified, suitable for hazardous area operation
- Robust, high reliability and industrially hardened design
- Comprehensive diagnostic self checking transmitter and sensor
- Process temperature compensation for consistent reliability
- Simple, direct access operation with operator-prompt programming menu
- Advanced digital communications – PROFIBUS®PA, FOUNDATION® FIELDBUS or HART protocols and Delta V® control platform certified
- Programmable security codes

**ATEX CERTIFIED**

**Dimensions mm (in.)**

*TB82 Dimensions*

*Wall/Hinge (Rear) Mounting Option*

*Panel Mounting Option*
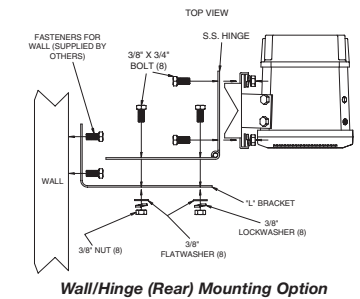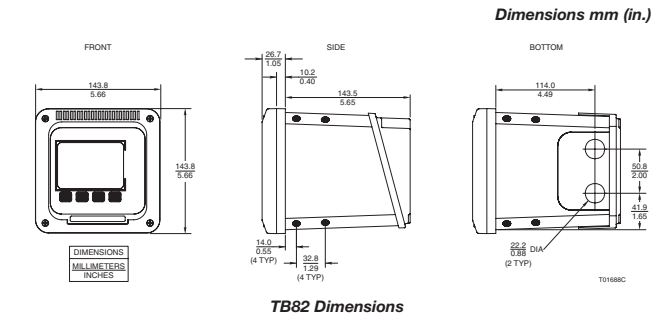
## Electrodes

- Patented solid state design for extended sensor life
- Eliminates plugging, poisoning and pumping
- Operates up to 140°C and 17 bar
- Resists fouling, strong acid and caustic solutions
- Integrated sensor cleaning function
- Solution ground enables continuous diagnostics

### Transmitters

| Cat. No. | Description | Price |
|---|---|---|
| TB82PH/2010030 | 2 wire IS pH/ORP transmitter | £635.00 |

### Mounting hardware

| Cat. No. | Description | Price |
|---|---|---|
| 4TB9515-0123 | Panel mount kit | £23.00 |
| 4TB9515-0124 | Pipe mount kit | £18.00 |
| 4TB9515-0125 | Wall mount kit (hinge) | £41.00 |

### Sensors (also see p8-9)

| Cat. No. | Description | Price |
|---|---|---|
| TB551/13300T30 100psi @ 110°C | Submersible/dip/in-line flat glass, ryton bodied electrode Pt100; Teflon junction; 30' tagged lead cable | £197.00 |
| TB551/23300T30 100psi @ 110°C | Submersible/dip/in-line standard glass ryton bodied electrode Pt100; 30' tagged lead cable | £197.00 |
| TB556/13300T30 100psi @ 90°C | Submersible/dip/in-line flat glass, kynar bodied electrode Pt100; Teflon junction; 30' tagged lead cable | £208.00 |
| TB556/23300T30 100psi @ 90°C | Submersible/dip/in-line standard glass kynar bodied electrode Pt100; 30' tagged lead cable | £208.00 |
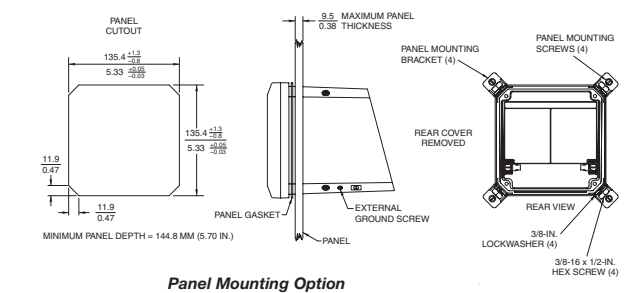
# Analytical
## pH Redox Sensors

**Combination pH and Redox (ORP) Electrode Systems**

*Series 2687*

*Series AP200*

*Series AP300 and TB5*

# Analytical
## pH Sensors

**Consumables – Electrodes, Buffer Powders**

Rapid supply of cost-effective consumables from Assist will ensure that your analytical and recording functions maintain their efficiency, and are not the cause of plant downtime or record gaps.

**Electrodes**

ABB's high performance, high reliability electrodes are manufactured by ABB at Stonehouse Gloucestershire in the UK's only glass production plant dedicated to electrodes, thus ensuring maximum quality and value.

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### Series 2687 Industrial Dip Electrodes

The 2687 series is designed for industrial dip applications in channels and open tanks, e.g. in effluent treatment applications where temperature compensation is not essential.

- Simple robust design, simple wall or tank installation
- Positive salt-bridge flow from integral reservoir, built in level sight glass
- Easily replaced, reliable combination electrode
- Available in 18 in, 36 in (shown) and 72 in lengths

### Series AP200 Rugged Insertion, Dip and Flow Through Electrodes

The AP200 Series offers rapid temperature response for critical processes in a wide range of applications including those requiring high process resistance features.

- Safe, high resistance construction with PPS Ryton™ body, to 6 bar and 130°C
- Lower maintenance costs integral jet wash for auto cleaning, optional sensor diagnostics facilitating just-in-time maintenance
- Reduced running costs with high integrity solid electrolyte
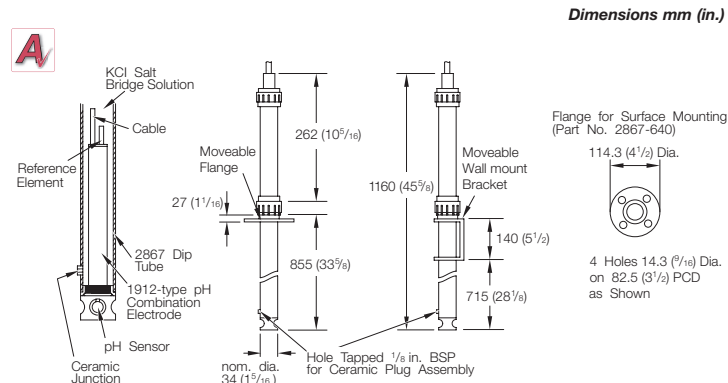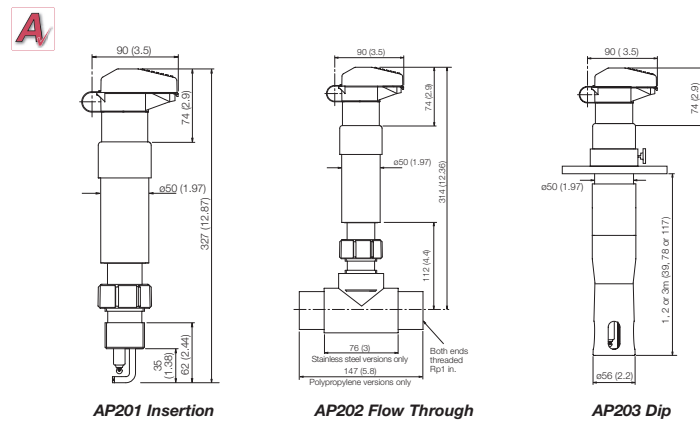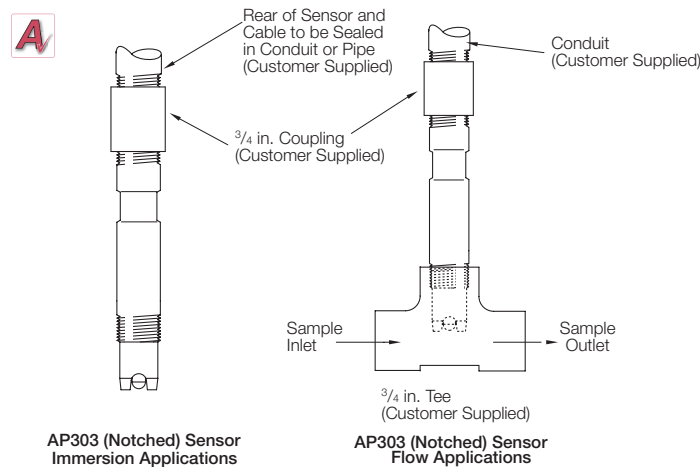- High accuracy consistent operation and calibration
- Easy sensor change with industry standard Variopin connectors

### Series AP300 Combination pH/Redox (ORP)

The AP300 Series electrodes are ideal for OEM and general light industrial applications. They are user-customisable for insertion, flow-through, immersion and hot-tap retractor systems.

- Gel-filled disposable sensor, gel electrolyte operates up to 105°C and 6 bar
- Sensor includes, measuring reference and temperature elements in one unit
- Bulb and flat glass options, for rugged performance and resistance to coating
- High stability PTFE junction, superior water performance, resists contamination

*Dimensions mm (in.)*

*AP201 Insertion*  *AP202 Flow Through*  *AP203 Dip*

*AP303 (Notched) Sensor Immersion Applications*  *AP303 (Notched) Sensor Flow Applications*

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### pH electrodes

| Electrode System Type | Cat. No. | Description | Performance Range | Cable Length | Price |
|---|---|---|---|---|---|
| 7650/7660 | 1720-000 | Gen. purpose glass | 0-14pH; 0-100°C | na | £101.00 |
| | 1722-000 | Low resistance glass | 0-10pH; -5-50°C | na | £121.00 |
| | 1724-000 | High temperature glass | 0-14pH; 50-140°C | na | £124.00 |

### Reference Electrodes

| Electrode System Type | Cat. No. | Description | Performance Range | Cable Length | Price |
|---|---|---|---|---|---|
| 7650/7660 | 1730-000 | Reference element | 0-100° | na | £113.00 |

### Temperature Compensators

| Electrode System Type | Cat. No. | Description | Performance Range | Cable Length | Price |
|---|---|---|---|---|---|
| 7650/7660 | 1750-000 | Pt100 | | na | £115.00 |

### Combination pH Electrodes

| Electrode System Type | Cat. No. | Description | Performance Range | Cable Length | Price |
|---|---|---|---|---|---|
| 2867 | 1912-400 | BNC connector | 0-14pH; -5-70°C | 6m | £110.00 |
| | 1912-500 | Tagged lead | 0-14pH; -5-70°C | 6m | £110.00 |
| AP101 | AP101/100 | For 7671 Bayonet in-line | 0-14pH; 0-100°C | na | £289.00 |
| AP103 | AP103/100 | For 7674 Screw-in or dip | 0-14pH; 0-100°C | na | £289.00 |
| AP 200 | AP121/11000 | General purpose – yellow glass | 0-14pH; 0-100°C | Variopin connector | £169.00 |
| | AP121/21000 | High temperature – white glass | 0-14pH; 10-130°C | Variopin connector | £169.00 |
| | AP121/31000 | Low temperature – blue glass | 0-10pH; -5-50°C | Variopin connector | £169.00 |
| AP302 | AP302/11011001 | Insertion/immersion Flat/flush | 0-14pH; 0-100°C | 6m | £146.00 |
| AP303 | AP303/21011001 | Insertion/immersion Standard notched | 0-14pH; 0-105°C | 6m | £146.00 |

### Extension cables

| Electrode System Type | Cat. No. | Description | Length | Price |
|---|---|---|---|---|
| AP101 | 7670/004 | Tags and IP67 plug | 5m | £66.00 |
| | 7670/005 | Tags and IP67 plug | 10m | £94.00 |
| | 7670/007 | Tags and IP67 plug | 20m | £151.00 |

### Standard Buffer and Salt Solutions

| Description | Quantity | Cat. No. | Price |
|---|---|---|---|
| pH 4 | 25 sachets per box = 5l solution | 0400-110 | £57.00 |
| pH 7 | 25 sachets per box = 5l solution | 0400-120 | £57.00 |
| pH 9 | 25 sachets per box = 5l solution | 0400-130 | £57.00 |
| Mixed box | 4, 7 and 9 pH sachets | 0400-135 | £57.00 |
| KCl Crystals | 2 sachets making 1litre solution each. | 0400-170 | £50.00 |

### Replacement Laboratory Combination pH Electrodes – C/W 1m of cable as standard

| Description | Cat. No. | Termination | pH Range | Temp Range | Price |
|---|---|---|---|---|---|
| Glass | 1411-400 | BNC | 0-14pH | 0-100°C | £83.00 |
| Epoxy Bodied | 1413-400 | BNC | 0-14pH | 0-100°C | £81.00 |

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Order on **ABB's** National Number: **0870 600 6122**

Or from your local **ABB Instrumentation Alliance Partner**

# Analytical
## Conductivity

The **AX400 Series** single or dual input conductivity and resistivity analysers are high functionality, high accuracy instruments, with features to match analysis applications across a wide spectrum of industries. The high reliability and exceptional performance meets the wide range of process monitoring and control requirements of today's modern industries.

# Analytical
## Conductivity

The **TB82TC Series** of transmitters is designed for the toughest industrial and process conditions. Used with ABB's TB404 non-contacting toroidal conductivity sensors, measurements can be made in chemically aggressive solutions that would typically corrode, foul or otherwise destroy contacting electrode type sensors. With an intrinsically safe design, it is certified for a wide range of ABB and other control platforms, and advanced digital communications.

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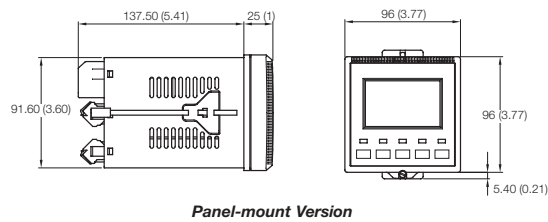### AX400 Series Conductivity Analysers

- Wall, pipe and panel mount versions
- Measurement up to 10,000 mS/cm
- True high purity temperature compensation for all pure water applications
- Versatile power, 85-265V AC or 12-30V DC – automatic sensing
- 2 fully isolated current outputs and 3 alarm relays as standard
- Option board to provide additional 2 isolated current outputs and 2 alarm relays
- High visibility, energy saving display
- IP66 / NEMA 4X protection
- P, PI, PID Control (AX410)
- Uses standard ABB 2 electrode conductivity cells
- Dual input configurable for 2 conductivity inputs or conductivity and pH/ORP inputs

*Dimensions mm (in.)*
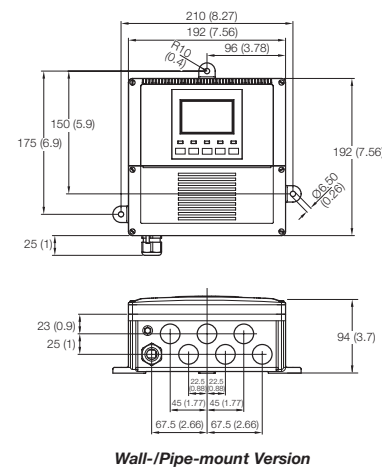
**Wall-/Pipe-mount Version**

**Panel-mount Version**

#### Transmitters

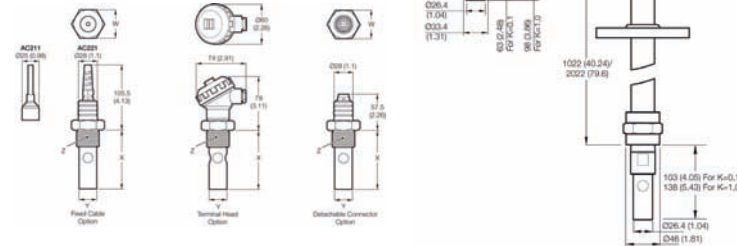| Cat. No. | Description | Price |
|---|---|---|
| AX410/10001 | Single input conductivity analyser | £590.00 |
| * AX411/10001 | Dual input conductivity analyser | £724.00 |
| AX416/10001 | Dual input pH/Redox and conductivity analyser | £724.00 |

#### Sensors – epoxy resin carbon electrodes

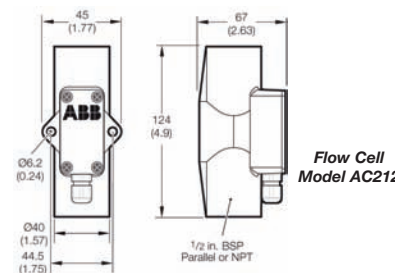| Cat. No. | Description | Price |
|---|---|---|
| AC211/341201 | Screw-in cell 1in. BSP, 0-100°C, C=0.1 | £241.00 |
| AC213/141131 | Dip cell 0-90°C with bracket and 4.5m cable, C=1.0 | £323.00 |
| AC212/131201 | Flow cell $^1$/2 in. BSP, 0-100°C, C=0.1 | £223.00 |

#### Extension Cables

| Cat. No. | Description | Price |
|---|---|---|
| AC200/008X | Cell connection cable (max 100m for cell constants of 1.0, terminal head versions only) | £5.00 per metre |

* Call for delivery

**Screw-in Model AC211**

**Dip Cell Model AC213**

**Flow Cell Model AC212**

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### TB82TC Toroidal Conductivity Series

- DeltaV® control platform certified
- Intrinsically safe, ATEX certified, non-incendive, NEMA 4X / IP65
- FOUNDATION® FIELDBUS, PROFIBUS® PA and HART protocol compatible
- Easy-to-use out of the box, with simple menu system for calibration and maintenance
- Pre-programmed concentration conversions for NaOH, HCl, $H_2SO_4$, and NaCl; also user- defined 6-segment curve capability

### Sensors

- TB404 Series non-contact sensors for highly corrosive solutions
- Multi-range capability 0-400 µS/cm to 2000 mS/cm
- Auto temperature compensation, fast response
- Up to 200°C, 2,060 kPag resistant, with choice of 316 SS, Kynar®, titanium or CPVC hardware
- PEEK encapsulation for chemical resistance, Kevlar® reinforcement; minimal coating and fouling, virtually unaffected by contaminants
- Hot tap capability
- TB4043 sanitary sensor, meets 3-A sanitary standards
- Integral, tri-clamp sanitary flange – mates with clamp, ferrule or Tee

**ATEX CERTIFIED**

*Dimensions mm (in.)*

**TB82 Dimensions**

**Wall/Hinge (Rear) Mounting Option**

**Panel Mounting Option**

**Sensor Exterior Profile**

#### Transmitters

| Cat. No. | Description | Price |
|---|---|---|
| TB82TC/2010030 | Toroidal conductivity transmitter | £650.00 |

#### Mounting hardware

| Cat. No. | Description | Price |
|---|---|---|
| 4TB9515-0123 | Panel mount kit | £23.00 |
| 4TB9515-0124 | Pipe mount kit | £18.00 |
| 4TB9515-0125 | Wall mount kit (hinge) | £41.00 |

#### Sensors

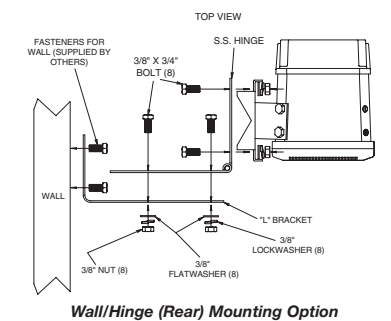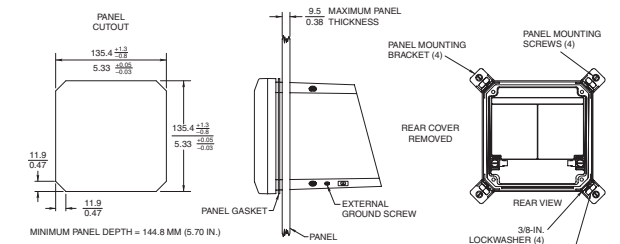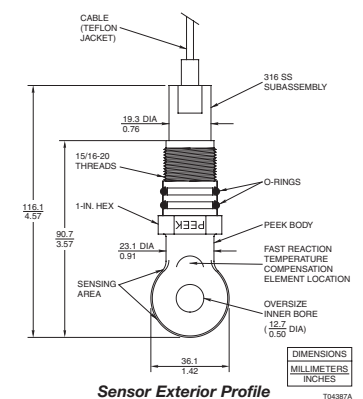| Cat. No. | Description | Price |
|---|---|---|
| TB404/222S1020 | Submersible/immersion toroidal conductivity sensor | £347.00 |
| TB404/222F2020 | In-line flow toroidal conductivity sensor | £369.00 |

# Analytical
## Dissolved Oxygen

The **AX400 high level dissolved oxygen analysers** provide high reliability for process monitoring and control applications. When used with 9408 Series immersion, submersion or self-cleaning floating-ball sensors, continuous measurement of one or two DO points with simultaneous local display and retransmission is possible.

# Analytical
## Turbidity

The **4670 Series** of turbidity monitoring systems offers high reliability and simplicity of operation without requiring any chemicals for calibration. The 4670/211* is a flow-through system ideal for clean water applications where optical fouling may occur.

*\* Other versions are available offering different ranges and sensor types.*

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### AX400 Dissolved Oxygen Analysers, Single and Dual Input

- Wall, pipe and panel mount versions
- Range 0-200ppm or 0-200% $O_2$
- Versatile power 85-265V AC or 12-30V DC – automatic sensing
- Cost effective – choice of one or two DO inputs, or combined with pH/Redox (ORP)
- Designed to reduce installation costs, small panel space, easy access terminations
- 2 fully isolated current outputs and 3 alarm relays as standard
- Option board to provide additional 2 isolated current outputs and 2 alarm relays
- High visibility, energy saving display
- IP66 / NEMA 4X protection
- Integral sensor cleaner control, integral PID controller (AX480)
- Service log-book for historical data
- On-line self-checking for reliability assurance
- High accuracy, salinity, temperature and atmospheric temperature compensation

*Dimensions mm (in.)*
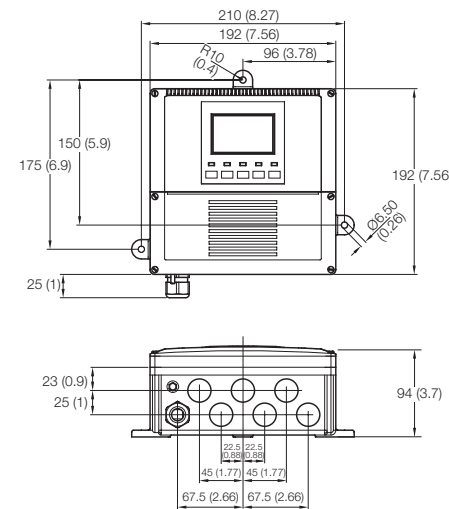
**Wall-/Pipe-mount Version**
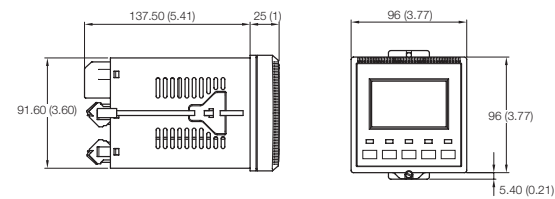
**Panel-mount Version**

**9408 Submersion Sensor**

**9408 Dip/Immersion Probe**

**9408 Floating Ball System**

#### Analyser

| Cat. No. | Description | Price |
|---|---|---|
| AX480/10001 | Single input DO analyser with integral PID controller | £590.00 |
| * AX488/10001 | Dual input DO analyser | £724.00 |
| * AX468/10001 | Dual input DO and pH/ORP analyser | £724.00 |

#### Sensor

| Cat. No. | Description | Price |
|---|---|---|
| 9408/710 | 1m dip/Immersion probe | £333.00 |
| * 9408/600 | Submersion sensor (8m cable) | £298.00 |
| 9408/750 | Floating-ball kit | £505.00 |

#### Extension Cables

| Cat. No. | Description | Price |
|---|---|---|
| 0233 828 | Extension cable | £4.50 per metre |
| 8012 170 | Spare sensor capsule | £81.00 |

*Call for delivery

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### 4670 Series Turbidity Monitors

- Wall mounting analyser with IP66 / NEMA 4Xcase
- High and low alarm relays
- Isolated current output programmable 0 to 10mA, 0 to 20mA or 4 to 20mA
- Ranges configurable 0 to1 NTU (min.) 0 to 30 NTU (max)
- Ultra low back scatter for true zero settings
- Dry standard eliminates use of formazine – NO HAZARDOUS CHEMICALS
- Auto-clean reduces maintenance
- Virtual lifetime zero
- Low cost of ownership

*Dimensions mm (in.)*
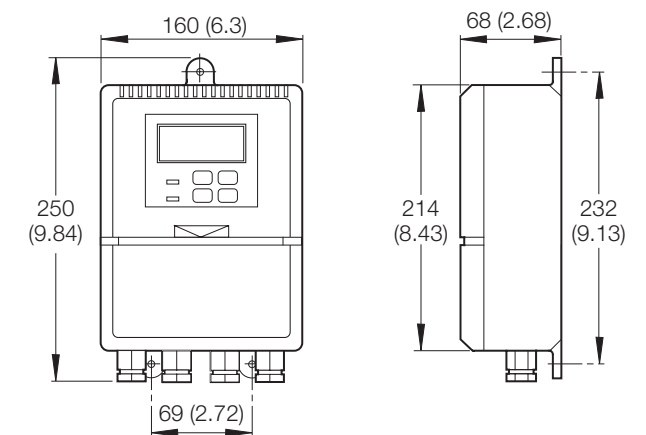
**Model 4670/500 Wall-mounting Version**

**7997-201 Sensor**

#### Turbidity system

| Cat. No. | Description | Price |
|---|---|---|
| 4670/211 | Wall mount transmitter c/w flow system sensor maximum range 0 to 30 NTU | £2237.00 |
| * 7997/170 | Turbidity dry secondary standard | £252.00 |

* 5 day delivery

Order on **ABB's** National Number: **0870 600 6122**
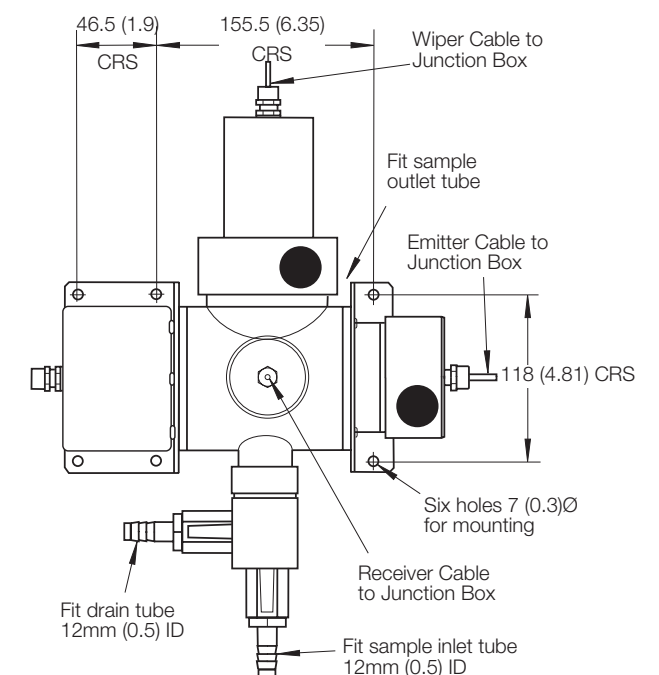
Or from your local **ABB Instrumentation Alliance Partner**

# Analytical
## Water Hardness

The ABB Testomat **AW101** provides automatic on-line monitoring of residual or total water hardness. This wall-mounted instrument has both display and output in programmable hardness units, and is ideal for plants where the quality and softness of the input and process water is critical.

# Analytical
## Other Parameters

**ABB Analysers – Hydrogen Purge Gas Monitor, Dissolved Oxygen, Sodium and Silica in Process Water**
ABB's wide range of renowned analysers is used in power, water treatment and processing plants the world over. Long experience and pedigree has enabled us to supply you with versatile, highly reliable instrumentation offering both low maintenance and cost of ownership, ideally suited to your application needs.

**Although ABB's Hydrogen Purge Gas Monitor, Low Level Dissolved Oxygen, Silica and Sodium Analysers are not currently available through Assist Direct, we will be very pleased to provide you with further details on these and other ABB Analysers.**

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### The ABB Testomat AW101 Water Hardness Monitor

- Easy to operate, menu driven programmable functions with clear LCD display
- Programmable range of hardness units, °dH, °f, ppm CaCO$_3$ and mmol/l
- Configurable initiation of analysis
  - Automatic intervals (programmable 0 – 99 mins.)
  - From external flow signal (turbine meter)
  - External stop/start
- Two ranges of hardness simultaneously
- Extended maintenance-free operation with 500ml reagent bottle
- Remote alarm for reagent low level and fouling
- Output compatible with process data recorders, either 0 to 20mA or 4 to 20mA

*Dimensions in. (mm)*



#### AW101 Water Hardness Monitor

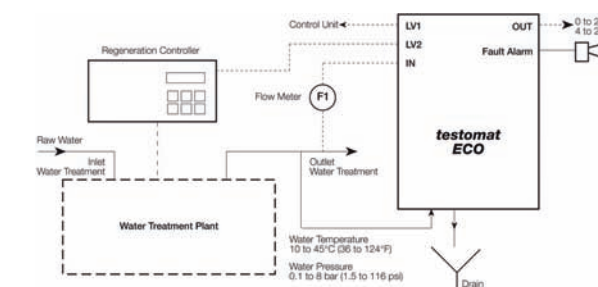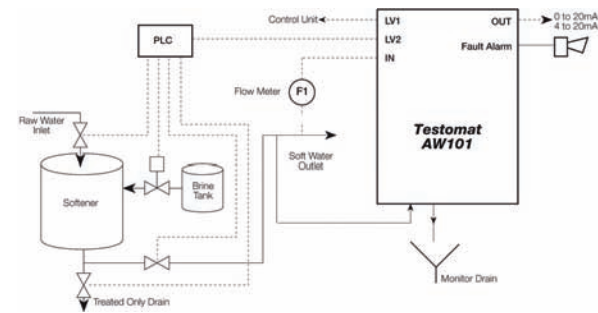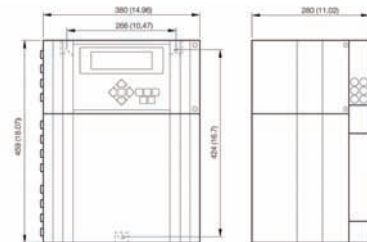| Cat. No. | Description | Price |
|---|---|---|
| AW101/111 | Water hardness monitor for mains 115V AC supply | £3073.00 |
| AW101/121 | Water hardness monitor for mains 230V AC supply | £3073.00 |
| AW101/131 | Water hardness monitor for mains 24V AC supply | £3073.00 |

#### AW101 Water Hardness Reagents

| | | |
|---|---|---|
| AW101901 | Water hardness reagent | £112.00 |
| AW101902 | Water hardness reagent | £112.00 |
| AW101903 | Water hardness reagent | £112.00 |
| AW101904 | Water hardness reagent | £112.00 |

#### Reagents Available for AW101

| | UNITS | PARAMETER/TYPE OF REAGENT | | | |
|---|---|---|---|---|---|
| | | Water Hardness AW101901 | Water Hardness AW101902 | Water Hardness AW101903 | Water Hardness AW101904 |
| RANGE | °dH GERMAN (10mg/CaO per 1000ml Water) | 00.5 to 0.5 (0.1) | 0.25 to 2.5 (0.05) | 1.0 to 10.0 (0.2) | 2.5 to 25.0 (0.2) |
| | °f FRENCH (10mg/CaCO3 per 1000ml Water) | 00.9 to 0.89 (0.02) | 0.45 to 4.48 (0.1) | 1.79 to 17.9 (0.4) | 4.48 to 44.8 (0.4) |
| | ppmCaCO3 NORTH AMERICA and UK (10mg/CaCO3 per 1000ml Water) | 0.89 to 8.83 (0.2) | 4.47 to 44.7 (0.9) | 17.9 to 179 (3.8) | 44.7 to 447 (3.8) |
| | mmol/l INTERNATIONALLY RECOMMENDED UNITS (10mg/CaCO3 per 1000ml Water) | 0.01 to 0.09 (0.01) | 0.04 to 0.45 (0.01) | 0.18 to 1.79 (0.04) | 0.45 to 48.5 (0.04) |

*N.B Figures in brackets show measurement resolution*

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### Hydrogen Purity/Purge Gas Monitor AK100 Series

Essential to alternator operational efficiency, the rugged ABB AK100 Series of gas monitors offer unrivalled long term stability and accuracy in hydrogen purity and purge gas measurement. From a world leader in hydrogen measurement, the special glass coated platinum filament design of the katharometer offers maximum sensitivity without direct contact with the measured gas, avoiding effects on filament performance. The unique gas path and filament design eliminate the effects of sample temperature and flow rate. The AK100 is fully ATEX certified – intrinsically safe to II (1) G Eex ia IIC T4.



*AK100 Series Hydrogen Purity*

**ATEX CERTIFIED**

### Low Level Dissolved Oxygen

Low level dissolved oxygen measurements are typically used in boiler water chemistry monitoring. The ABB systems use cartridge style sensors allowing rapid replacement of a depleted cartridge thus minimising 'down-time' and maintenance.
The 9437 and 9438 low level systems are ideal for monitoring in the ppb range, in de-aeration and oxygen scavenging systems. The 9437 system is a lower cost version of the fully automatic 9438 unit. For high level dissolved oxygen, see page 12, for the AX400 series.

*Model 9437 Low Level Dissolved Oxygen*

### Sodium

As the developer of the first industrial in-line sodium analysers, ABB now offers two unique instruments for measuring sodium in steam-raising plants down to 0.01ppb. Both the 8036 and 8037 provide for low reagent usage, minimal maintenance and rapid calibration. The cost effective 8037 has a very small panel footprint, numerous output types and extensive sensor diagnostics.

*Model 8037 Sodium*

### Silica

On-line colorimetric analysis of silica with the ABB Navigator 600 Silica Analyser meets the exacting requirements of the steam and power generation industries. The Navigator 600 provides continuous measurement for faster response times than batch testing analysers. The automatic zero with compensation for silica in the reagents provides for extremely accurate measurement at all times. Multi stream versions for up to 6 samples are also available.

*Navigator AW 600 Silica*

# Temperature
## Head Mounted Temperature Transmitters

- 2-wire, loop powered, 4-20 mA, or PROFIBUS PA or FOUNDATION Fieldbus compatible
- Linear output signals with custom linearisation capabilities
- Mean, differential and other arithmetic calculations
- Enhanced self diagnostics
- High accuracy, long term stability
- Wide ambient temperature range -50°C to +85°C
- Type B/DIN standard sized connection head mounting
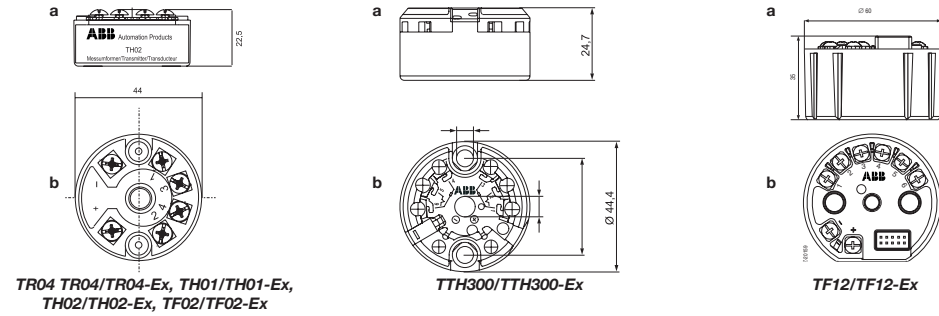
| Dimensions | a | b |
|---|---|---|
| TR04/TR04-Ex | 22.5 | 44 |
| TH01/TH01-Ex | 22.5 | 44 |
| TH02/TH02-Ex | 22.5 | 44 |
| TTH300/TTH300-Ex | 22.5 | 44 |
| TF02/TF02-Ex | 24 | 44 |
| TF12/TF12-Ex | 35 | 60 |

TR04 TR04/TR04-Ex, TH01/TH01-Ex, TH02/TH02-Ex, TF02/TF02-Ex

TTH300/TTH300-Ex

TF12/TF12-Ex

Dimensions mm

| | Analog Fixed Range | Digital Programmable | Digital HART® | Digital Fieldbus PROFIBUS PA | Digital Fieldbus FOUNDATION Fieldbus | | Digital HART® |
|---|---|---|---|---|---|---|---|
| | TR04/TR04-Ex | TH01/TH01-Ex | TH02/TH02-Ex | TF12/TF12-Ex | TF 02/TF02-Ex | | TTH300/TTH300-Ex |
| **Input (Sensor type)** | | | | | | | |
| RTD Type (2-, 3- and 4-wire)/ Minimal Span | Pt100/40 K | Pt100...1000/20 K Ni100, Ni500/20 K | Pt50...Pt100...1000/20 K Ni100/20 K | Pt50...Pt100...Pt1000 Ni50...Ni100...Ni1000 | Pt10...Pt100...Pt1000 Ni50...Ni100...Ni1000 Cu10, Cu100 | | RTD (Pt 100), linear resistance measurement 0....500 ohm, Thermocouples, Linear voltage measurment -125.....1100mV |
| TC Type (internal CJC) | – | B, E, J, K, L, N, R, S, T, U | B, E, J, K, L, N, R, S, T, U | B, E, J, K, R, S, T, N, C, D, L, U | B, C, D, E, J, K, L, N, R, S, T, U | | B, E, J, K, L, N, R, S, T, U, C, D |
| Voltage | – | –125...+1200 mV | –125...+1200 mV | –15...+115 mV | –120...+1200 mV | | -125mV.....+1100mV |
| Resistance | – | 0...5000 Ω | 0...5000 Ω | 0...400 Ω/0...4000 Ω | 0...500 Ω/0...4000 Ω | | 0 - 5000 Ω Ω |
| **Electrical Isolation (Input/Output)** | – | Yes | Yes | Yes | Yes | | Yes |
| **Supply voltage** | 10,5...30 V DC Ex: 10,5...29,4 V DC | 9...30 V DC Ex: 9...29,4 V DC | 8,5...30 V DC Ex: 8,5...29,4 V DC | 9...32 V Ex: 9...17,5 V | 9...32 V Ex: 9...24 V | | 11 - 30 V DC Ex 11 - 30 V DC |
| **Output** | 4...20 mA | 4...20 mA | 4...20 mA + HART® signal | Up to 3 digital values + status | Up to 2 digital values + status | | 4 - 20mA plus HART signal |
| **Explosion Protection** | | | | | | | |
| Ex-N | PTB: ATEX ⓔ II 3 G EEx nA IIC T6 | – | PTB: ATEX; GOST ⓔ II 3 G EEx nA IIC T6 | – | DMT: ATEX II 3 G EEx nA [nL] IIC T6 | | ATEX Zone 2 II 3 G EEx nA II T6 |
| Non-Incendive | – | – | FM, CSA Class I; Div. 2; Groups A, B, C, D | – | FM, CSA Class I; Div 2; Group A, B, C, D | | FM, CSA Class I; Div 2; Groups A, B, C, D |
| Intrinsically Safe | PTB: ATEX; GOST ⓔ II 2 (1) G EEx ia IIC T6 FM, CSA: Class I, Div. 1,Groups: A, B, C, D; T6; IS and Zone 1 resp. 0 | PTB: ATEX; GOST ⓔ II 2 (1) G EEx [ia] ib IIC T6 – | PTB: ATEX; GOST ⓔ II 2 (1) G EEx [ia] IIC T6 FM, CSA: Class I, Div. 1, Groups: A, B, C, D; T6; IS and Zone 1 resp. 0 | Zelm: ATEX ⓔ II 2 (1) G EEx ia IIC T6 | DMT: ATEX ⓔ II 1 G EEx ia IIC T6 FM, CSA: Class I, Div. 1, Groups: A, B, C, D; or Class I, Zone 0, Group IIC, AEx ia IIC | | ATEX: Zone 0: II 1 G EEx ia IIC T6, ATEX: Zone 1 (0): II 2 (1) G EEx [ia] ib IIC T6 ATEX: Zone 1 (20): II 2 G (1D) EEx [iaD] ib IIC T6 FM, CSA: IS, Class I, Div. 1 + 2, Groups: A, B, C, D; Class II, Groups:E, F, G; Class III (FM:Class I, Zone 0, AEx ia IIC T6) |
| **Special Features** | – | No HART device, but driver and software independent, pro- grammable via HART Universal | Diagnostics, arithmetic functions (mean, difference), custom linearization, 32 capabilities | Two independent sensor inputs, diagnostics, redundancy, arithmetic functions, custom linearization | One or two sensor inputs programmable, diagnostics, custom linearization | | Specific Linearisation (Callendar Van Dusen Coefficients), Customer Specific Curve / 32 tie points, Dual Sensor input E.g. 2xPt100 3W, Redundancy/Sensor backup, Sensor drift monitoring, Programmable via display. **SIL 2 - TUV Certified** |
| **Indicator** | Yes[1,2] | Yes[1,2] | Yes[1,2] | No | Yes[2] | | Yes[12] |
| **Configuration – Software Tools** | – | SMART VISION | SMART VISION FDT/DTM, AMS, | FDT/DTM SMART VISION SIEMENS Simatic/PDM | Configuration with DD and CFF file | | SMART VISION FDT/DTM, Siemens Simatic/PDM, LOCAL HMI Display |
| **Configuration – Handheld** | – | 691 HT, STT04, HHT275, FC375 | 691HT, STT04, HHT275, FC375 | – | FC375 | | 691 HT, STT04, HHT275, FC375 |

[1] Loop powered programmable indicator (ProMeter or CoMeter)    [2] requirements: AGLHD or AGSHD head mounted transmitter

### TR04/TR04-Ex

| Cat. No. | Part.No. | Description | Price |
|---|---|---|---|
| TR0460 | V11531-1-3-1-3-3-0 | TR04 Eco, Pt100 2 or 3 wire 0 to +60°C | £69.00 |
| TR04100 | V11531-1-3-1-4-3-0 | TR04 Eco, Pt100 2 or 3 wire 0 to +100°C | £69.00 |
| TR04200 | V11531-1-3-1-7-3-0 | TR04 Eco, Pt100 2 or 3 wire 0 to +200°C | £69.00 |
| TR04-Ex60 | V11531-5-3-1-3-3-0 | TR04 Ex, Pt100 2 or 3 wire 0 to +60°C | £97.00 |
| TR04-Ex100 | V11531-5-3-1-4-3-0 | TR04 Ex, Pt100 2 or 3 wire 0 to +100°C | £97.00 |
| TR04-Ex200 | V11531-5-3-1-7-3-0 | TR04 Ex, Pt100 2 or 3 wire 0 to +200°C | £97.00 |

### TH01/TH01-Ex

| Cat. No. | Part.No. | Description | Price |
|---|---|---|---|
| TH01 | V11508-1-3-0-0 | TH01 non-Ex certified | £100.00 |
| TH01-Ex | V11508-5-3-0-0 | TH01 Ex certified | £123.00 |
| Conf/T | - | Configuration | £12.00 |

### TTH300

| Cat. No. | Part.No. | Description | Price |
|---|---|---|---|
| Please see P. 23 for full dimension and price details | | | |

### TH02/TH02-Ex

| Cat. No. | Part.No. | Description | Price |
|---|---|---|---|
| TH02 | V11518-1-3-0-0-0 | TH02 non-Ex certified | £128.00 |
| TH02-Ex | V11518-5-3-0-0-0 | TH02 Ex certified | £145.00 |
| Conf/T | - | Configuration | £12.00 |

### TF12/TF12-Ex

| Cat. No. | Part.No. | Description | Price |
|---|---|---|---|
| TF12 | V11525-1-3-0-0 | TF12 non-Ex certified | £267.00 |
| TF12-Ex | V11525-5-3-0-0 | TF12 Ex certified | £286.00 |
| Conf/T | - | Configuration | £12.00 |

### TF12/TF12-Ex

| Cat. No. | Part.No. | Description | Price |
|---|---|---|---|
| TF02 | V11527-FR-1-3-0-0 | TF02 non-Ex certified | £240.00 |
| TF02-Ex | V11525-FR-5-3-0-0 | TF02 Ex certified | £257.00 |
| Conf/T | - | Configuration | £12.00 |

**ATEX CERTIFIED**

Unless configured, transmitters supplied with factory default settings.
(Pt100, 0 ... 100°C 4 wire circuit, damping off, direct action characteristics, Sensor or Device error = 22mA)

Order on **ABB's** National Number: **0870 600 6122**        Or from your local **ABB Instrumentation Alliance Partner**

# Temperature
## Field Mounted Temperature Transmitters

- 2-wire, loop powered, 4-20 mA, or PROFIBUS PA or FOUNDATION Fieldbus compatible
- Linear output signals with custom linearisation capabilities
- Mean, differential and other arithmetic calculations
- Enhanced self diagnostics
- Analogue and digital indicators, local configuration
- High accuracy, long term stability
- Wide ambient temperature range -40°C to +85°C
- Aluminium or stainless steel housing for harsh environments, rated IP66/67 (NEMA 4X)

*Dimensions mm*

| | Analog Fixed Range | Digital HART® | Digital Fieldbus PROFIBUS PA | Digital Fieldbus FOUNDATION Fieldbus | | Digital HART® |
|---|---|---|---|---|---|---|
| | TR204/TR204-Ex | TH202/TH202-Ex | TF212/TF212-Ex | TF202/TF202-Ex | | TTF300/TTF300-Ex |
| **Input (Sensor type)** | | | | | | |
| RTD Type (2-, 3- and 4-wire)/ Minimal Span | Pt100/40 K | Pt100...1000/20 K Ni100, Ni500/20 K | Pt50...Pt100...1000/20 K Ni100/20 K | Pt10...Pt100...Pt1000 Ni50...Ni100...Ni1000 Cu10, Cu100 | | RTD (Pt 100), linear resistance measurement 0.....500 ohm, Thermocouples, Linear voltage measurment -125.....1100mV |
| TC Type (internal CJC) | – | B, E, J, K, L, N, R, S, T, U | B, C, D, E, J, K, L, N, R, S, T, U | B, C, D, E, J, K, L, N, R, S, T, U | | B, E, J, K, L, N, R, S, T, U, C, D |
| Voltage | – | –125...+1200 mV | –15...+115 mV | –120...+1200 mV | | -125mV.....+1100mV |
| Resistance | – | 0...5000 Ω | 0...4000 Ω | 0...4000 Ω | | 0 - 5000 Ω Ω |
| **Electrical Isolation (Input/Output)** | – | Yes | Yes | Yes | | Yes |
| **Supply Voltage** | 10,5...30 V DC Ex: 10,5...29,4 V DC | 8,5...30 V DC Ex: 8,5...29,4 V DC | 9...32 V Ex: 9...17,5 V | 9...32 V Ex: 9...24 V | | 11 - 30 V DC Ex 11 - 30 V DC |
| **Output** | 4...20 mA | 4...20 mA + HART® signal | Up to 3 digital values + status | Up to 2 digital values + status | | 4 - 20mA plus HART signal |
| **Explosion Protection** | | | | | | |
| Ex-N | PTB: ATEX ⟨Ex⟩ II 3 G EEx nA IIC T6 | PTB: ATEX; GOST ⟨Ex⟩ II 3 G EEx nA IIC T6 | – | DMT: ATEX II 3 G EEx nA [nL] IIC T6 | | ATEX Zone 2 / Zone 22 II 3 G EEx nA II and II 3 D IP65 T135°C |
| Non-Incendive | FM: Class I, Div. 2; Groups A, B, C, D; Class II, Groups: E, F, G; Class III | – | | FM, CSA: Class I, Div. 2; Groups A, B, C, D; Class II, Groups E, F, G; Class III | | FM, CSA Class I; Div 2; Groups A, B, C, D Class II, Groups:E, F, G; Class III |
| Intrinsically Safe | PTB: ATEX; GOST ⟨Ex⟩ II 2 (1) G EEx ia IIC T6 | PTB: ATEX; GOST ⟨Ex⟩ II 2 (1) G EEx [ia] ib IIC T6 | Zelm: ATEX ⟨Ex⟩ II 2 (1) G EEx ia IIC T6 | DMT: ATEX ⟨Ex⟩ II 1 G EEx ia IIC T6 ⟨Ex⟩ I M1 EEx ia I (Mine) | | ATEX: Zone 0: II 1 G EEx ia IIC T6, ATEX: Zone 1 (0): II 2 (1) G EEx [ia] ib IIC T6 ATEX: Zone 1 (20): II 2 G (1D) EEx [iaD] ib IIC T6 |
| | FM, CSA: Class I, Div. 1, Groups: A, B, C, D; T6; IS and Zone 1 resp. 0 | | | FM, CSA: Class I, Div. 1; Groups A, B, C, D; Class II, Groups E, F, G; Class III, (FM: Class I, Zone 0) | | FM, CSA: IS, Class 1, Div.1+2, Groups:A, B, C, D, Class II, Groups:E, F, G; Class III (FM: Class I, Zone 0, AEx ia IIC T6) |
| "Flameproof enclosure" (acc. to "zone" classification) | PTB: ATEX ⟨Ex⟩ II 1/2 G EEx d IIC T6 | | | | | |
| Dust Ex | DMT: ATEX ⟨Ex⟩ II 1 D IP 65 T 135 °C | | | | | |
| Dust Ex + intrinsically safe | See the corresponding explosion protection certificate for intrinsic safety + ⟨Ex⟩ II 1 D IP 65 T 135 °C | | | | | |
| "Explosion proof" (according to "division" classification) | FM, CSA: Class I, Div. 1, Groups: A, B, C, D Class II, Class III, Div. 1, Groups: E, F, G | – | | (under preparation) | | FM, CSA: XP, NI, DIP, Class I, II, III, Div 1+2, Groups A-G, factory sealed |
| Special Features | – | Diagnostics, arithmetic functions (mean, difference), custom linearization, 32 capabilities | Two independent sensor inputs, diagnostics, redundancy, arithmetic functions, custom linearization | O programmable, diagnostics, custom linearization | | Specific Linearisation (Callendar Van Dusen Coefficients), Customer Specific Curve / 32 tie points, Dual Sensor input E.g. 2xPt100 3W, Redundancy/ Sensor backup, Sensor drift monitoring, Programmable via display. SIL 2 - TUV Certified |
| Indicator | Yes[1] | Yes[1] | No | Yes[2] | | Yes[1] |
| Configuration – Software Tools | – | SMART VISION FDT/DTM, AMS | FDT/DTM, SMART VISION Siemens Simatic/PDM | Configuration with DD and CFF file | | SMART VISION FDT/DTM, AMS. LOCAL DISPLAY |
| Configuration – Handheld | – | 691HT, STT04, HHT275, FC375 | – | FC375 | | 691 HT, STT04, HHT275, FC375 |

[1] Loop powered indicator or configurator    [2] Local indicator, adapts directly to the Fieldbus transmitter    [1] Loop powered HMI programmable indicator

**Window version**

**Blind version**
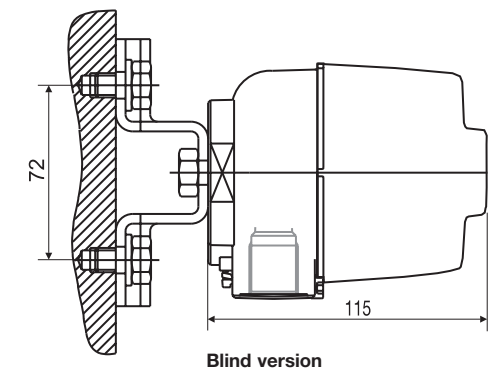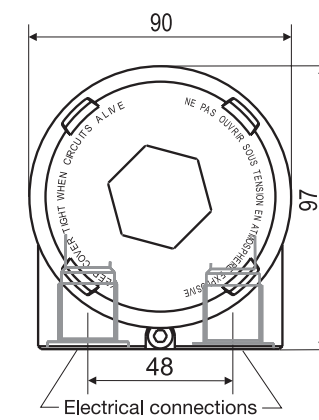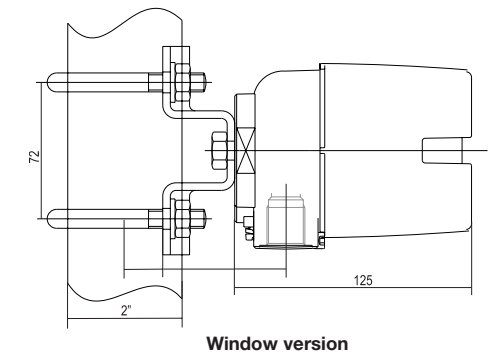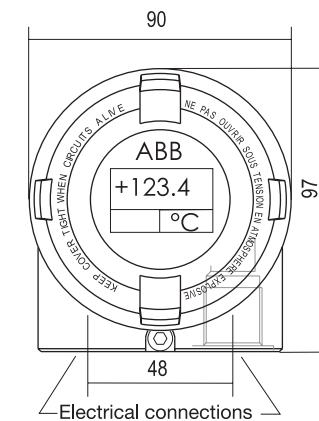
| TR204/ TR204-Ex |
| TH202/TH202-Ex |
| TTF300/TTF300-Ex |
| TH212/TH212-Ex |
| TF202/TF202-Ex |

The choice of specifications available to meet your application requirements is so comprehensive that a specific enquiry (0870 600 6122) is the best way to discuss your needs.

**ATEX CERTIFIED**

Unless configured, transmitters supplied with factory default settings. (Pt100, 0 ... 100°C 4 wire circuit, damping off, direct action characteristics, Sensor or Device error = 22mA)

# Temperature

## Rail Mounted Temperature Transmitters

- 2-wire (loop powered, 4...20 mA)
- Two independent channels
- Temperature linear output, with customisable linearisation capabilities
- Mean, differential and other arithmetic calculations
- Enhanced self diagnostics
- High accuracy, long term stability
- Wide ambient temperature range -40°C to +85°C
- Compact dimensions, rail mounting in junction boxes

# Temperature

## Thermocouple Assemblies

ABB **thermocouple assemblies** feature durable, high quality material construction with IP67 protection and mineral insulation, for use in heavy duty applications.
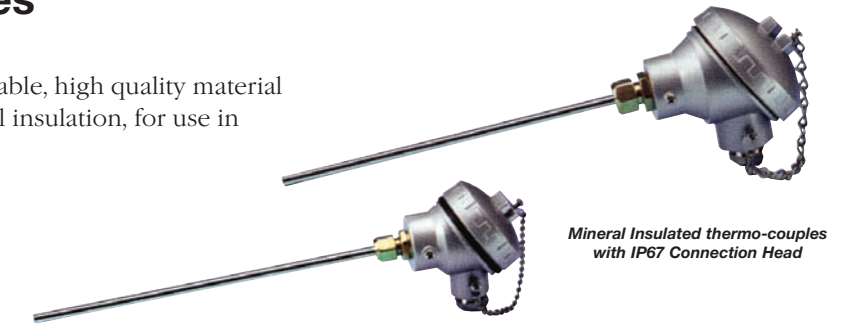
*Mineral Insulated thermo-couples with IP67 Connection Head*

| | Analog Fixed Range | Digital Programmable | Digital HART® |
|---|---|---|---|
| **Input (Sensor type)** | **TR104/TR104-Ex** | **TH101/TH101-Ex** | **TH102/TH102-Ex** |
| RTD Type (2-, 3- and 4-wire)/ Minimal Span | Pt100/40 K | Pt100...1000/20 K Ni100, Ni500/20 K | Pt100...1000/20 K Ni100, Ni500/20 K |
| TC Type (internal CJC) | – | B, E, J, K, L, N, R, S, T, U | B, E, J, K, L, N, R, S, T, U |
| Voltage | – | –125...+1200 mV | –125...+1200 mV |
| Resistance | – | 0...5000 Ω | 0...5000 Ω |
| **Electrical Isolation (Input/Output)** | – | Yes | Yes |
| **Supply Voltage** | 10,5...30 V DC Ex: 10,5...29,4 V DC | 9...30 V DC Ex: 9...29,4 V DC | 8,5...30 V DC Ex: 8,5...29,4 V DC |
| Output | 4...20 mA | 4...20 mA | 4...20 mA + HART® signal |
| **Explosion Protection** Ex-N | **PTB:ATEX** ⟨Ex⟩ II 3 G EEx nA IIC T6 | – | **PTB:ATEX; GOST** ⟨Ex⟩ II 3 G EEx nA IIC T6 |
| Intrinsically Safe | **PTB: ATEX; GOST** ⟨Ex⟩ II 2 (1) G EEx ia IIC T6 | **PTB: ATEX; GOST** ⟨Ex⟩ II 2 (1) G EEx [ia] ib IIC T6 | **PTB: ATEX; GOST** ⟨Ex⟩ II 2 (1) G EEx [ia] ib IIC T6 |
| **Special Features** | – | No HART device, but driver and software independent, programmable via HART Universal | Diagnostics, arithmetic functions (mean, difference), custom linearization |
| **Indicator** | – [2] | – [2] | – [2] |
| **Configuration – Software Tools** | – | SMART VISION | SMART VISION FDT/DTM; AMS |
| **Configuration – Handheld** | – | 691HT, STT04, HHT275, FC375 | 691HT, STT04, HHT275, FC375 |

[2] Please refer to our product line of field indicators.

### TR104/TR104-Ex (Prices for 2 channels only, Call ABB for single and 4 channels)

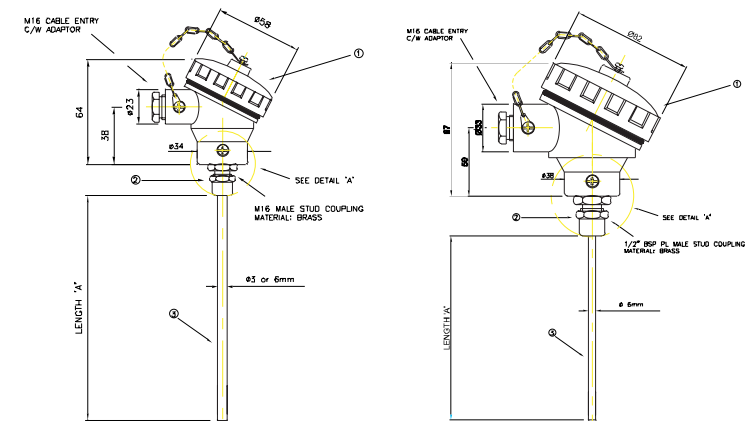| Cat. No. | Part No | Description | Price |
|---|---|---|---|
| TR10460 | V11515-3-3-3-A-3-3-A-0 | TR104 Eco, Pt100 2 or 3 wire 0 to +60°C | £169.00 |
| TR104100 | V11515-3-4-3-A-4-3-A-0 | TR104 Eco, Pt100 2 or 3 wire 0 to +100°C | £169.00 |
| TR104200 | V11515-3-7-3-A-7-3-A-0 | TR104 Eco, Pt100 2 or 3 wire 0 to +200°C | £169.00 |
| TR104-Ex60 | V11515-A-3-3-A-3-3-A-0 | TR104 Eco, Pt100 2 or 3 wire 0 to +60°C | £223.00 |
| TR104-Ex100 | V11515-A-4-3-A-4-3-A-0 | TR104 Eco, Pt100 2 or 3 wire 0 to +100°C | £223.00 |
| TR104-Ex200 | V11515-A-7-3-A-7-3-A-0 | TR104 Eco, Pt100 2 or 3 wire 0 to +200°C | £223.00 |

### TH101/TH101-Ex

| | | | |
|---|---|---|---|
| TH101 | V11509-3-0-0 | TH101 non-Ex certified | £237.00 |
| TH101-Ex | V11509-2-0-0 | TH101 Ex Certified | £266.00 |
| Conf/T | - | Configuration | £12.00 |

### TH102/TH102-Ex

| | | | |
|---|---|---|---|
| TH102 | V11517-3-0-0-0 | TH102 non-Ex certified | £380.00 |
| TH102-Ex | V11517-2-0-0-0 | TH102 Ex Certified | £422.00 |
| Conf/T | - | Configuration | £12.00 |

## Thermocouple Assemblies

- Hot junction mineral insulated
- IEC 584-3 Class 2
- Connection head: - die cast aluminium alloy;
  - IP67 weatherproof
  - Temperature rating 135°C
- For compression fittings, see page opposite

### Type K – 310 Stainless Steel Sheath (1100°C) with IP67 miniature connection head

| Cat. No. | Description | Unit price 1-9 | Unit price 10-20 |
|---|---|---|---|
| MTC-K-S-3-310-150 | 3mm dia X 150mm long | £23.00 | £23.00 |
| MTC-K-S-3-310-500 | 3mm dia X 500mm long | £25.00 | £25.00 |
| MTC-K-S-3-310-1000 | 3mm dia X 1000mm long | £26.40 | £26.40 |
| MTC-K-S-6-310-150 | 6mm dia X 150mm long | £26.40 | £26.40 |
| MTC-K-S-6-310-500 | 6mm dia X 500mm long | £26.40 | £26.40 |
| MTC-K-S-6-310-1000 | 6mm dia X 1000mm long | £32.45 | £31.35 |

### Type K – Inconel 600 Sheath (1100°C) with IP67 miniature connection head

| Cat. No. | Description | Unit price 1-9 | Unit price 10-20 |
|---|---|---|---|
| MTC-K-S-3-600-150 | 3mm dia X 150mm long | £23.00 | £23.00 |
| MTC-K-S-3-600-500 | 3mm dia X 500mm long | £26.40 | £26.40 |
| MTC-K-S-3-600-1000 | 3mm dia X 1000mm long | £26.00 | £26.00 |
| MTC-K-S-6-600-150 | 6mm dia X 150mm long | £26.40 | £26.40 |
| MTC-K-S-6-600-500 | 6mm dia X 500mm long | £26.40 | £26.40 |
| MTC-K-S-6-600-1000 | 6mm dia X 1000mm long | £33.55 | £32.45 |

### Type K – 310 Stainless Steel Sheath (1100°C) with IP67 standard connection head

| Cat. No. | Description | Unit price 1-9 | Unit price 10-20 |
|---|---|---|---|
| STC-K-S-6-310-150 | 6mm dia X 150mm long | £31.35 | £31.35 |
| STC-K-S-6-310-500 | 6mm dia X 500mm long | £34.10 | £33.55 |

### Type K – Inconel 600 Sheath (1100°C) with IP67 standard connection head

| Cat. No. | Description | Unit price 1-9 | Unit price 10-20 |
|---|---|---|---|
| STC-K-S-6-600-150 | 6mm dia X 150mm long | £31.90 | £31.35 |
| STC-K-S-6-600-500 | 6mm dia X 500mm long | £34.00 | £33.35 |

# Temperature

## Resistance Thermometer Assemblies

**Resistance Thermometer Assemblies**
ABB resistance thermometer assemblies are available as standard in single wire, Class B construction. 2, 3 or 4 wire, duplex and Class A are available on request (duplex in 6mm only & 2 or 3 wire).
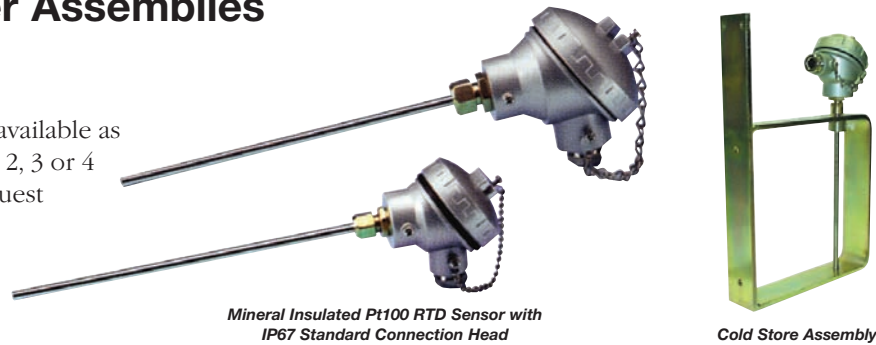
*Mineral Insulated Pt100 RTD Sensor with IP67 Standard Connection Head*

*Cold Store Assembly*

### Resistance Thermometer Assemblies

- Mineral insulated sensing element is Pt100 Ohms at 0°C, to IEC 751-2: 1995-07 resp.
- Connection head: - die cast aluminium alloy;
  - IP67 weatherproof
  - temperature rating 135°C
- A range of adjustable compression fittings is available in brass or stainless steel
- Dedicated RTD Cold Store Assembly Unit meets all current regulatory requirements
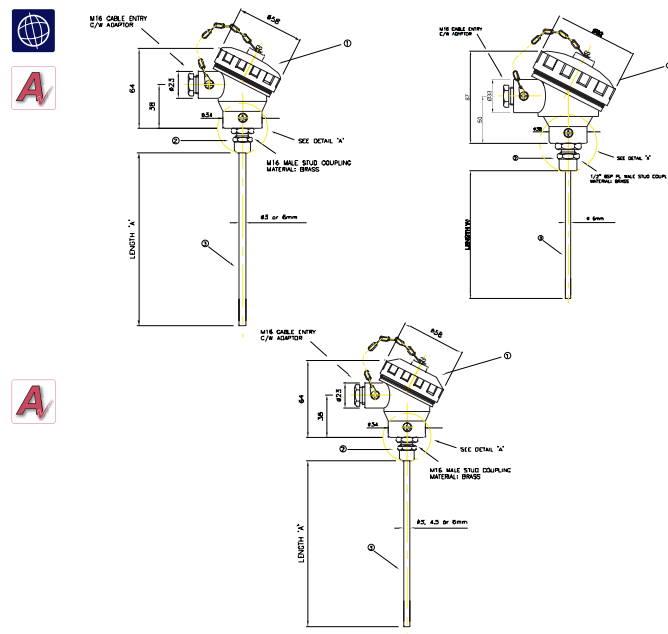
### Compression Glands

- Process connections in brass or stainless steel
- 3mm or 6mm probe diameters
- Improve flexibility for probe insertion into process
- Offer degree of resistance to pressure applications
- NPT threads on request

#### Male adjustable compression glands – stainless steel

| Cat. No. | Description | Unit price 1-9* | Unit price 10-20* |
|---|---|---|---|
| CF-SS-3-G18-P | 3mm x 1/8 in. BSP P | £5.17 | £4.95 |
| CF-SS-3-G12-P | 3mm x 1/2 in. BSP P | £10.78 | £10.23 |
| CF-SS-6-G18-P | 6mm x 1/8 in. BSP P | £5.72 | £5.30 |
| CF-SS-6-G12-P | 6mm x 1/2 in. BSP P | £9.02 | £8.58 |
| CF-SS-3-G18-T | 3mm x 1/8 in. BSP T | £5.17 | £4.95 |
| CF-SS-3-G12-T | 3mm x 1/2 in. BSP T | £10.78 | £10.23 |
| CF-SS-6-G18-T | 6mm x 1/8 in. BSP T | £5.72 | £5.30 |
| CF-SS-6-G12-T | 6mm x 1/2 in. BSP T | £9.02 | £8.58 |

#### Male adjustable compression glands – BRASS

| Cat. No. | Description | Unit price 1-9* | Unit price 10-20* |
|---|---|---|---|
| CF-BR-3-G18-P | 3mm x 1/8 in. BSP P | £1.87 | £1.76 |
| CF-BR-3-G12-P | 3mm x 1/2 in. BSP P | £4.18 | £3.96 |
| CF-BR-6-G18-P | 6mm x 1/8 in. BSP P | £1.76 | £1.65 |
| CF-BR-6-G12-P | 6mm x 1/2 in. BSP P | £4.18 | £3.96 |
| CF-BR-3-G18-T | 3mm x 1/8 in. BSP T | £1.87 | £1.76 |
| CF-BR-3-G12-T | 3mm x 1/2 in. BSP T | £4.18 | £3.96 |
| CF-BR-6-G18-T | 6mm x 1/8 in. BSP T | £1.76 | £1.76 |
| CF-BR-6-G12-T | 6mm x 1/2 in. BSP T | £4.18 | £3.96 |

#### Pt100 RTD Sensor with IP67 miniature connection head

| Cat. No. | Description | Unit price 1-9* | Unit price 10-20* |
|---|---|---|---|
| MRT-B-S-3-321-150 | 3mm dia X 150mm long | £38.50 | £36.85 |
| MRT-B-S-3-321-300 | 3mm dia X 300mm long | £39.05 | £36.85 |
| MRT-B-S-3-321-500 | 3mm dia X 500mm long | £39.05 | £37.40 |
| MRT-B-S-3-321-1000 | 3mm dia X 1000mm long | £44.55 | £42.35 |
| MRT-B-S-6-321-150 | 6mm dia X 150mm long | £37.40 | £35.75 |
| MRT-B-S-6-321-300 | 6mm dia X 300mm long | £37.95 | £36.30 |
| MRT-B-S-6-321-500 | 6mm dia X 500mm long | £39.05 | £37.40 |
| MRT-B-S-6-321-1000 | 6mm dia X 1000mm long | £46.70 | £44.00 |

#### Pt100 RTD Sensor with IP67 standard connection head

| Cat. No. | Description | Unit price 1-9* | Unit price 10-20* |
|---|---|---|---|
| SRT-B-S-6-321-150 | 6mm dia X 150mm long | £41.80 | £40.15 |
| SRT-B-S-6-321-300 | 6mm dia X 300mm long | £42.90 | £40.70 |
| SRT-B-S-6-321-500 | 6mm dia X 500mm long | £43.45 | £41.80 |
| SRT-B-S-6-321-1000 | 6mm dia X 1000mm long | £50.60 | £48.40 |

#### Cold Store assembly – dedicated RTD unit

| Cat. No. | Description | Unit price 1-9* | Unit price 10-20* |
|---|---|---|---|
| 192/21 | Cold Store assembly | £93.50 | n.a. |

*N.B. Prices for single construction only; 2, 3 or 4 wire, duplex and Class A are available on request (duplex in 6mm only)

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# Temperature

## Head / Field Mounted Temperature Transmitters

**New Temperature Transmitter TTH/TTF300**
The unique new ABB TTH/TTF 300 temperature transmitter is a breakthrough to the future of process temperature measurement. In both head and field mounted formats, the TTH/TTF 300 offers so many advantages in reliability, functionality and accuracy.

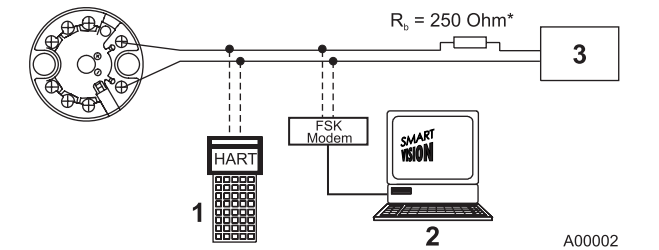### New Head and Field Mounted Hart Transmitters

- Less downtime, maintenance and service costs through its unique 3-wire connection to two PT 100 sensors which reduces inputs, with automatic switching if one sensor fails
- Process cost reduction and optimisation through outstanding accuracy at ± 0.1°K and stability of 0.05% pa, thanks to automatic sensor adjustment
- Instant, on-the-spot independent process control for higher efficiency and quality, using the LCD display or SmartVision or via hand held terminal
- HART enabled for remote control panel operation
- Better security and less downtime though enhanced self diagnostics
- Fully process protected – as well as IP67 / NEMA 4X, it is Intrinsically safe to Zone 0 – ATEX Ex ia / Ex d / Dust Ex, and explosion proof by FM and CSA
- Compact 44mm head size
- Low cost, rapid, high accuracy installation with easy access cable block (TTF300)

**Dimensions mm**

1 – Hand-held terminal
2 – FDT/DTM technology
3 – Ground connection (optional)
4 – Power supply (process interface)

$R_0$ = 250 Ohm*

A00002

**TTH 300 Dimensions**

Ø 44,4

#### Temperature Transmitter TTH 300

| Cat. No. | Part No. | Description | Price |
|---|---|---|---|
| TTH300 | TTH300-Y0 | TTH300 non-Ex certified | £135.00 |
| TTH300-Ex | TTH300-E1 | TTH300 Ex certified | £145.00 |
| Conf/T | - | Configuration | £12.00 |
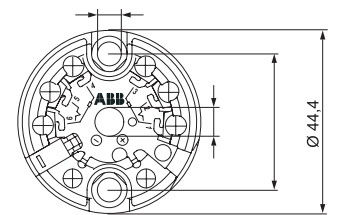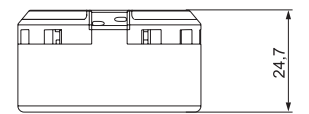
**TTF 300 Dimensions**

#### Temperature Transmitter TTF 300

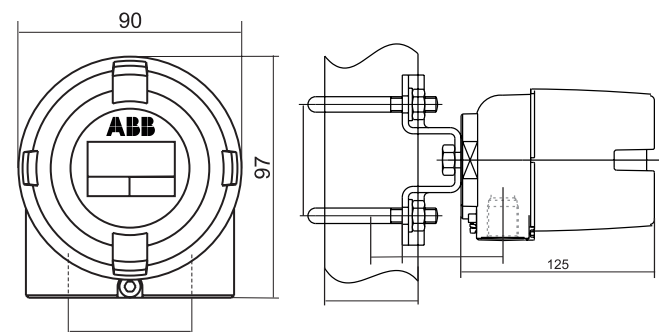| Cat. No. | Part No. | Description | Price |
|---|---|---|---|
| TTF300 | TTF300-Y0-C-K2 | TTF300 non-Ex certified c/w LCD Display | £398.00 |
| TTF300-Ex | TTF300-Y0-C-K2 | TTF300 Ex certified c/w LCD Display | £422.00 |
| Conf/T | - | Configuration | £12.00 |

Order on **ABB's** National Number: **0870 600 6122**

Or from your local **ABB Instrumentation Alliance Partner**

# Temperature
## SensyTemp TSBA Resistance Thermometers

**SensyTemp BA R**

The SensyTemp BA R series of resistance thermometers are specifically designed for building automation, machine construction and environmental engineering applications. Long term stability and reliability without maintenance are key features.

# Temperature
## Temperature Sensor Assemblies

**Heavy Duty Assembly for the Oil and Gas Industry**

The range of ABB temperature sensing and transmitting assemblies for the oil and gas industries offer high accuracy and reliability in very arduous environments – including exploration, on- and off-shore, petro-chem and chemical industries. Fully certified to ATEX and other hazardous area classifications, they provide engineered solutions for optimised and dependable process measurement.

### SensyTemp TSBA Resistance Thermometers

- Different output signals: - Pt100;
  - 4...20mA
    (temperature linear, analogue)
  - 4...20mA HART protocol
    on request
- Rapid response
- Selection of temperature ranges to suit application from between -50°C to +400°C
- Intrinsically safe models available

**SensyTEMP TSBA resistance thermometers**

| Cat. No. | Description | Application | Price |
|---|---|---|---|
| BA R-150 | 1 X Pt100 | Building, Automation, Pipelines, Machine construction, Environmental engineering | POA |
| BA R-700 | 1 X Pt100 | Dry conditions, ambient temperatures for offices, meeting rooms | POA |
| BA R-750 | 1 X Pt100 | Dry or humid, cold stores, store rooms, production | |
| BA R-750 | 2 X Pt100 | rooms, cellars | POA |
| BA R-500 | 1 X Pt100 | Dry or humid, cold stores, store rooms, production rooms, cellars | POA |
| BA R 0300 | 1 X Pt100 | Air ducts | POA |
| BA R-900 | 1 X Pt100 | Large rooms, air registers Air ducts, Airshafts, Environmental protection Water pipes, Heating pipes, Sewage pipes, Mechanical engineering | POA |

### Heavy Duty Assembly for the Oil and Gas Industry

- Constructed from durable, high quality materials
- Selection of hazardous area protection concepts, including Ex and EX d to ATEX, with FM and CSA certified versions also available
- Low cost of ownership with in-service exchangeability in pipes or vessels
- Display option provides on-the-spot measurement
- Industry standard DIN Form B size transmitter for mounting versatility
- Simple coding structure – one part number for complete sensor and transmitter; HART configuration

**ATEX CERTIFIED**

### Light Duty Fabricated Pocket Assemblies for General Purpose Applications

The ABB temperature sensing and transmitting assemblies for general purpose applications comprise a resistance thermometer and thermocouples, with a welded protection tube and measuring insert, complete with head mounted temperature transmitters. Typical applications range from general processing and industrial use, to power generation, food and beverage, chemical process and petroleum or natural gas supply and processing.

- Modular design, with different insertion lengths to suit process
- Sensor inserts can be replaced during process operation
- ATEX approval for Ex I, with protection tube in Zone 0
- Choice of protection tube materials and designs to suit operating conditions
- Transmitter in head eliminates need for a multi-wired circuit
- Interference immune, 4 – 20 mA output signal; HART configuration

**ATEX CERTIFIED**

**Although ABB's heavy and light duty assemblies are not currently available through Assist Direct, we will be very pleased to provide you with further details on these and other ABB temperature assemblies.**

**HART configurator**
Please see page 66 (Instrument configuration) for further details

# Pressure
## Differential Pressure Transmitters

ABB's range of differential pressure transmitters offers versatility and high accuracy for a wide selection of plant applications, in harsh industrial and hazardous locations. Features include HART communication, PED and ATEX compliance, local calibration and configuration and a base accuracy of +/- 0.075%.

# Pressure
## Gauge Pressure Transmitters

ABB's range of gauge pressure transmitters offers versatility and high accuracy for a wide selection of plant applications, in harsh industrial and hazardous locations. Features include HART communication, PED and ATEX compliance, local calibration and configuration and a base accuracy of +/- 0.075%.

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### Differential Pressure Transmitters

- Maximum static pressure 210 bar
- Output 4 to 20 mA plus HART communication
- Local zero and span adjustment push buttons
- Local write protection and upscale/downscale failure mode selection
- Hazardous area certification ATEX Group II Category 1 GD Intrinsic Safety EEXia
- PED category IV
- Ingress protection IP67
- Epoxy painted aluminium alloy electrical housing with 20 mm connections
- Gasket material Viton
- Bolt material 316 stainless steel
- Diaphragm material 316L stainless steel
- Fill fluid silicone oil
- Process connection material 316L stainless steel
- Process connections: Drilled to suit standard manifold, 1/4" NPT female connection in flange, supplied with 1/2" NPT female adaptors
- Supplied with chrome passivated zinc plated carbon steel 2" pipe mounting bracket

*Dimensions mm (in.)*

**(*) FOR MODEL 264DS**
51 (2.01), 54 (2.13) or 57 (2.24) mm (in) according to 1/2 in 14 NPT adapters
fitting 54 (2.13)mm (in) on 1/4 18 NPT process flange
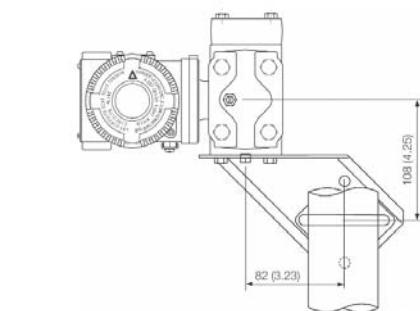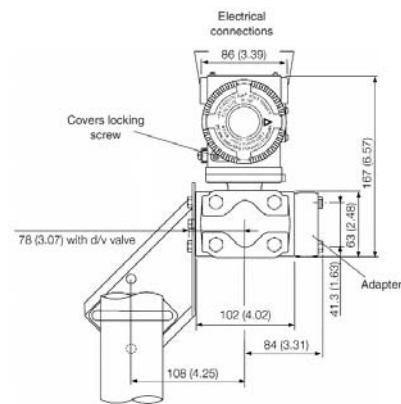
NOTE: Process connection, gasket groove and gaskets are in accordance with DIN 19213. Bolting threads for fixing adapter or other devices (i.e. manifold etc.) on process flange is 7/16 in –20 UNF.

**ATEX CERTIFIED**

#### Ex-stock

| Cat. No. | Description | Price |
|---|---|---|
| 264DSESSB1B1 V1 E1 B1 | Span limits 2.7 and 160 mbar | £953.00 |
| 264DSFSSB1B1 V1 E1 B1 | Span limits 4 and 400 mbar | £881.00 |

#### 5 working days delivery

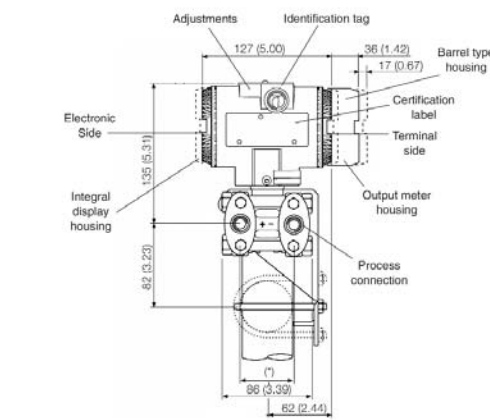| Cat. No. | Description | Price |
|---|---|---|
| 264DSHSSB1B1 V1 E1 B1 | Span limits 16 and 1600 mbar | £881.00 |
| 264DSMSSB1B1 V1 E1 B1 | Span limits 0.06 and 6 bar | £905.00 |

#### Hastelloy C diaphragms NACE process wetted materials (5 working days delivery)

| Cat. No. | Description | Price |
|---|---|---|
| 264DSBSHB1B1 V1 E1 B1 | Span limits 1.34 and 40 mbar | £1112.00 |
| 264DSESHB1B1 V1 E1 B1 | Span limits 2.7 and 160 mbar | £972.00 |
| 264DSFSHB1B1 V1 E1 B1 | Span limits 4 and 400 mbar | £900.00 |
| 264DSHSHB1B1 V1 E1 B1 | Span limits 16 and 1600 mbar | £900.00 |
| 264DSMSHB1B1 V1 E1 B1 | Span limits 0.06 and 6 bar | £924.00 |

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### Gauge Pressure Transmitters

- Output 4 to 20 mA plus HART communication
- Local zero and span adjustment push buttons
- Local write protection and upscale/downscale failure mode selection
- Hazardous area certification ATEX Group II Category 1 GD Intrinsic Safety EEXia
- PED category III
- Ingress protection IP67
- Epoxy painted aluminium alloy electrical housing with 20 mm connections
- Diaphragm material 316L stainless steel
- Fill fluid silicone oil
- Process connection material 316L stainless steel
- Process connection: 1/2" NPT female
- Supplied with chrome passivated zinc plated carbon steel 2" pipe mounting bracket

*Dimensions mm (in.)*

Sensors H, M, P, Q, S

#### Ex-stock

| Cat. No. | Description | Price |
|---|---|---|
| 264HSPSBB1 E1 B1 | Span limits 0.24 and 24 bar | £682.00 |
| 264HSQSBB1 E1 B1 | Span limits 0.8 and 80 bar | £682.00 |

#### 5 working days delivery

| Cat. No. | Description | Price |
|---|---|---|
| 264HSHSBB1 E1 B1 | Span limits 16 and 1600 mbar | £682.00 |
| 264HSMSBB1 E1 B1 | Span limits 0.06 and 6 bar | £682.00 |
| 264HSSSBB1 E1 B1 | Span limits 1.6 and 160 bar | £682.00 |

#### Hastelloy C diaphragms NACE process wetted materials (5 working days delivery)

| Cat. No. | Description | Price |
|---|---|---|
| 264HSHHBB1 E1 B1 | Span limits 16 and 1600 mbar | £682.00 |
| 264HSMHBB1 E1 B1 | Span limits 0.06 and 6 bar | £682.00 |
| 264HSPHBB1 E1 B1 | Span limits 0.24 and 24 bar | £682.00 |
| 264HSQHBB1 E1 B1 | Span limits 0.8 and 80 bar | £682.00 |
| 264HSSHBB1 E1 B1 | Span limits 1.6 and 160 bar | £682.00 |

Order on **ABB's** National Number: **0870 600 6122**

Or from your local **ABB Instrumentation Alliance Partner**
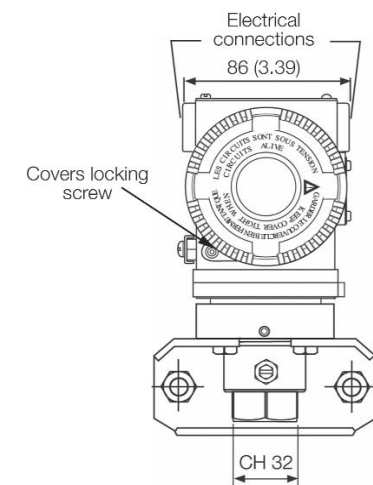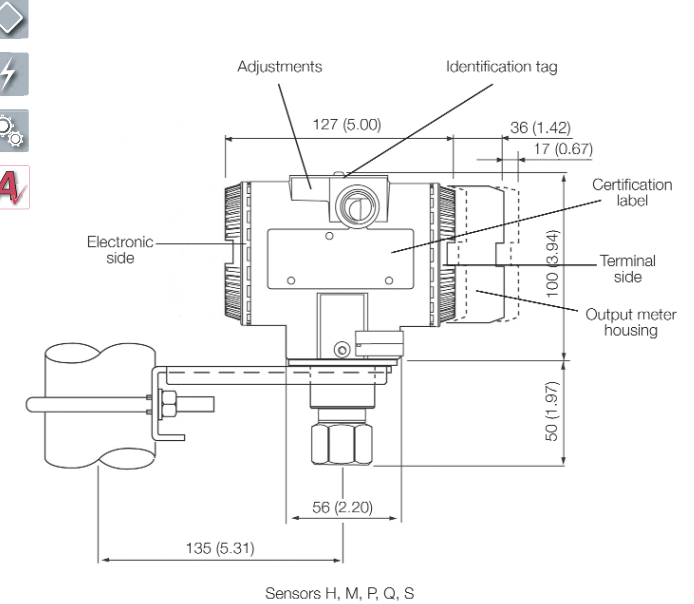
# Pressure
## Differential and Gauge Pressure Accessories

These accessories may be ordered as optional extras to the Differential and Gauge pressure transmitters, by making a change or an addition to the Catalogue No., and noting the additional price. All options are on 5 working days delivery.

# Pressure
## Compact Gauge Pressure Transmitters

ABB's range of gauge pressure transmitters offers versatility and high accuracy for a wide selection of plant applications, in harsh industrial and hazardous conditions. 0PED and ATEX compliant, local calibration and configuration via LCD indicator and a base accuracy of +/- 0.15%.

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### Stainless steel pipe mounting bracket

| Instrument Cat. No. change | Price change to complete instrument |
|---|---|
| Final B1 to B2 | +£18 |

### Hazardous area certification

| Instrument Cat. No. change | Price change to complete instrument |
|---|---|
| E1 to E2 | No charge |

ATEX Group 11Category 1/2 GD Flameproof EExd

⟨Ex⟩ **ATEX CERTIFIED**

| Instrument Cat. No. change | Price change to complete instrument |
|---|---|
| E1 to E3 | No charge |

ATEX Group 11 Category 3 GD Type N EEx nL

⟨Ex⟩ **ATEX CERTIFIED**

### CoMeter output indicator

- Push button configuration of meter or transmitter
- Displays output in engineering units, % or current
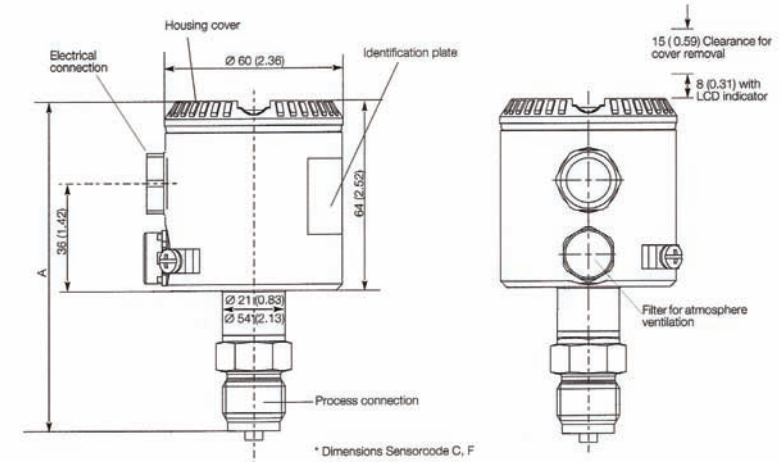- Central 0 to 100 bargraph

### Configurable transmitter functions

- Review configuration
- View variables
- Configure units
- Configure upper and lower range values
- Adjust damping
- Configure square root extraction
- Trim zero
- Loop test
- Re-ranging

| Instrument Cat. No. change | Price change to complete instrument |
|---|---|
| Add D7 to model code | +£182.00 |

### ProMeter output indicator

- Configured by push buttons on meter
- Displays output in engineering units, % or current
- Central 0 to 100 bargraph

| Instrument Cat. No. change | Price change to complete instrument |
|---|---|
| Add D1 to model code | +£140.00 |

### The ABB Compact Gauge Pressure Transmitters

- Output 4 to 20mA plus HART communications
- Local zero and span adjustment push button
- Local write protection and upscale/downscale failure mode selection
- Hazardous area certification ATEX Group II Category 1/2 GD Intrinsic safety EEXia
- PED Category III
- Ingress protection IP67
- 316L stainless steel electrical housing with 20mm connection
- Diaphragm material Hastelloy C276 NACE
- Fill fluid silicone oil
- Process connection material 316L stainless steel NACE
- Process connection: ½ in. NPT female
- LCD indicator and local configurator

#### 261 Compact pressure transmitters

| Cat. No. | Description | Price |
|---|---|---|
| 261 GSDKBNT1 EL L1 AA AB | Span limits 0.50 and 10 bar | £445.00 |
| 261 GSUKBNT1 EL L1 AA AB | Span limits 1.50 and 30 bar | £445.00 |
| 261 GSRKBNT1 EL L1 AA AB | Span limits 5.00 and 100 bar | £445.00 |

**Note: Supplied Process Connection 1/2" NPT Female**
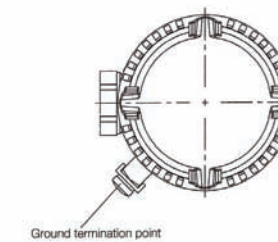
Dimension „A" is dependent upon process connection:

| Process connection | |
|---|---|
| ½–14 NPT male thread | 111 (4.37) |
| ½–14 NPT female thread | 105 (4.17)/(110(4.33) sensor V) |
| DIN EN 837-1 G ½ B | 111 (4.37) |
| DIN EN 837 G ½ B (HP) for convex seal | 121 (4.76)E |

# Pressure
## Other ABB Transmitter Options

ABB can offer the widest choice of pressure transmitter features available on the market, all chosen to fit your specific application. All models are available with 4 – 20 mA, HART, Profibus or Foundation Fieldbus outputs. Call for price and delivery details.

# Pressure
## Other ABB Transmitter Options

For use with the Differential and Gauge Pressure transmitters on previous pages ABB offers high quality three and two valve manifolds. These manifolds have non-rotating, self centering, anti galling spindle tips to give tight shutoff combined with dynamic adjustment of the spindle packing to give leak free spindle sealing.

---
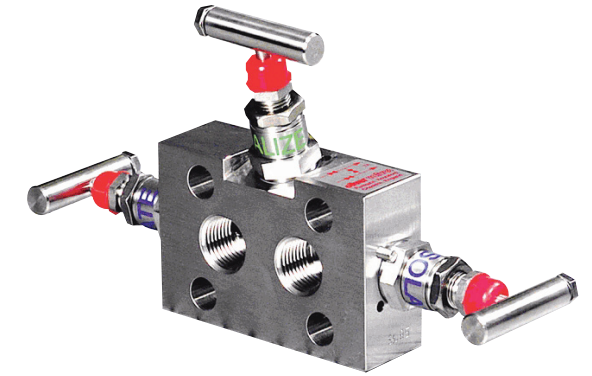
### SIL2 Safety Transmitters

- TUV verified and certified for IEC 61508 S84.01 SIL2 applications
- Hardware and software redundancy
- Can be used in a 1001D configuration in a SIL2 system. In SIL2 applications, a single transmitter provides the same protection as two conventional transmitters in a 1002 configuration
- Reduction in capital, installation, commissioning and operating costs

### Liquid Level Transmitters

For hydrostatic liquid level measurement in open and closed tanks, ABB Liquid Level transmitters provide an accurate volume measurement using a polynomial function for various tank shapes.
- ANSI and DIN standard flanges
- Corrosion resistant metal and Teflon coated diaphragms

### Remote Seal Transmitters

ABB remote seal transmitters provide application solutions for high temperature, high viscosity applications, and where solids are present in the process. The all-welded remote seal system provides high integrity for vacuum applications.
- Wide range of process connections including food and sanitary
- FDA approved fill fluids

### Absolute Pressure Transmitters

ABB absolute Pressure transmitters are available with spans from 2.67 millibar to 420 bar.
- Wide variety of process connections
- Full compliance with PED Category IV Safety Accessory

**A** Applies to all products on this page

### Multivariable Mass Flow Transmitter

The ABB multivariable mass flow transmitter provides mass and volume flow measurement with a wide range of primary flow elements (see p.YY) including orifice plates, Venturi tubes, flow nozzles, and Pitot tubes.
- Differential and absolute pressure plus temperature measurement in a single unit
- Flow compensation based on AGA3 and EN ISO 5167

### Sanitary Process Connections

ABB transmitters with sanitary process connections provide gauge, absolute pressure and liquid level measurement for food and pharmaceutical applications.
- Industry standard Triclamp, DIN 11851 and Cherry Burrell process connections
- Choice of FDA approved fill fluids

### Pulp and Paper Connections

ABB's transmitters with pulp and paper connections provide gauge and absolute pressure measurement for the pulp and paper industries.
- Industry standard 1 in. push fit and 1.5 in. screwed process connections
- FDA approved fill fluid for food packaging applications

### Pressure Transmitter Manifolds

Three Valve Manifold – technical specification
- Maximum working pressure 6000 psi
- Process wetted materials 316 stainless steel
- Valves with PTFE packing and T bar handles
- Process connection 1/2" NPT female
- Instrument connection flanged to suit differential pressure transmitter
- Supplied with 316 stainless steel bolts and PTFE gaskets

*Dimensions in. (mm)*

| Part No. | Description | Price |
|---|---|---|
| Y34S/NA/SSB | Three Valve Manifold | £107.00 |

| Part No. | Description | Price |
|---|---|---|
| G12FMS / NA | Two Valve Manifold | £62.00 |
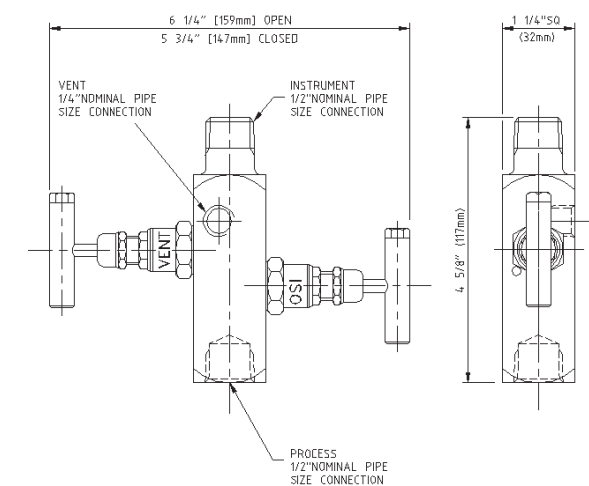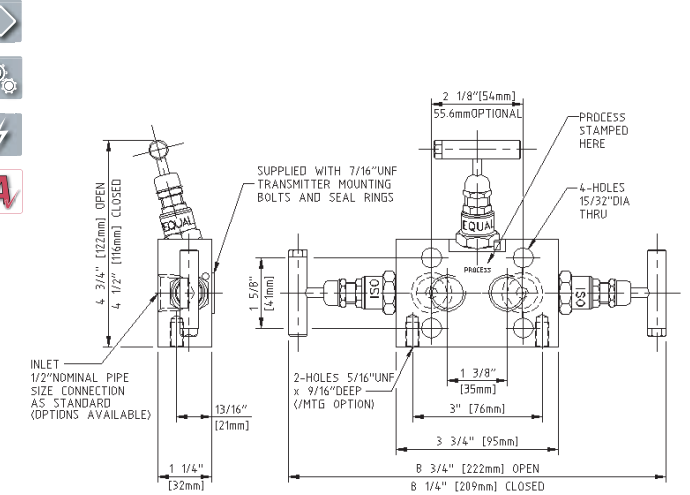
# Flowmeters

ABB is a world leader in flowmeter technologies with one of the widest selections available to meet flow requirements. This stretches from gases and steam through to all kinds of difficult liquids and aggressive fluids – conducting or non conducting. The table below provides a quick selection guide.

# Primary Flow Elements

ABB is the world leader in primary flow elements, with 125 years' experience in unrivalled quality and precision manufacturing. Our global presence means that we have experience in locations from Siberia to the Middle East and the bottom of the North Sea. With the widest selection of materials used in manufacture, ABB flow devices can be matched to an extensive range of process applications and materials.

**Although ABB's Primary Flow Elements are not currently available through Assist Direct, we will be very pleased to provide you with further details on these and other ABB Flowmeters.**

## Flowmeter selection summary

| Fluid Properties | State (Liquid Gas Steam) | Upper viscosity limit (mPas) | Light solids contamination | Solids transport | Elec. Conductivity | Liquid Gas content | Pressure/ density/temp changes | Chemically aggressive fluid, corrosion danger |
|---|---|---|---|---|---|---|---|---|
| **Flowmeter** | | | | | | | | |
| Turbine Meter | L (G) | 700 | U | U | N | Over speed danger | Minimal errors | Nickel rotor, StStl Hsg. Other parts StStl |
| Vortex meter | L,G,S | 10 | N | U | N | Cavitation effects possible | Gas affected | StStl |
| Swirlmeter | L,G,S | 5 | N | U | N | Cavitation effects possible | Liquid no effect | StStl (Hastelloy, PTFE) |
| Diff. Pressure | L,G,S | enquire | Damage to meter edge, plugged pressure lines | U | N | Error | Effect on ΔP | StStl |
| Variable Area | L,G,S | 100(700) | Damage to float edge | U | N | Error | Density changes buoyancy | StStl, Hastelloy, PTFE, Glass |
| Electromagnetic | L | N | N | N | ≥0.05 μs/cm | Error | N | PTFE, Platinum |
| Massmeter coriolis | L (G) | N | Possible, limitations | U | N | Error | Density is measured value | StStl |
| Massmeter thermal | G | N | U | U | N | na | Temperature is a measured value, SensyFlow IG | StStl metering tube |

U = Unsuitable  N = Not affected  StStl = stainless steel  Hsg = housing

ABB Flow Specialists and Alliance partners can provide more assistance with flow technology selection and optimum meter sizing advice.
Engineering Flowmeter Installation and Selection wall charts are also available to assist you. The details of each range of flow technologies from Primary Elements for DP flow, water and waste water electromagnetic flowmeters, and process flow meters follow in this section.
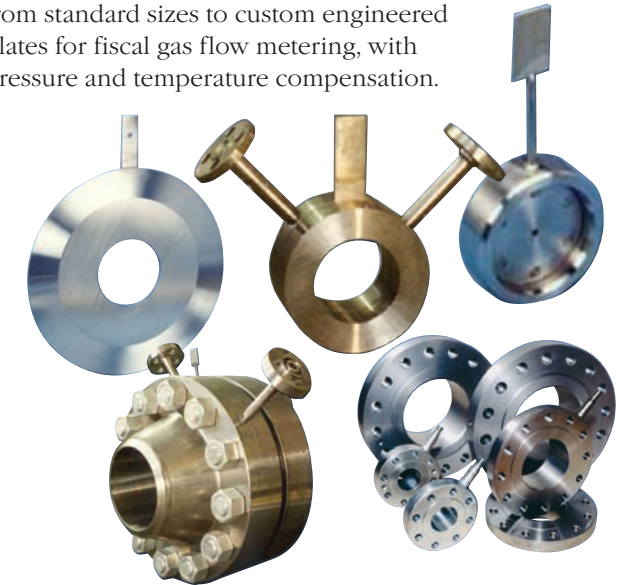
## Averaging Pitot Tube

Lowest installed cost of any primary flow element, and features a very low pressure loss. Capable of measurement at extreme temperatures, and resistant to wear, they are suitable for blower air, cryogenic and steam applications. The ABB Sensybar for volumetric and mass flow is a multi-port, self-averaging flowmeter that can be used for flow in circular or rectangular ducts.

## Flow Nozzles

ABB's three Flow Nozzle variants, ISA (1932), Long Radius and ASME, are ideal for high temperature, high velocity flowmetering duties. Typical uncalibrated accuracies are 0.5% to 2% as per ASME and ISO 5167 respectively.

## Venturi Tubes

Venturi tubes overcome the wear and pressure loss problems of orifice plates, and are thus suitable for high velocity and difficult applications. With a typical uncalibrated accuracy of 1% as per ISO 5167, they are ideal for measurements in large pipe sizes, e.g. for Liquid Natural Gas.
The range also includes a Flow Nozzle variation, which is ideal for steam applications.

## Orifice Plates

Leading industry standards in manufacturing tolerances, ABB Orifice Plates meet ISO 5167 and bore accuracy to the Instrument Society of America Rp 3.2. The range extends from standard sizes to custom engineered plates for fiscal gas flow metering, with pressure and temperature compensation.

## Wedge™ Flow Element

The simple and highly robust Vee-shaped flow restriction design, high accuracy electronic pressure transmitters of the ABB Wedge Flow elements offer high accuracies to 0.5% when factory calibrated to specific customer flow profiles. The meters are bi-directional and require minimum upstream/downstream piping lengths.

# Flow – Water and Waste

## MagMaster™ – Electromagnetic Flowmeter

One of the most versatile and accurate flowmeters in service, the MagMaster is suitable for all water handling applications found in process industry from potable water inflow to process waste water treatment. MagMaster's IP 68 rating and two year warranty permits the sensor to be buried. This eliminates the need for meter pits or chambers and so reduces installation costs. Wide flow range and class-leading accuracy improve control and quality of water supply and water discharge to water courses and treatment works. CalMaster compatible, routine calibration verification to comply with regulatory requirements can be achieved without removing the sensor from service.

*Wall-mount Version*

### Transmitter

- Display: flowrate /total/alarms
- Outputs: 4-20 mA/ pulses/alarms
- Supply: 85-265VAC
- Protection: IP65
- Mounting: remote – wall

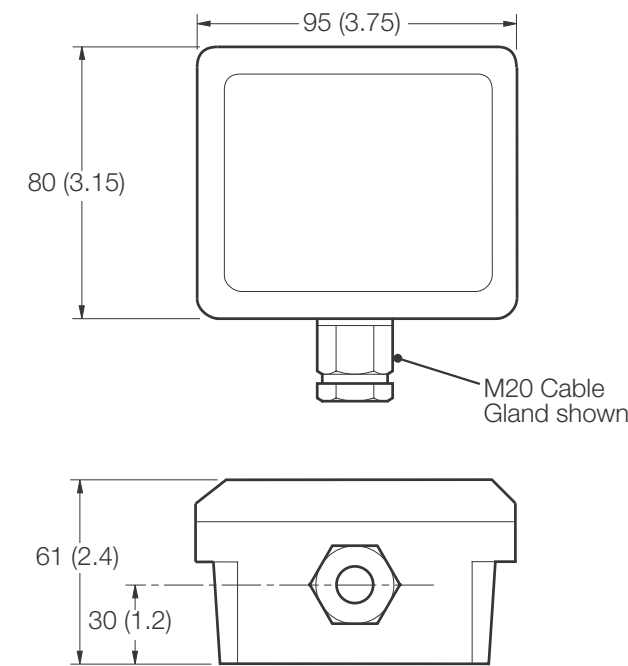### Sensor

- Size range: DN 25 to DN150 (1 to 6in.)
- Connections: flanged NP16, fully rated 16 bar
- Lining: suitable for potable water (WRC listed)
- Electrode: suitable for potable water (WRC listed)
- 1500:1 flow range – class leading and covers minimal night flows
- Accuracy: to 0.15%
- Protection: IP68 – submersible and buriable
- Earthing: inbuilt earth electrode
- Fully CalMaster2 compatible (with integral Fingerprint) – optional extra for regular, no dig recalibration, automatically performed. Factory fitted +/- 1% accuracy, field fitted +/- 2% accuracy
- ABB Service Team can verify MagMaster and AquaMaster using CalMaster2 and produce verification certificates helping UK operators to achieve regulatory compliance

**MagMaster process water and waste, c/w wall-mounted remote transmitter**

| Cat. No. | Description | Price |
|---|---|---|
| MFE 250 | 25mm bore | £1496.00 |
| MFE 500 | 50mm bore | £1593.00 |
| MFE 800 | 80mm bore | £1815.00 |
| MFE 101 | 100mm bore | £1854.00 |
| MFE 151 | 150mm bore | £2020.00 |
| MFE VCM-CHECK2 | CalMaster2 suite CheckMaster Validation Tool | £3745.00 |
| **With CalMaster2 and Fingerprint option** | | Add £109.00 to above prices |

*Dimensions mm (in.)*

95 (3.75)
80 (3.15)
M20 Cable Gland shown
61 (2.4)
30 (1.2)

*Terminal Box – Sensor Mounted*
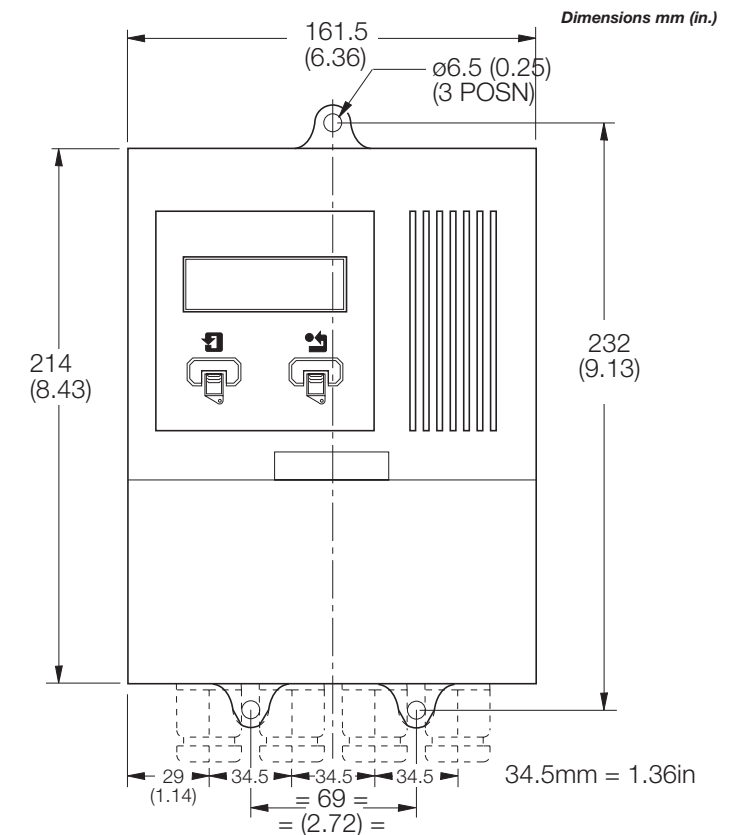
161.5 (6.36)
ø6.5 (0.25) (3 POSN)
214 (8.43)
232 (9.13)
29 (1.14)  34.5  34.5  34.5
= 69 = = (2.72) =
34.5mm = 1.36in
Unit Depth = 70 (2.75)

*Remote Transmitter/Display Unit – Wall Mounting*

A
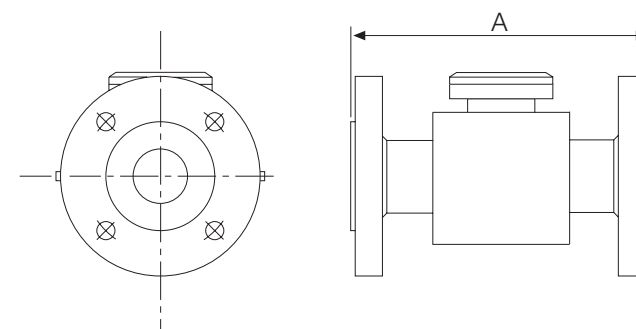
*Overall sensor dimensions*

| Cat. No. | Dim. A mm (in.) | Weight kg (approx.) |
|---|---|---|
| MFE 250 | 200 (7.9) | 7 |
| MFE 500 | 200 (7.9) | 9 |
| MFE 800 | 200 (7.9) | 18 |
| MFE 101 | 250 (9.8) | 24 |
| MFE 151 | 300 (11.8) | 38 |

| Cat. No. | Flow Range m³/hr | Weight kg (approx.) |
|---|---|---|
| MFE 250 | 0.014 | 17 |
| MFE 500 | 0.053 | 71 |
| MFE 800 | 0.136 | 181 |
| MFE 101 | 0.21 | 283 |
| MFE 151 | 0.47 | 640 |

# Flow – Water and Waste
## Aquaprobe™ Insertion Electromagnetic Flowmeter

The AquaProbe offers an economic alternative to a full-bore conventional magnetic flowmeter. The meter may be used in a wide range of applications from permanent installations where space is restricted through to temporary site surveying of existing meters. Unit complies with the latest WRAS potable water requirements.

### Aquaprobe™ Insertion Electromagnetic Flowmeter

The AquaProbe combines sensor and remote electronic display unit, which gives added flexibility, functions and diagnostics not found on integrated probe solutions.

- Fully submersible sensor to IP68
- Accuracy +/- 2% over wide operating range
- No moving components
- Bi-directional flow
- Hot Tap capability with line at operating pressure
- Mains powered 85v to 265V AC
- Nominal bore 200mm to 800mm
- Fits any installation with 1 in. and 1½ in. BSP (1 in. NPT) and gate valve for isolation
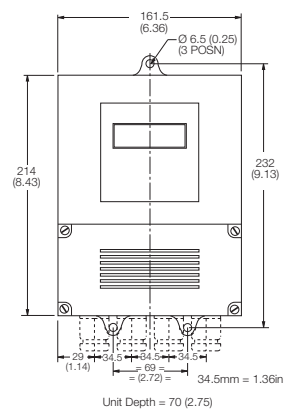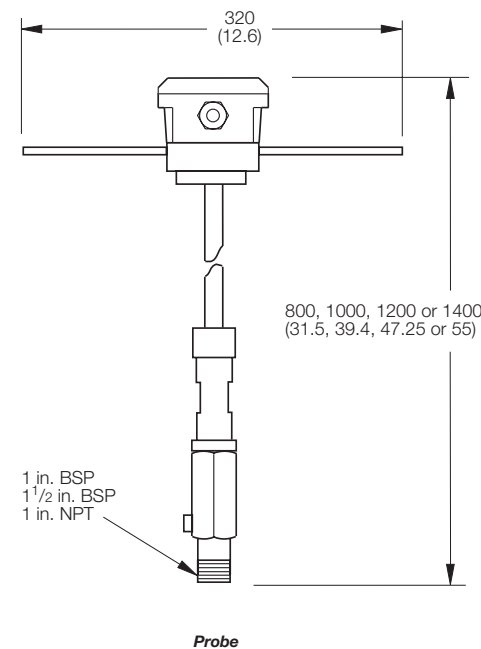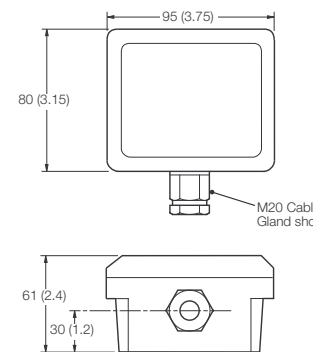
#### AquaProbe assembly

| Cat. No. | Description | Price |
|----------|-------------|-------|
| MFA 70 | 700mm probe, C/W potted cable, AquaMaster Transmitter with display , 300mm insert | From £2490.00 |

**Dimensions mm (in.)**

320 (12.6)

800, 1000, 1200 or 1400 (31.5, 39.4, 47.25 or 55)

1 in. BSP
1¹/₂ in. BSP
1 in. NPT

*Probe*

161.5 (6.36)
Ø 6.5 (0.25) (3 POSN)
214 (8.43)
232 (9.13)
29 (1.14) 34.5 34.5 34.5
69 = (2.72) = 34.5mm = 1.36in
Unit Depth = 70 (2.75)

**IP65/NEMA4X Electronic Display Unit**

95 (3.75)
80 (3.15)
M20 Cable Gland short
61 (2.4)
30 (1.2)

**Terminal Box – Probe Mounted**

# Flow – Water and Waste
## Flowmeters

For virtually any liquid, steam, gas or slurry there is a cost-effective flowmeter solution from ABB. With the widest choice of techniques available, only ABB can offer you unbiased advice on the right flowmeter for your application. With the Assist Alliance, you are supported by a team of skilled and experienced flowmeter specialists with extensive knowledge and wide-ranging applications expertise. For water and waste water flowmetering, ABB meters cover the complete range of applications. Our meters for utilities water and waste have been trusted by the water services industry for decades, with instruments for mains and revenue metering duties.

### AquaMaster™ for revenue and district water metering

AquaMaster has unsurpassed high accuracy over a very wide flow range, so it is ideal for monitoring water flow in revenue applications, where undetected low flows and leaks can lead to significant losses. Adapted to the demands of the water industry, AquaMaster is available in battery-powered and mains powered versions. The latest AquaMaster S can be supplied with integral data loggers and GMS-SMS transmission technology, ideal for remote locations.

### PARTI-MAG II sensor for partially filled pipes

PARTI-MAG II is designed to provide high accuracy measurements in partially filled or filled waste water and combined waste water discharges, and many years of use has confirmed its technical superiority.

### CalMaster2™ in-situ calibration verification

The CalMaster2 suite is available either with CheckMaster validation tool for contractor/end user use or CalMaster2 IRIS verification services carried out by skilled ABB Service Engineers.

**For more information about any of the above Flowmeter products, please call your local Instrumentation Alliance Partner.**

For primary flow elements with differential pressure sensing – orifice plates, pitot tubes, flow nozzles, Venturi tubes and Wedge™ flow elements – please see page 33.

For a wide range of process plant and ATEX certified flowmeters, please see pages 39 to 47.

# Flow – Water and Waste
## Flow Calibration Centres

ABB operates a unique and world-leading flow calibration and development centre located at Stonehouse, Gloucestershire and a facility in Workington. These facilities are not only used for development and calibration of ABB's range of flowmeters, but are also United Kingdom Accreditation Service (UKAS) Accredited Calibration Laboratories (No. 0225), and are calibrated every two months.

### Large flow facility

The world's largest continuous flow facility, this is the keystone of ABB's global flow calibration capability and accredited to international flow standards. It has a flow capacity from 7 to 2700 l/sec, and a meter size capacity from 300 to 3000mm bore. It is operated from three work centres with de-aerated water continuously circulated from a 1 million cubic metre sump (Olympic swimming pool size).

### Small flow facility

The small flow facility has a flow capacity from 0.001 to 120 l/sec, a meter size capacity from 40mm to 300mm and the only rigs in the world capable of calibrating at 5mm/sec. Computer controlled from five work centres, it uses master meters checked with primary weigh scales for continuously repeatable and transferable results.

### Money-saving flow calibration and recalibration services

As well as conducting the pre-delivery flow calibration services offered on many flow products, ABB makes its cost-effective flow calibration services available to the manufacturers and operators of flowmeters, pumps, valves, pipeline and hydraulic equipment. Routine recalibration of public utility or industrial flowmeters, is another service offered to help maintain peak efficiency and accuracy.

### Dedicated flow repair and recalibration facility

The ABB Workington site operates dedicated flow calibration test facilities specifically tailored to recalibration of existing flowmeter systems. UKAS traceable recalibrations are offered on both ABB and third party flowmeters across many technologies, from variable area, electro-magnetic and vortex to turbine and venturi. On site facilities range from DN1 to DN600 bore size, with larger units > DN600 being calibrated at our Stonehouse site.

In addition to flow calibration and repair, temperature and pressure calibration and repairs are also offered at Workington. For more details, contact the Calibration & Repair Centre on 01946 830 611. Alternatively CalMaster2 is available for on-site verification.

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# Flow – Process
## FXL5000 Miniflow Electromagnetic Flowmeter

For applications that require a low cost, simple metering solution, ABB offers the new Miniflow range of electro-magnetic flowmeters. This range combines a much simplified design comprising a moulded plastic primary element together with a new miniature electronics package, resulting in an extremely small and lightweight instrument. Threaded process connections are available as ISO 228 or NPT standard. Minimum liquid conductivity limit is 50 uS/cm.

### FXL5000 Miniflow Electromagnetic Flowmeter

- Size range DN10 to DN50
- Connection sizes G $3/4$" to G $2 3/4$" [3/4" NPT to $2 1/2$" NPT]
- Thread adaptors available on request
- 24v AC / DC operation
- Power and output connections via two external connectors
- Standard accuracy class 3% of actual reading. 1.5% possible at additional cost
- Display showing flowrate and totaliser in various engineering units
- Set-up by integral display and keypad – no requirement for external PC or configuration unit
- Integral grounding electrode fitted as standard
- Liner in PEEK or PVDF (PVDF for DN50 only)
- Hastelloy C-4 electrodes
- 4 to 20 mA and pulse output available
- Lower cost versions without display or mA output available(e.g. for flow switching applications)
- Catalogue prices include standard UK delivery
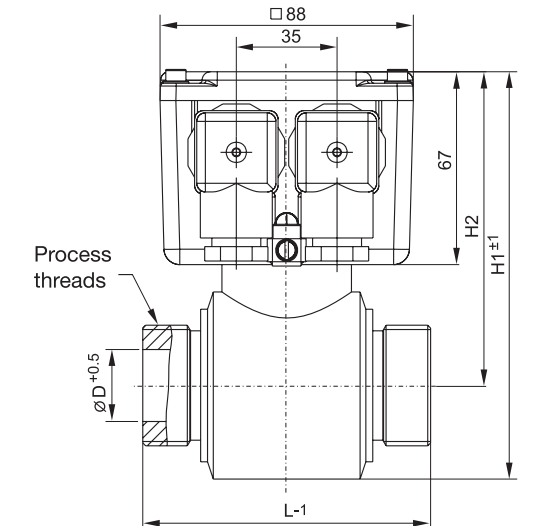
| Cat. No. | Description | Price |
|---|---|---|
| FXL5000 electromagnetic flowmeter | PEEK liner, Hast. C electrodes, mA and pulse o/p | |
| XL010NPT | 10mm NPT $3/4$" | £707.00 |
| XL015NPT | 15mm NPT $3/4$" | £747.00 |
| XL025NPT | 25mm NPT $1 1/4$" | £786.00 |

Delivery time 2 to 3 weeks from order receipt.

### FXL5000 Dimensions

| | | Threaded conns. per ISO 228 | NPT | Dimensions | | | | Weight kg |
|---|---|---|---|---|---|---|---|---|
| d inside mm | In. | Ext. conn. threads | Ext. conn. threads | L | D1 | H1 | H2 | |
| 10 | 0.4 | G$3/4$ in. | NPT $3/4$ in. | 85 | 53 | 127 | 100 | 0.8 |
| 15 | 0.6 | G$3/4$ in. | NPT $3/4$ in. | 85 | 53 | 127 | 100 | 0.85 |
| 25 | 1.0 | G $1 1/4$ in. | NPT $1 1/4$ in. | 100 | 64 | 142 | 109 | 0.9 |
| 50 | 2.0 | G $2 1/2$ in. | NPT $2 1/2$ in. | 130 | 92 | 171 | 125 | 1.4 |
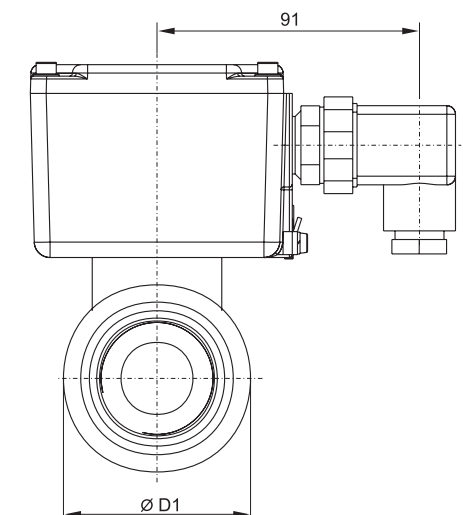
# Flow – Process
# COPA-XE/ MAG-XE™ – Electromagnetic Flowmeters

For a wide range of process flow applications, the **COPA-XE/MAG-XE** flowmeter provides a compact, cost-effective solution in an extensive selection of sizes. The **COPA-XE** (head mounted converter) and MAG-XE (remote/panel mounted converter) conform to all the requirements of the Pressure Equipment Directive for process flow. The simple to operate converter ensures rapid commissioning, and may be ordered as HART, PROFIBUS or FOUNDATION Fieldbus compatible. The flowmeter can also be configured using Smart Vision® (see page 66), or by local internal pushbuttons and display, requiring no additional configuration tools.

## COPA-XE/ MAG-XE™ Electromagnetic Flowmeters

- High accuracy class of 0.5% of actual reading
- Corrosion resistant PTFE lining (alternatives available on request)
- Hastelloy C electrodes (alternatives available on request)
- Carbon steel flanges
- PN16 or ANSI 150lb flanges (alternatives available on request)
- IP67 environmental protection
- Integral display and programming pushbuttons – no need for external configuration tools or PC
- Analogue and pulse outputs as standard
- Universal AC supply 85 to 256 V
- ATEX certified hazardous area versions available
- Catalogue prices include standard delivery

Number of Holes N
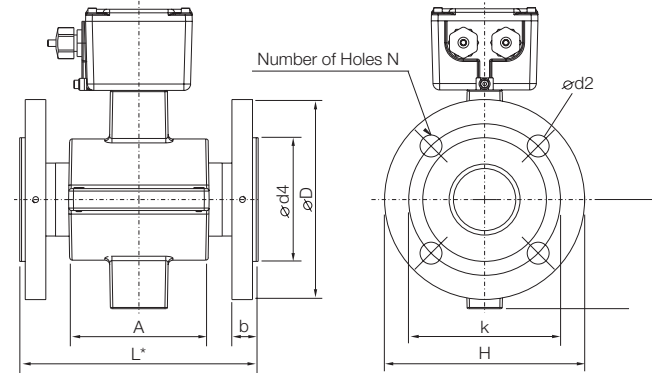
*(N.B. Drawing shows remote converter option only)*

### Copa-XE flowmeter. PTFE liner, Hast. C electrodes, mA and pulse output

| Cat. No. | Description | Price |
|---|---|---|
| XE015D | 15mm, PN16 flanges | £1641.00 |
| XE015A | 15mm, ANSI 150lb flanges | £1641.00 |
| XE025D | 25mm, PN16 flanges | £1686.00 |
| XE025A | 25mm, ANSI 150lb flanges | £1686.00 |
| XE050D | 50mm, PN16 flanges | £1743.00 |
| XE050A | 50mm, ANSI 150lb flanges | £1743.00 |
| XE080D | 80mm, PN16 flanges | £1789.00 |
| XE080A | 80mm, ANSI 150lb flanges | £1789.00 |
| XE100D | 100mm, PN16 flanges | £1917.00 |
| XE100A | 100mm, ANSI 150lb flanges | £1953.00 |
| XE150D | 150mm, PN16 flanges | £2177.00 |
| XE150A | 150mm, ANSI 150lb flanges | £2248.00 |

Some models available from stock. Please contact your local ABB Alliance Partner or ABB sales office for availability.

### MAG-XE flowmeter

| Cat. No. | Description | Price |
|---|---|---|
| XE015DR | 15mm, PN16 flanges | £1915.00 |
| XE015AR | 15mm, ANSI 150lb flanges | £1915.00 |
| XE025DR | 25mm, PN16 flanges | £1960.00 |
| XE025AR | 25mm, ANSI 150lb flanges | £1960.00 |
| XE050DR | 50mm, PN16 flanges | £2016.00 |
| XE050AR | 50mm, ANSI 150lb flanges | £2016.00 |
| XE080DR | 80mm, PN16 flanges | £2063.00 |
| XE080AR | 80mm, ANSI 150lb flanges | £2063.00 |
| XE100DR | 100mm, PN16 flanges | £2190.00 |
| XE100AR | 100mm, ANSI 150lb flanges | £2226.00 |
| XE150DR | 150mm, PN16 flanges | £2449.00 |
| XE150AR | 150mm, ANSI 150lb flanges | £2520.00 |

## Typical Magmeter Dimensions (in mm for indication only, not certified)

### Magmeter din flange

| DN | PN | D/H | d4 | b | k | d2 | N | A | L* | L(2) | L(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 10-40 | 95 | 45 | 18 | 65 | 14 | 4 | 67 | 200 | 203 | 206 |
| 25 | 10-40 | 115 | 68 | 20 | 85 | 14 | 4 | 87 | 200 | 203 | 206 |
| 50 | 10-40 | 165 | 102 | 21 | 125 | 18 | 4 | 116 | 200 | 203 | 206 |
| 80 | 10-40 | 200 | 138 | 27 | 160 | 18 | 8 | 100 | 200 | 203 | 206 |
| 100 | 10-16 | 220 | 158 | 23 | 180 | 18 | 8 | 130 | 250 | 253 | 256 |
| | 25-40 | 235 | 162 | 27 | 190 | 22 | | | | | |
| 150 | 10-16 | 285 | 212 | 25 | 240 | 22 | 8 | 170 | 300 | 305 | 310 |
| | 25-40 | 300 | 218 | 31 | 250 | 26 | | | | | |
| 200 | 10 | 340 | 268 | 28 | 295 | 22 | 8 | 195 | 350 | 355 | 360 |
| | 16 | | | | | | 12 | | | | |
| 250 | 10 | 395 | 320 | 30 | 350 | 22 | 12 | 250 | 450 | 455 | 460 |
| | 16 | 405 | | | 355 | 26 | | | | | |
| 300 | 10 | 445 | 370 | 31 | 400 | 22 | 12 | 250 | 500 | 505 | 510 |
| | 16 | 460 | 378 | 33 | 410 | 26 | | | | | |

### Magmeter ANSI flange

| Meter size | | Flange Dimensions ANSI CL 150 | | | | | | Instrument Dimensions | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | L* | |
| DN | Inch | D/H | d4 | b | k | d2 | N | A | ABB (Ser.1000) | E |
| 15 | 3/8, 1/2 | 89 | 35 | 13 | 60 | 16 | 4 | 67 | 270 | 101 |
| 25 | 1 | 108 | 51 | 16 | 80 | 16 | 4 | 87 | 270 | 112 |
| 50 | 2 | 152 | 92 | 21 | 121 | 19 | 4 | 116 | 280 | 129 |
| 80 | 3 | 191 | 127 | 26 | 153 | 19 | 4 | 100 | 340 | 159 |
| 100 | 4 | 229 | 157 | 26 | 191 | 19 | 8 | 130 | 400 | 179 |
| 150 | 6 | 279 | 216 | 30 | 241 | 22 | 8 | 170 | 450 | 190 |
| 200 | 8 | 343 | 270 | 34 | 298 | 22 | 8 | 195 | 500 | 222 |
| 250 | 10 | 406 | 324 | 35 | 362 | 25 | 12 | 250 | 550 | 250 |
| 300 | 12 | 483 | 381 | 37 | 432 | 26 | 12 | 250 | 620 | 293 |

# Flow – Process
## COPA-XT™ Two Wire Electromagnetic Flowmeters

Volume flow rates of media such as sludges, slurries and liquids can be accurately measured with the **COPA-XT electromagnetic flowmeter**. A highly competitive two-wire design, it does not require a separate power cable as it draws energy from the 4 – 20 mA signal. The low power usage of only 0.5W ensures low running costs, and being truly two-wire loop powered, installation costs are also low.

### COPA-XT™ Two-wire Electromagnetic Flowmeters

- Suitable for liquid volumetric flow measurement
- Suitable for aggressive liquids up to 130°C continuous operating temperature
- Accurate and reliable, intelligent two-wire technology
- HART communication as standard
- Minimum fluid conductivity 50 µS/cm
- Flow rates from 0 – 45 l/min (DN10) to 0 – 240 m³/hr (DN100)
- ATEX certified hazardous area versions available

#### COPA-XT flowmeter PTFE liner / Hastelloy C electrodes – NON-HAZARDOUS AREA DESIGN

| Cat. No. | Description | Price |
|---|---|---|
| XT010D | DN 10, PN40 flange | £1641.00 |
| XT015D | DN 15, PN40 flange | £1641.00 |
| XT020D | DN 20, PN40 flange | £1641.00 |
| XT025D | DN 25, PN40 flange | £1686.00 |
| XT032D | DN 32, PN40 flange | £1699.00 |
| XT040D | DN 40, PN40 flange | £1724.00 |
| XT050D | DN 50, PN40 flange | £1743.00 |
| XT065D | DN 65, PN40 flange | £1762.00 |
| XT080D | DN 80, PN40 flange | £1789.00 |
| XT100D | DN 100, PN16 flange | £1917.00 |

Delivery 6 weeks from order receipt

# Flow – Process
## FSM4000 Electromagnetic Flowmeters

Flow rate measurement of difficult process liquids, for example high consistency paper pulp, can be accurately performed with the **FSM4000 electromagnetic flowmeter**. It is designed to operate efficiently with high pulp consistencies, liquids exhibiting high electro-chemical noise and high solid content pastes and slurries. New sensor technology and high gain, digital signal processing ensure unsurpassed accuracy, even with pulsating and rapidly changing processes. Set up is easy, and integrated diagnostic tools aid improved reliability and ease commissioning.

### FSM4000 Electromagnetic Flowmeters

- High accuracy class of 0.5% of actual reading
- Paper pulps and slurries, up to 15% consistency
- Temperature range –40° to +130°C
- Minimum electrical conductivity 20 µS/cm (0.5 µS/cm available with pre-amplifier)
- Rapid start-up with 'Easy set-up' menu
- Special software to accommodate 'piston pump' operation included as standard
- Empty pipe detection included as a standard feature
- Fully configurable via the front panel keypad / display – no handheld terminal or PC needed
- Universal mains power supply
- Low voltage power (24v AC / DC) available on request
- HART version available
- Size range from DN1 to DN2000
- Various flanged ratings available, DIN, ANSI, etc.
- Stainless steel versions available with food / pharmaceutical fittings available
- Standard delivery included in catalogue price

#### FSM4000 electromagnetic flowmeter PTFE, Hast. C electrodes, DIN PN16 flanges (INDUSTRIAL DESIGN)

| Cat. No. | Description | Price |
|---|---|---|
| SM050D | 50mm | £2943.00 |
| SM100D | 100mm | £3068.00 |
| SM150D | 150mm | £3500.00 |
| SM200D | 200mm | £3846.00 |
| SM250D | 250mm | £5100.00 |

Delivery 4 to 6 weeks from order
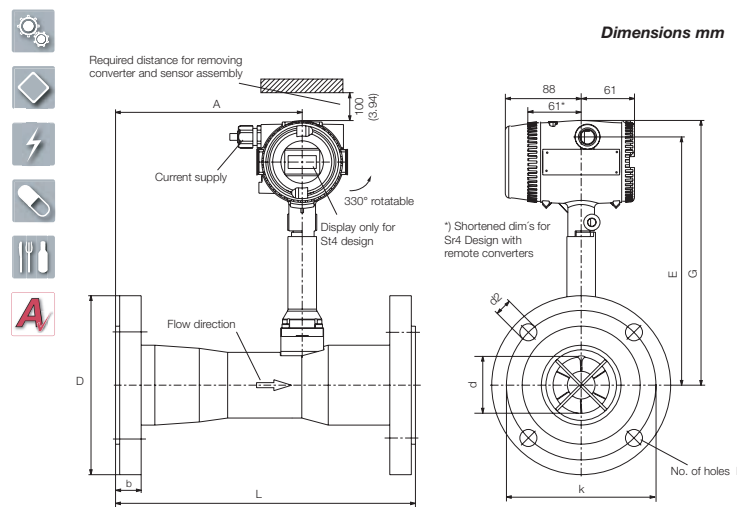
# Flow – Process

## FVT 4000™ Vortex Flowmeter / FST4000™ Swirl Flowmeter

ABB FVT 4000 vortex meters and FST 4000 swirl meters are designed to measure the volume flow rate of steam, gases and liquids over a wide range of flow rates, independent of the fluid properties. Suitable for non-hazardous and hazardous area use, the flowmeters also include Pt100 temperature sensors, enabling them to be used for temperature monitoring. The inclusion of internal steam table software, as standard, means that mass flow measurement of saturated steam can easily be achieved without the requirement for an external flow computer. The two-wire design ensures easy installation and low energy usage.
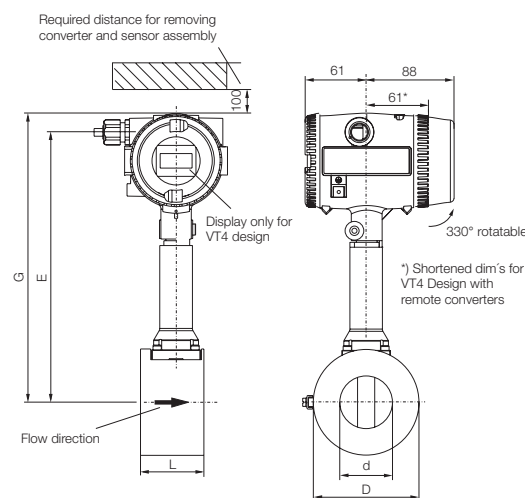
### FVT 4000™ Vortex Flowmeter / FST4000™ Swirl Flowmeter

- Liquid flow range 0.5 m³/hr to 2400 m³/hr across size range
- Gas flow range 4 m³/hr to 10,000 m³/hr across size range
- Available in size range 15 to 300mm (vortex) and 15 to 400mm (swirl)
- Stainless steel and kalrez wetted parts (alternatives available on request)
- Wafer style ANSI 150lb or DIN (FVT 4000) and DIN flange (FST 4000) connections
- Flanged version of FVT 4000 available
- Integral Pt100 sensor option for direct mass flow measurement of steam (additional cost)
- Integral electronics and flow indication
- 2 wire device with HART communications
- Very short conditioning pipework lengths required for Swirlmeter design (typically less than 3 diameters upstream, 2 diameters downstream)
- Standard delivery included in price of catalogue items
- ATEX certified hazardous area versions available

**ATEX CERTIFIED**

| Cat. No. | Description | Price |
|---|---|---|
| **VT 4000 vortex flowmeter** | Non-hazardous area vortex meter | |
| VT015 AW or DW | 15mm wafer ANSI 150 or PN40 | £1192.00 |
| VT025 AW or DW | 25mm wafer ANSI 150 or PN40 | £1192.00 |
| VT050 AW or DW | 50mm wafer ANSI 150 or PN40 | £1231.00 |
| VT080 AW or DW | 80mm wafer ANSI 150 or PN40 | £1279.00 |
| VT100 AW or DW | 100mm wafer ANSI 150 or PN16 | £1392.00 |
| VT150 AW or DW | 150mm wafer ANSI 150 or PN16 | £2006.00 |

| Cat. No. | Description | Price |
|---|---|---|
| **ST 4000 swirl flowmeter** | Non-hazardous area swirl meter | |
| ST015D | DIN 15mm flanged PN40 | £1940.00 |
| ST025D | DIN 25mm flanged PN40 | £1990.00 |
| ST050D | DIN 50mm flanged PN40 | £2032.00 |
| ST080D | DIN 80mm flanged PN40 | £2239.00 |
| ST100D | DIN 100mm flanged PN16 | £2435.00 |
| ST150D | DIN 150mm flanged PN16 | £4131.00 |

Delivery 6 to 8 weeks, some models in stock

**Dimensions mm**



*Swirl Flowmeter FS4000-ST4/SR4 dimensions*



*Vortex Flowmeter FV4000-VT4/VR4 dimensions*

### Swirl Flowmeter FS4000-ST4/SR4 Dimensions

| Meter size DN | Pressure rating PN | L(1) | G | E | A | D | k | d2 | d | b | N | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 10-40 | 200 | 319 | 300 | 83 | 95 | 65 | 14 | 17.3 | 16 | 4 | 5.8 |
| 25 | 10-40 | 150 | 321 | 302 | 67 | 115 | 85 | 14 | 28.1 | 18 | 4 | 3.5 |
| 50 | 10-40 | 200 | 326 | 307 | 106 | 165 | 125 | 18 | 51.1 | 20 | 4 | 7.2 |
| 80 | 10-40 | 300 | 329 | 310 | 159 | 200 | 160 | 18 | 82.6 | 24 | 8 | 12.2 |
| 100 | 10-16 | 350 | 333 | 314 | 189 | 220 | 180 | 18 | 101.1 | 22 | 8 | 14.2 |
| | 25-40 | | | | | 235 | 190 | 22 | 101 | 24 | | 18 |
| 150 | 10-16 | 480 | 357 | 338 | 328 | 285 | 240 | 22 | 150.1 | 28 | 8 | 28.5 |
| | 25-40 | | | | | 300 | 250 | 26 | | | | 34.5 |

### Vortex Flowmeter FV4000-VT4/VR4 Water Design Dimensions

| Meter size | Pressure rating | L +/- 0.5 | | E | D | G | d | Weight kg |
|---|---|---|---|---|---|---|---|---|
| DN | PN | Tmax 280°C | Tmax 400°C | | | | | |
| 15 | 10-64 | 65 | na | 278 | 55 | 297 | 17.3 | 4.2 |
| 25 | 10-64 | 65 | 65 | 274 | 73 | 293 | 28.5 | 4.1 |
| 50 | 10-64 | 65 | na | 298 | 109 | 317 | 54.4 | 5.6 |
| 80 | 10-40 | 65 | 65 | 312 | 144 | 331 | 82.4 | 7.6 |
| 100 | 10-40 | 65 | 65 | 320 | 164 | 339 | 106.8 | 8.5 |
| 150 | 10-40 | 65 | 65 | 352 | 220 | 371 | 159.3 | 13 |

| Meter size | Pressure rating | | L +/- 0.5 | E | D | G | d | Weight kg |
|---|---|---|---|---|---|---|---|---|
| inch | CL | Schedule | Tmax 280°C | | | | | |
| 1/2 | 150 | 40 | 112.5 | 278 | 52 | 297 | 15.7 | 4.5 |
| 1 | 150 | 80 | 112.5 | 284 | 70.5 | 303 | 24.3 | 5.1 |
| 1 1/2 | 150 | 80 | 113 | 290 | 89.5 | 309 | 38.1 | 6.1 |
| 2 | 150 | 80 | 112.5 | 296 | 106.5 | 315 | 49.2 | 8.4 |
| 3 | 150 | 80 | 111 | 312 | 138.5 | 331 | 73.7 | 11.2 |
| 4 | 150 | 80 | 116 | 325 | 176.5 | 344 | 97.2 | 17.2 |
| 6 | 150 | 80 | 137 | 352 | 222.2 | 371 | 146.4 | 25.7 |

All dimensions in mm

## More Process Flowmeters from ABB

### Digital Trio-mass coriolis mass flowmeters

A wide range of digital coriolis mass flowmeters are available in size ranges from 1.5mm diameter to 150mm diameter with Hastelloy C and stainless steel options for different process fluids. The robust design ensures very high accuracy and insensitivity to pipe stresses and vibrations.

### Thermal mass flowmeters

The thermal mass flowmeter range is available for direct mass flow measurement of gases.

# Flow – Process
## ATEX Certified Flowmeters



**ATEX CERTIFIED**

### ATEX Certified Flowmeters

Each of these ABB flowmeters is available with full ATEX certification for use in the specified hazardous area zones.

Order by phone, state the standard size you require, also specify the ATEX certified model and ask for a quotation and delivery date.

COPA-XE / MAG-XE, ATEX Zones 1 / 2 (page 44).

COPA-XT, ATEX Zones 1 / 2 (page 26).

PartiMag II, ATEX Zones 1 / 2 – flowmeter for partially filled pipelines not shown in catalogue.

FVT 4000 / FST 4000 vortex / swirl, ATEX Zones 1 / 2 (page 38).

For ATEX Zones 1 / 2, ABB can offer a combination Primary Flow Element (page 27) and ATEX certified Differential PressureTransmitter (page 22).

Sensyflow Thermal Mass meters
for gas mass measurement,
ATEX zone not shown in catalogue.

AM54 series metal tube variable area flowmeters.
ATEX Zones 1 / 2, not shown in catalogue.

*COPA-XE*

*MAG-XE*

*COPA-XT*

*FVT/FST 4000*

*Orifice Plates*

# Flow – Process
## Variable Area Flowmeters

Proven and inexpensive – ABB Variable Area Flowmeters.  For the measurement of gases, liquids and steam at low flow rates, a large range of models assure that there is a suitable flowmeter for every application.  The series starts with the A6100 Purgemaster® which can be used to measure the low flow rates in bubbler applications or for laboratory flow measurements. It continues with an extensive selection of glass tube flowmeters and finishes with metal tube flowmeters – available as simple indicators or models with two-wire transmission.  Metal tube flowmeters are especially well suited for use with aggressive or opaque liquids and for steam measurements.
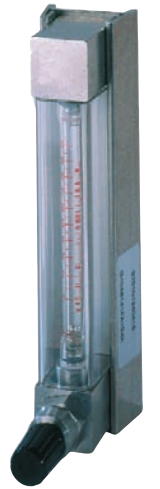
### Purgemaster® Variable Area Flowmeters

- Corrosion resistant, high strength, stainless steel body
- Polycarbonate safety shield to protect operator against tube breakage
- Borosilicate glass tube, resistant to practically all fluids
- Snap-in technology facilitates glass changing for cleaning / scale changing, minimises down time
- Flow ranges: water –  0.05 to 2300 m³/min
  air – 4.8 to 69200 m³/min
- Rangeability = 10:1
- Scale: % or direct reading
- Operating range: 0 to 150°C

| Meter series | Process fluid | Range | Model code | Connection rating | Price |
|---|---|---|---|---|---|
| AM54 armoured VA | Water | 10 - 100 l/hr | AM54071DL03 | Flanged PN40 | £397.00 |
| AM54 armoured VA | Water | 1 - 10 m³/hr | AM54071DL12 | Flanged PN40 | £554.00 |
| AM54 armoured VA | Air | 0.25 - 2.75 Nm³/hr | AM54071DG02 | Flanged PN40 | £445.00 |
| AM54 armoured VA | Air | 10 - 120 Nm³/hr | AM54071DL10 | Flanged PN40 | £609.00 |
| | | | | | |
| 10A3200 armoured VA | Water | 1 - 10 l/hr | D10A32230L04 | 1/4" NPTi | £226.00 |
| 10A3200 armoured VA | Water | 40 - 250 l/hr | D10A32230L04 | 1/2" NPTi | £346.00 |
| 10A3200 armoured VA | Air | 16 - 96 Nl/hr | D10A32230L04 | 1/4" NPTi | £226.00 |
| 10A3200 armoured VA | Air | 800 - 4800 Nl/hr | D10A32230L04 | 3/8" NPTi | £296.00 |
| 10A3200 armoured VA | Air | 2000 - 23000 Nl/hr | D10A32230L04 | 1/2" NPTi | £386.00 |
| | | | | | |
| 10A6100 glass VA | Water | 0.8 - 5.4 l/hr | 10A61410L01 | 1/4" NPTi | £151.00 |
| 10A6100 glass VA | Water | 15 - 105 l/hr | 10A61410L01 | 1/4" NPTi | £156.00 |
| 10A6100 glass VA | Air | 0.4 - 3.4 Nl/min | 10A61410L01 | 1/4" NPTi | £151.00 |
| 10A6100 glass VA | Air | 4 - 38 Nl/min | 10A61410L01 | 1/4" NPTi | £151.00 |
| | | | | | |
| 10A3500 glass VA | Water | 16 - 200 l/hr | A3554A1A1L | BSPT | £229.00 |
| 10A3500 glass VA | Water | 120 - 1500 l/hr | A3554A1A2L | BSPT | £241.00 |
| 10A3500 glass VA | Air | 0.64 - 8.02 Nm³/hr | A3554A1A1G | BSPT | £229.00 |
| 10A3500 glass VA | Air | 4.3 - 54 Nm³/hr | A3554A1A2G | BSPT | £241.00 |

For full specifications please contact ABB

# Controllers

## Single Loop Controllers – Process and Motorised Valve

**COMMANDER 100 1/8 DIN Universal Process Controller**
The C100 is a basic, general-purpose single-loop controller suitable for most industries including pulp & paper, mining & metals, consumer food and heat treatment. One model for all applications can be easily set up using ABB's PC Configuration Editor or front panel codes.
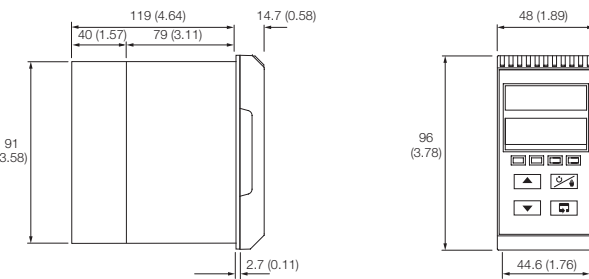
**COMMANDER V100 1/8 DIN Motorised Valve Controller**
The V100 is designed for direct valve position control of motorised valves. Two 5A relays are fitted as standard for either direct control of the positioner or via intermediate relays – plus retransmission of the process variable for connection to a datalogger or process recorder. The V100 is capable of measuring a wide range of process signals such as temperature, pressure, flow and level.

### COMMANDER 100 1/8 DIN Universal Process Controller

- Simple PID control using built-in and optional outputs
- Universal process input
- Heat/cool control strategies using a combination of the analogue, logic and relay outputs
- NEMA 3/ (IP65) front face
- RS485/Modbus serial communications for SCADA, PLC and open systems integration

| Cat. No. | Description | Price |
|----------|-------------|-------|
| C100 | 1/8 DIN universal process controller | From £267.00 |

### COMMANDER V100 1/8 DIN Motorised Valve Controller

- Boundless controller – no need for slidewire feedback
- Universal input
- Integral transmitter power supply
- Extensive I/O options – alarm relay, remote set point and digital input
- NEMA 3 (IP65) front face
- RS485/Modbus serial communications option for SCADA PLC and open systems integration

| Cat. No. | Description | Price |
|----------|-------------|-------|
| * V100 | 1/8 DIN motorised valve controller | From £284.00 |

* Call for delivery

*Dimensions mm (in.)*

119 (4.64) | 40 (1.57) | 79 (3.11) | 14.7 (0.58) | 48 (1.89)
91 (3.58) | 96 (3.78) | 2.7 (0.11) | 44.6 (1.76)

Cut-out dims. 45 $^{+0.6}_{-0}$ wide x 92 $^{+0.8}_{-0}$ high
(1.77 $^{+0.02}_{-0}$ wide x 3.62 $^{+0.03}_{-0}$ high)

*C100/V100 Dimensions*
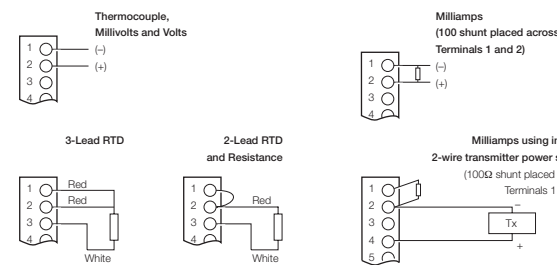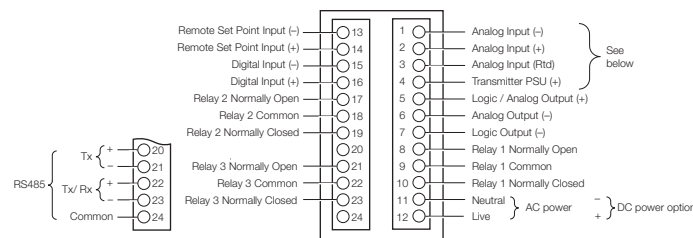
*C100/V100 Electrical Connections*

Note: Not all functions present on base models.
Please refer to full specification sheet for details.

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# Controllers

## Single Loop Controllers – Process and Motorised Valve

**COMMANDER 250 1/4 DIN Compact Process Controller**
The C250 is a general-purpose single-loop controller. It is suitable for use in a wide range of applications including pulp & paper, mining & metals, consumer food and heat treatment.

**COMMANDER V250 1/4 DIN Motorised Valve Controller**
The V250 is designed for direct valve position control of motorised valves. Two 5A relays are fitted as standard for either direct control of the positioner or via intermediate relays. The V250 is capable of measuring a wide range of process signals such as temperature, pressure, flow and level.

### COMMANDER 250 1/4 DIN Compact Process Controller

- PID controller with ramp/soak facility
- Universal process input
- Remote set point and retransmission options
- Optional digital input with 1 or 2 relay outputs
- NEMA 4X (IP66) front face
- RS485/MODBUS serial communications for SCADA, PLC and open systems integration

| Cat. No. | Description | Price |
|----------|-------------|-------|
| C250 | 1/8 DIN universal process controller | £297.00 |

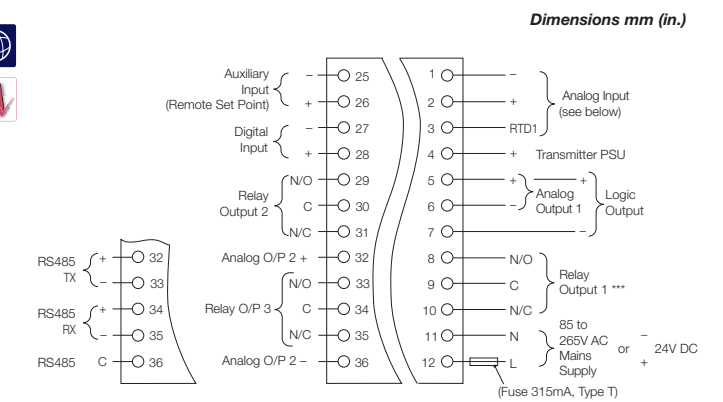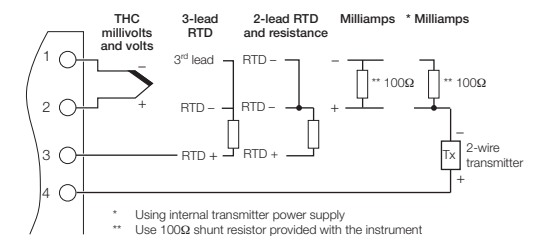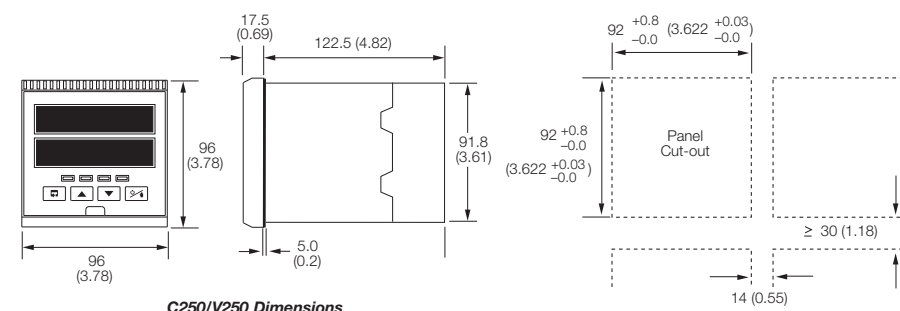### COMMANDER V250 1/4 DIN Motorised Valve Controller

- Boundless controller – no need for slidewire feedback
- Universal input
- Integral transmitter power supply
- Extensive I/O options – alarm relay, remote set point and digital input
- NEMA 4X (IP66) front face
- RS485/Modbus serial communications option for SCADA, PLC and open systems integration

| Cat. No. | Description | Price |
|----------|-------------|-------|
| * V250 | 1/8 DIN motorised valve controller | From £366.00 |

* Call for delivery

*Dimensions mm (in.)*

*C250/V250 Electrical Connections*

* Using internal transmitter power supply
** Use 100Ω shunt resistor provided with the instrument
*** Fit the arc suppression component supplied with the instrument

Note: Not all functions present on base models.
Please refer to full specification sheet for details.

17.5 (0.69) | 122.5 (4.82) | 92 $^{+0.8}_{-0.0}$ (3.622 $^{+0.03}_{-0.0}$)
96 (3.78) | 91.8 (3.61) | 92 $^{+0.8}_{-0.0}$ (3.622 $^{+0.03}_{-0.0}$) | Panel Cut-out
96 (3.78) | 5.0 (0.2) | ≥ 30 (1.18) | 14 (0.55)

*C250/V250 Dimensions*

# Controllers
## Single Loop Controllers – Process

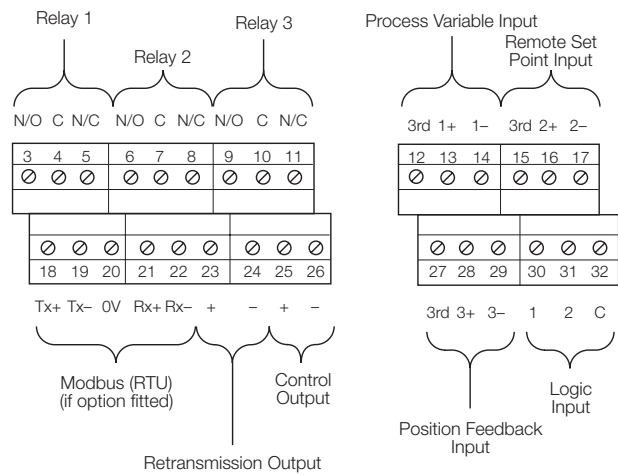**COMMANDER 310 Wall-/Pipe-mount Universal Process Controller**
The C310 is a Wall/Pipe mounted single-loop controller with full PID functionality. The C310 is suitable for a wide range of applications including consumer food (hosedown areas), pharmaceutical, chemical and oil & gas (compressor control).

### COMMANDER 310 Wall-/Pipe-mount Universal Process Controller

- Suitable for wall- or pipe-mounting (with optional kit)
- PID controller with heat/cool
- 2 universal process inputs + 2 digital inputs
- 2 x 4 to 20mA outputs + 3 relay outputs
- Ramp/Soak capability
- NEMA 4X (IP66) Case, FM Class 1, Div.2 electrical rating
- Optional RS485/Modbus serial communications for SCADA, PLC and open systems integration
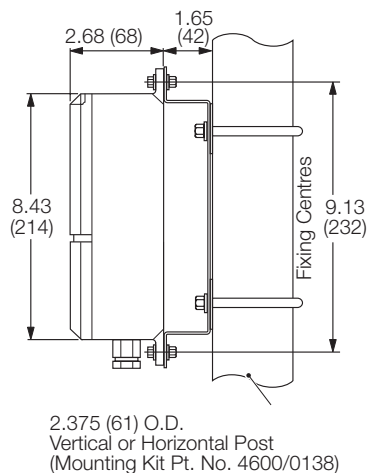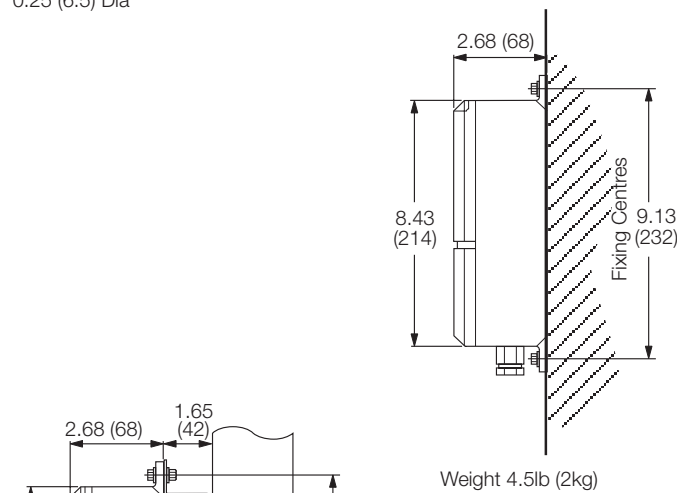
| Cat. No. | Description | Price |
|----------|-------------|-------|
| C310 | Wall mounted universal process controller | £562.00 |
| 4600/0138 | Pipe mounting kit | £69.30 |



*C310 Electrical Connections*
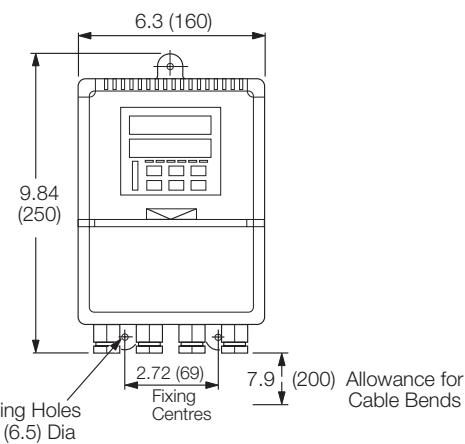


*Dimensions in. (mm)*

*C310 Dimensions*

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# Controllers
## Single Loop Controllers – Process and Motorised Valve

**COMMANDER 351 1/4 DIN Short Case Universal Process Controller**
The C351 is a full functionality 1/4 DIN Controller incorporating standard application templates for heat/cool, auto/manual, and analogue back up. Custom math & linearisation blocks are also included. The C351 is suitable for a wide range of applications such as evaporators, distillation columns, water & waste (pH & filtration), consumer foods and chemical.

### COMMANDER 351 1/4 DIN Short Case Universal Process Controller

- PID controller with heat/cool and motor drive valve control (both with and without feedback)
- 3 universal process inputs + up to 4 digital inputs
- 2 x analogue outputs + up to 4 relay outputs
- Remote set point with ratio and bias
- NEMA 4X (IP66) front face
- RS485/Modbus serial communications for SCADA, PLC and open systems integration
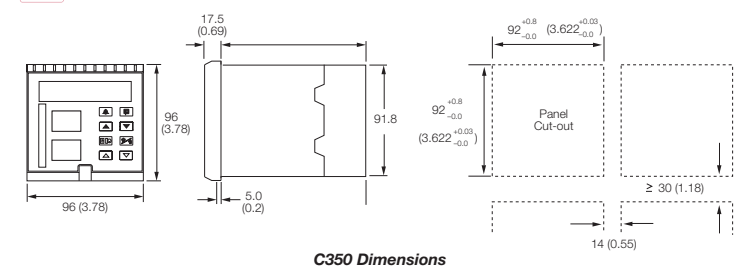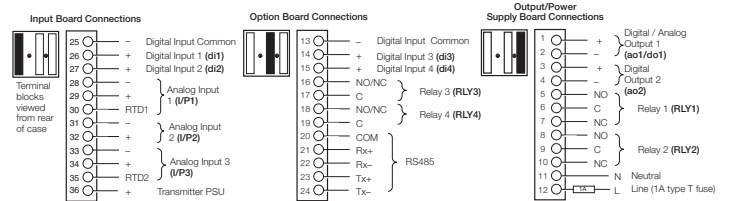
*Dimensions mm (in.)*



*C350 Dimensions*

### COMMANDER 355 1/4 DIN Short Case Advanced Process Controller

The C355 is a C351 with added application templates for, auto/manual station, feed forward, cascade control, ratio station and analogue backup. Custom math & linearisation blocks are also included. The C355 is suitable for a wide range of applications such as evaporators, distillation columns, water & waste (pH & filtration), consumer foods and chemical.

- 17 "Prebuilt" application templates
- Setpoint profile function for basic recipe control
- Inbuilt "Control Efficiency Monitor" assists with fine tuning of control loops
- Gain Scheduling allows up to 4 sets of PI terms to be selected as required
- Internal cascade and feedforward functions allow control of the most difficult process loops

### COMMANDER 360 1/4 DIN Short Case Profile Controller

The C360 incorporates all the features of the C350 series with an added set point profiler (ramp-&-hold) for control recipes, up to 99 segments in 20 profiles. The C360 is suitable for a wide range of applications such as chemical blending, industrial food canning processes and batch processing.

- Dedicated program control keys for Play/Pause & Stop
- Ramp/Soak "Guarantee" system delivers consistent process quality whatever the process conditions
- Self-seeking setpoint ensures that batch productivity is maximised
- Segment event states allow sequencing of external devices
- Clear display for program status and time remaining

| Cat. No. | Description | Price |
|----------|-------------|-------|
| C351 | 1/4 DIN process/valve controller | £449.00 |
| * C355 | 1/4 DIN process/valve controller | From £528.00 |
| | * Call for delivery | |
| * C360 | 1/4 DIN process/valve controller | From £545.00 |
| | * Call for delivery | |



*C350 Series Electrical Connections*

# Controllers

## 6x3 Controllers – Process and Motorised Valve

### COMMANDER 501 6x3 Process Controller

The C501 incorporates all the comprehensive features of the C351 – in a 6x3 format. The 501 has standard application templates to simplify set-up of the most common uses including single loop control, auto/manual station and analogue back up controller. Custom maths & linearisation blocks are included and are accessed via the optional configurator package. Its dual bar graph display gives 'at a glance' indication of the process.

### COMMANDER 501 6x3 Process Controller

- 3 universal process inputs + 4 digital inputs*
- 2 x analogue outputs + 4 relay outputs*
- Remote set point with ratio and bias
- NEMA 4X (IP66) front face
- RS485/Modbus serial communications for SCADA, PLC and open systems integration*
- Analogue, relay, heat/cool and motorised valve control output strategies

\* With option board fitted.

### COMMANDER 505 6x3 Advanced Process Controller

The C505 incorporates all the comprehensive features of the C355 – in a 6x3 format. This unit features 17 application templates to simplify set up of advanced configurations. In addition to templates offered by the C501, feed forward, ratio and internal cascade are available to address demanding process loops. Using the optional PC configuration package, advanced maths & logic functionality are also available.

- 17 "Prebuilt" application templates
- Setpoint profile function for basic recipe control
- Inbuilt "Control Efficiency Monitor" assists with fine tuning of control loops
- Gain Scheduling allows up to 4 sets of PI terms to be selected as required
- Internal cascade and feedforward functions allow control of the most difficult process loops

| Cat. No. | Description | Price |
|---|---|---|
| C501 | 6x3 process controller | £563.00 |
| * C505 | 6x3 advanced process controller | From £637.00 |

*Call for delivery

Dimensions mm (in.)

**C500 Dimensions**

**C500 Electrical Connections**
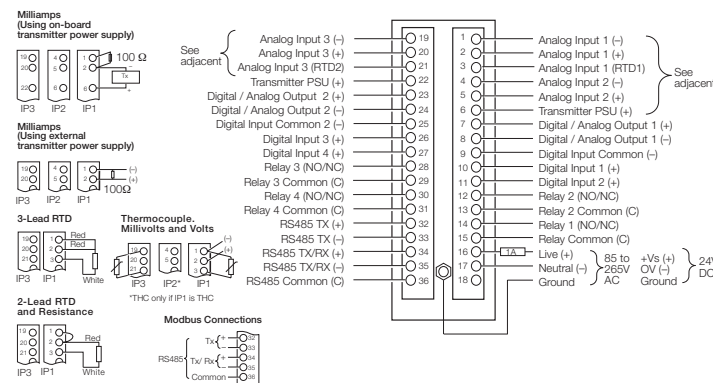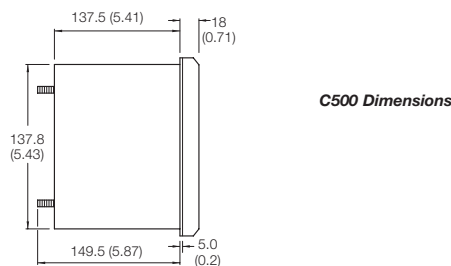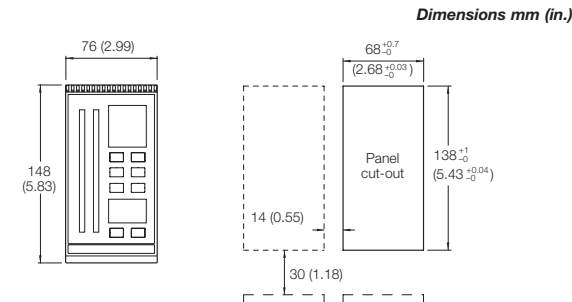
Note: Certain features only available when option card installed.

# Indicators

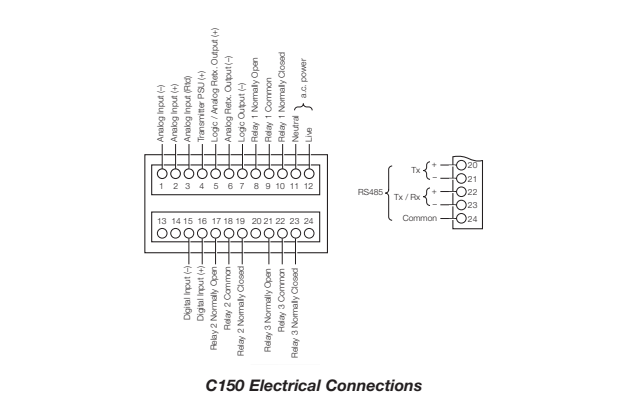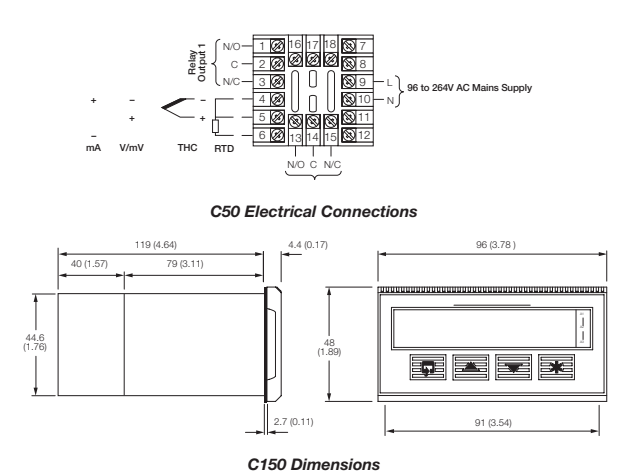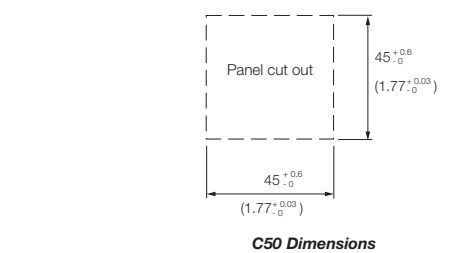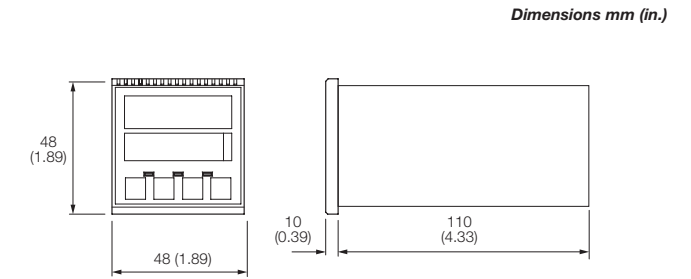## 1/16 DIN AND 1/8 DIN Process Indicators

### COMMANDER 50

The C50 controller is a compact Controller/Alarm unit capable of measuring, indicating and controlling a variety of input types. The unit can perform on/off or PID time proportioning using its inbuilt relay. Because of its compact size it is ideal for use as an alarm unit for applications such as over temperature protection of ovens and furnaces.

### COMMANDER 50 1/16 DIN Process Controller Unit Alarm

- High visibility dual 4 digit display
- Universal process input
- Standard relay output
- 'One-shot' auto tune
- IP65 (NEMA 3) front face protection

| Cat. No. | Description | Price |
|---|---|---|
| C50 | 1/16 DIN controller alarm unit | £161.00 |
| C150 | 1/8 DIN indicator | £245.00 |

Dimensions mm (in.)

**C50 Dimensions**

**C50 Electrical Connections**

### COMMANDER 150 1/8 DIN Process Indicator

The C150 process indicator is a highly versatile, digital display, which can measure and indicate temperature, pressure, flow, level and other variables. It offers a high visibility LED display, 0.1% measurement accuracy and analogue and relay outputs as standard. In addition, it utilises a universal process input with transmitter power supply, and optional RS485/MODBUS serial communications.

- Totaliser with simple batch functions
- 6 digit display
- Panel mounted
- Hose-proof front panel and full RF noise immunity, for harsh conditions
- 4 digit code security for configuration/ re-configuration

**C150 Dimensions**

**C150 Electrical Connections**

**COMMANDER 160 Process Indicator**

The C160 process indicator is a highly versatile, digital display, which can measure and indicate temperature, pressure, flow, level and other variables. It offers a high visibility LED display, 0.1% measurement accuracy and analogue and relay outputs as standard. In addition, it utilises a universal process input with transmitter power supply, and RS485/MODBUS serial communications.

**COMMANDER CR100 Chart Recorder**

ABB's CR100 100mm strip chart recorder covers a wide range of applications under highly demanding conditions, with cost-effective 1 or 2 pen continuous recording and a number of features included as standard.
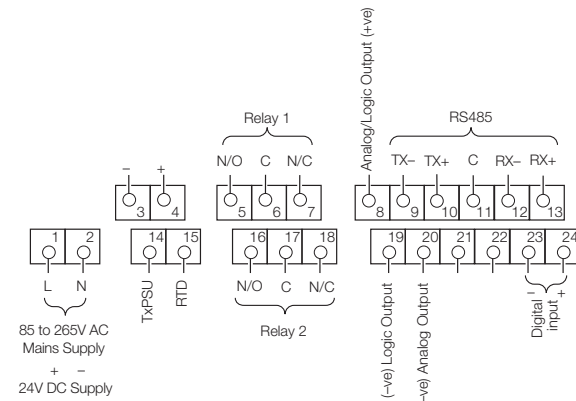
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*Dimensions mm (in.)*

## COMMANDER 160 Process Indicator

- 6 digit display
- Totaliser and math functions include 6 digit totals and max. / min. values
- IP66 / NEMA 4X weatherproof enclosure
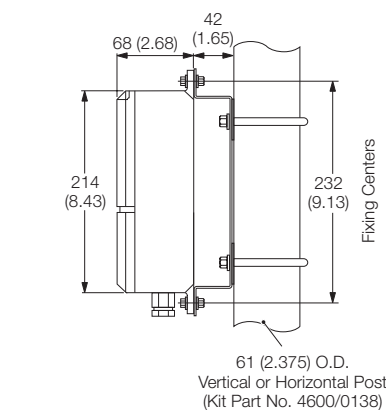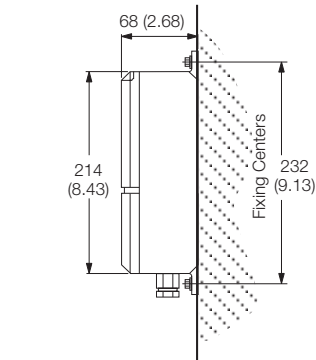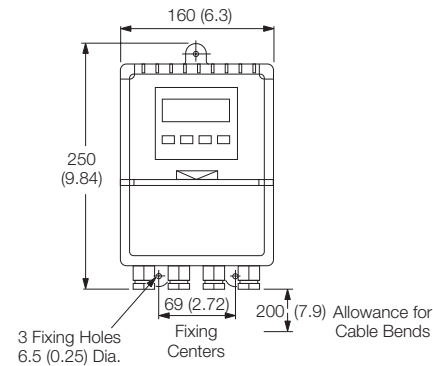- Wall or pipe mounting (with optional kit)

### C160 process indicator

| Cat. No. | Description | Price |
|---|---|---|
| * C160 | Wall/pipe mount indicator | From £380.00 |
| * 4600/0138 | Pipe mounting kit | £69.30 |

* Call for delivery

*C160 Electrical Connections*

160 (6.3)
250 (9.84)
69 (2.72) Fixing Centers
200 (7.9) Allowance for Cable Bends
3 Fixing Holes 6.5 (0.25) Dia.
68 (2.68)
214 (8.43)
232 (9.13) Fixing Centers
42 (1.65)
61 (2.375) O.D. Vertical or Horizontal Post (Kit Part No. 4600/0138)

*C160 Dimensions*

## COMMANDER CR100 Chart Recorder

- 1 or 2 pen continuous line, 100mm recorder
- Clear, 5-digit LED display
- 2 digital inputs, 2 alarm relays as standard
- Isolated analogue retransmission
- Configuration from front face or via PC
- Transmitter power supply
- IP65 / NEMA 3 protection

### CR100 strip chart recorder

| Cat. No. | Description | Price |
|---|---|---|
| CR101 | Single pen | £524.00 |
| CR102 | Two pen | £678.00 |

### Replacement pens for CR100/CR102

| Cat. No. | Description | Price |
|---|---|---|
| P100L/1095 | Red per pack of 3 | £17.30 |
| P100M/0056 | Green per pack of 3 | £17.30 |

### Replacement paper for CR101/CR102 (0-100 scaled)

| Cat. No. | Description | Price |
|---|---|---|
| P100L/7400G | Roll Chart – 50 divisions – 10mm timeline | £8.00 |
| P100L/7400X | Fan Fold – 50 divisions – 10mm timeline | £8.40 |
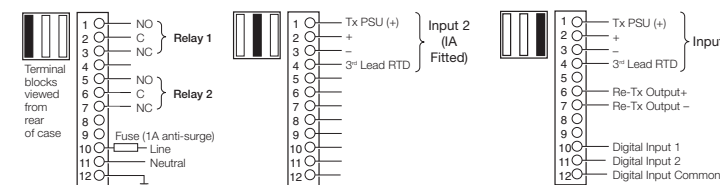
*CR100 Electrical Connections*
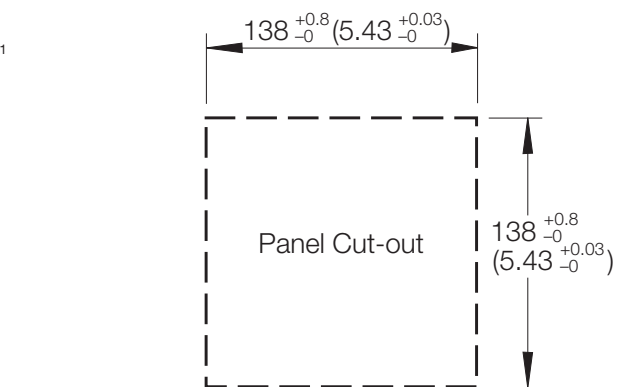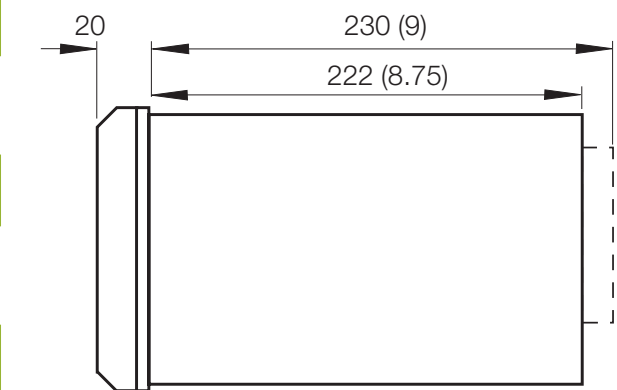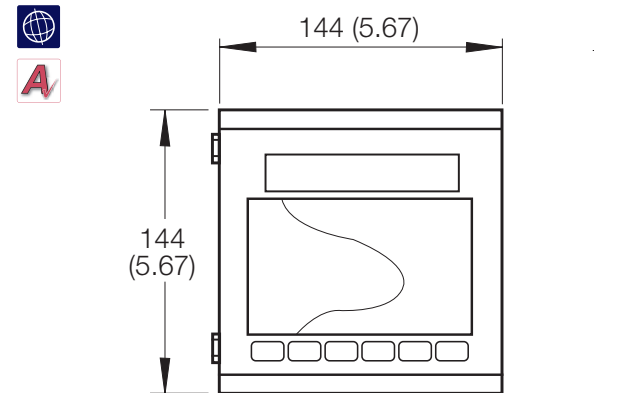
*Dimensions mm (in.)*

144 (5.67)
144 (5.67)
20
230 (9)
222 (8.75)
138 +0.8 −0 (5.43 +0.03 −0)
138 +0.8 −0 (5.43 +0.03 −0)
Panel Cut-out

*CR100 Dimensions*

**100mm**

**250mm**

### COMMANDER SR100B 100mm Process Recorder

The SR100B provides accurate and reliable recording of 3 or 6 process signals on a 100mm wide chart (250mm process recorders are also available). In-built text printing capabilities give clear annotation on the chart of time, date, scales and channel identifiers. The SR100B can be supplied preconfigured for the signal types and ranges you specify when ordering. All configurations can be adjusted on-site by means of the front panel keys or ABB's PC Configurator.

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### COMMANDER SR100B 100mm Process Recorder

- 3- or 6- traces
- High clarity display
- Available preconfigured to your requirements
- 2-Wire transmitter power supply as standard
- Dust and water resistant front fascia to IP65 / NEMA 3

### COMMANDER SR100A Advanced Process Recorder

The SR100A is a 100mm strip chart recorder providing accurate and reliable recording of up to 6 channels. The SR100A also provides a range of advanced processing capabilities, such as flow totalisation, math blocks, logic equations, configurable displays and full message printing, that can be configured via the front panel facia or ABB's PC Configurator software.

- 1- to 6-trace recording on a 100mm chart
- Precision universal process inputs
- Unique cue and review incident analysis
- High clarity liquid crystal display (LCD)
- Totalisers, math and logic equations
- RS485 MODBUS serial communications
- Dust and water resistant front fascia to IP65 / NEMA 3
- Direct configuration and logging on PC (via memory card option)

**Dimensions mm (in.)**

144 (5.67)
144 (5.67)

**SR100 Dimensions**

Maximum inclination 30° backwards from vertical

20 (0.78)   230 (9)
222 (8.75)
138 -0.8 +0.03 (5.43 -0 +0)

Panel Cut-out

138 +0.8 -0 (5.43 +0.03 -0 )

260 (10.25)

Optional rear terminal compartment

Standard Analog Input or Enhanced Analog Input

**SR100A/SR100B  Electrical Connections**

| AC Power | DC Power |
|---|---|
| Line | + ve |
| Neutral | – ve |
| Earth | Ground |
| No connection | |
| No connection | |
| No connection | * 24V Transmitter PSU |

OR

Alternative I/O options

#### Strip chart multicolour print heads for SR100

| Cat. No. | Description | Price |
|---|---|---|
| PR100/0210 | Three colour | £29.70 |
| PR100/0211 | Six colour | £29.70 |

#### Strip chart recorder paper for SR100

| Cat. No. | Description | | Price |
|---|---|---|---|
| PR100/9000R | Roll Chart | 30 divisions | £10.30 |
| PR100/9001R | | 40 divisions | £10.30 |
| PR100/9002R | | 50 divisions | £7.80 |
| PR100/9003R | | 60 divisions | £10.30 |
| PR100/9005R | | 75 divisions | £10.30 |
| PR100/9000F | Fan Fold | 30 divisions | £8.10 |
| PR100/9001F | | 40 divisions | £8.10 |
| PR100/9002F | | 50 divisions | £6.00 |
| PR100/9003F | | 60 divisions | £8.10 |
| PR100/9005F | | 75 divisions | £8.10 |
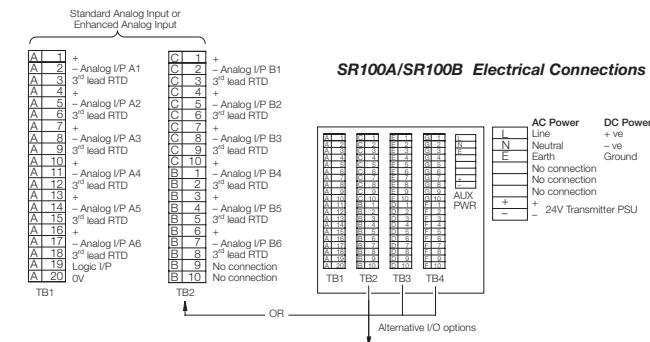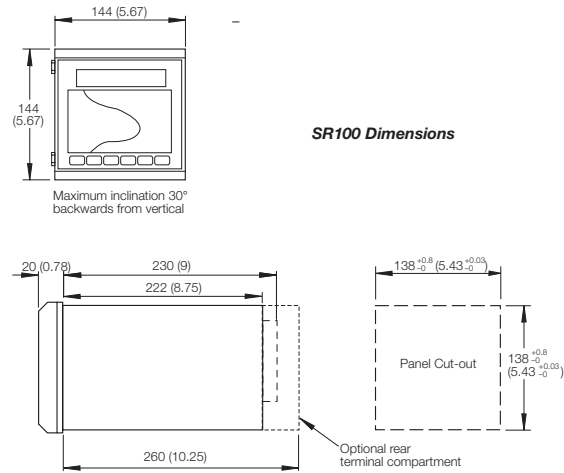
**Option Card Types**

| Termination Number | Digital 3 Digital Inputs 3 Digital Outputs | Relay Output 3 per Card | Hybrid 2 Relay Outputs 1 Analog Outputs | Analog 3 Analog Outputs Card | Serial Comms. Code Option F only * |
|---|---|---|---|---|---|
| 1 | +24V | RL1 N/C | N/C RL1 | No connections | No connections |
| 2 | +5v | RL1 N/O | N/O RL1 | O/P1+ | Tx– |
| 3 | 0V | RL1 C | C RL1 | O/P1– | Tx+ |
| 4 | O/P1 | RL2 N/C | N/C RL2 | No connections | N/C |
| 5 | O/P2 | RL2 N/O | N/O RL2 | O/P2+ | Rx+ |
| 6 | O/P3 | RL2 C | C RL2 | O/P2– | Rx– |
| 7 | I/P1 | RL3 N/C | No connections | No connections | NC |
| 8 | I/P2 | RL3 N/O | + O/P | O/P3+ | 0V |
| 9 | I/P3 | RL3 C | – O/P | O/P3– | NC |
| 10 | No connections | No connections | No connections | No connections | No connections |

* See **Ordering Information**

NB. Permissable options are dependent on model

#### SR100 strip chart recorder

| Cat. No. | Description | Price |
|---|---|---|
| SR103B | Three pen | £1047.00 |
| SR106B | Six pen | £1164.00 |
| SR100A | Three and six pen | from  £1168.00 |

* Call for delivery

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### COMMANDER 1300 Circular Chart Recorder

ABB's C1300  advanced circular chart recorder combines established paper chart recording technology with the latest advances in electronic data collection, giving you more power than ever before to use your recorded data to its full potential.

Building on ABB's successful COMMANDER recorder range and based on customer feedback, the C1300 features a host of new developments to provide a powerful and flexible data recorder suitable for most applications.

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### C1300 Advanced Circular Chart Recorder

- High definition backlit display
- Isolated universal inputs with transmitter power supply
- 1 relay output, 2 digital inputs and a retransmission output on each pen fitted
- Simple to configure totalizers with automatic calculation function
- Fully field upgradeable
- Configuration backup
- Optional data-logging to memory card

*Configuration of the unit is greatly aided by the full English graphical display.*

#### C1300 Advanced Circular Chart Recorder

| Cat. No. | Description | Price |
|---|---|---|
| C1300 | Circular Recorder | from £971 |

#### Circular Chart Recorder pens for C1300, pen capsules (pack of three pens)

| Cat. No. | Description | Price |
|---|---|---|
| C1900/0119 | Black | £13.00 |
| C1900/0120 | Blue | £13.00 |
| C1900/0121 | Red | £13.00 |
| C1900/0122 | Green | £13.00 |
| C1900/0123 | Violet | £13.00 |

*Configuration data can be uploaded or downloaded via ABB's PC configuration software.*

#### Circular Chart Recorder paper for C1300 (pack of 100)

| Cat. No. | Description | Price |
|---|---|---|
| 296 | 0-100 12 hr | £17.30 |
| 510 | 0-100, 24 hr | £17.30 |
| 410 | 0-100, 7 day | £17.30 |
| 1429 | 0-150, 3 hr | £17.30 |
| 1302 | -25 / +25, 7 day | £17.30 |
| 433 | 0-40 / 20-100, 7 day | £17.30 |
| 564 | 0-150, 24 hr | £17.30 |
| 585 | 0-300, 24hr | £17.30 |

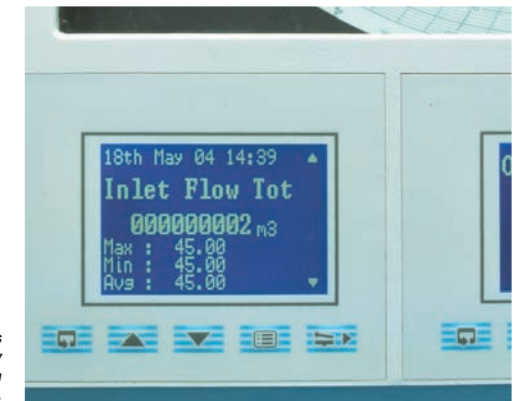Note: Dimensional data and connections are as per C1900 (see page 58)
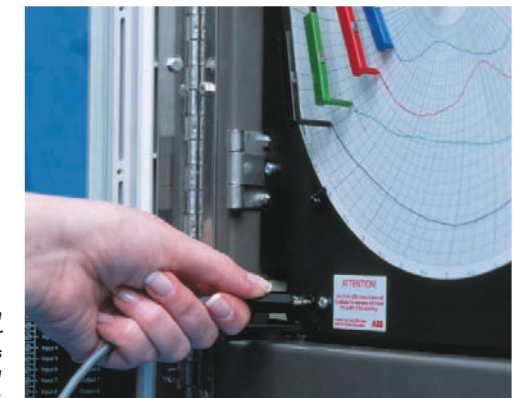
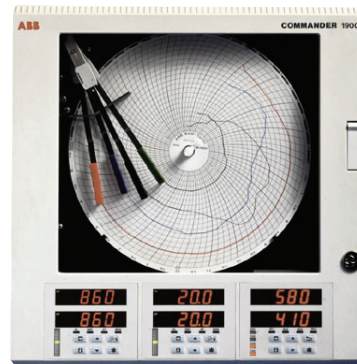*Totaliser logs automatically collect flow data for ease of review.*

# Recorders

## Chart Recorders

**COMMANDER 1900 Circular Chart Recorders**

A blend of imaginative engineering and 80 years' solid experience has made the C1900 series the benchmark in modern day circular recording and controlling. Each instrument is extremely easy to use, offers up to four pen chart recording and is protected to NEMA 4X/IP66 to withstand the harshest environments. Recorder / controller models have integral single or dual-loop PID control capability and a dedicated controller faceplate for ease of operation.

# Recorders

## Videographic Process Recorders

**World First**

**SM500F Field Mountable Videographic Process Recorders**

The SM500F is the first field-mountable process recorder that is designed to withstand the rigours of harsh industrial process and external conditions, while delivering 8 recording channels to the engineer out on site. Based on ABB's highly successful SM series platform, it is a cost-effective alternative to paper chart recorders. Data can be displayed in a variety of display formats including chart, bargraph and digital indicator, and is logged securely to the removable memory card; it can also be accessed remotely via the Ethernet connection.

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## C1900 Circular Chart Recorders

- Extensive recording capabilities with a choice of 1 to 4 pens
- Isolated universal inputs with transmitter power supply
- 0.1% measurement accuracy
- Multiple 6 digit LED display
- 1 relay output, 2 digital inputs and a retransmission outputs on each pen fitted (except C1901)
- Optional RS485 MODBUS serial communications
- IP66 / NEMA 4X and hosedown protection
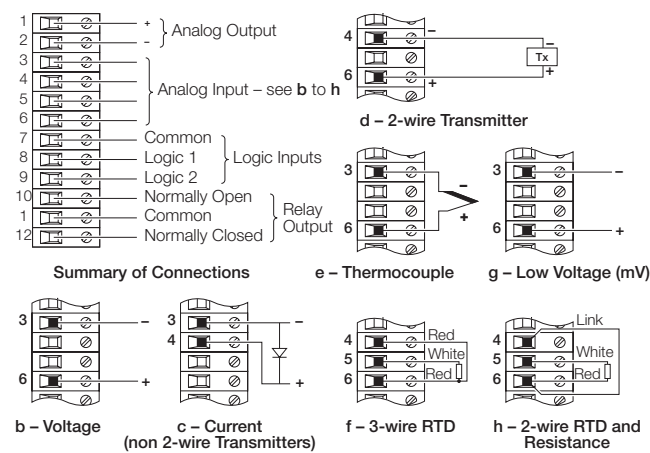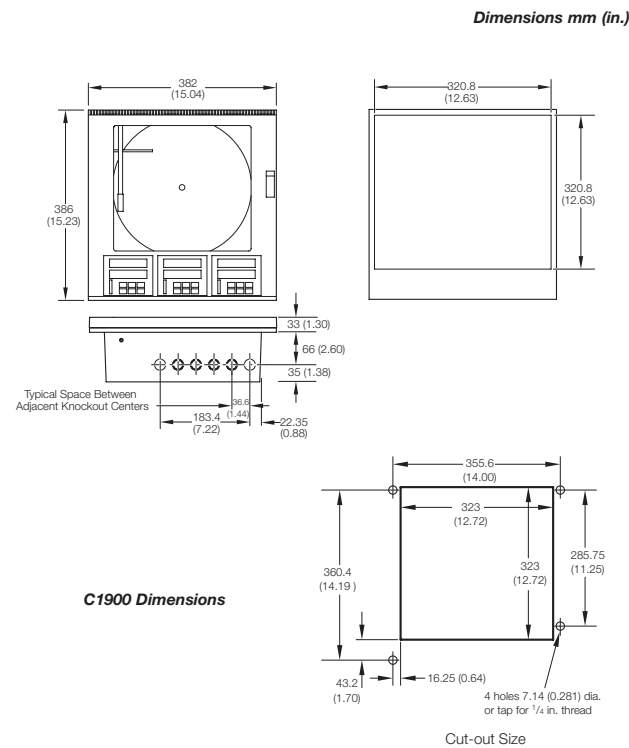
### C1900 circular chart recorder

| Cat. No. | Description | Price |
| --- | --- | --- |
| C1901 | Single pen only (non-upgradeable) | £779.00 |
| C1911 | Single pen | £906.00 |
| C1912 | Two pen | £1142.00 |
| C1913 | Three pen | £1475.00 |
| C1914 | Four pen | £1709.00 |
| C1900/1712 | Wall mounting kit | £16.80 |

### Circular Chart Recorder Pens For C1900, pen capsules (pack of three pens)

| Cat. No. | Description | Price |
| --- | --- | --- |
| C1900/0119 | Black | £13.00 |
| C1900/0120 | Blue | £13.00 |
| C1900/0121 | Red | £13.00 |
| C1900/0122 | Green | £13.00 |
| C1900/0123 | Violet | £13.00 |

### Circular Chart Recorder Paper For C1900 (pack of 100)

| Cat. No. | Description | Price |
| --- | --- | --- |
| 296 | 0-100 12 hr | £17.30 |
| 510 | 0-100, 24 hr | £17.30 |
| 410 | 0-100, 7 day | £17.30 |
| 1429 | 0-150, 3 hr | £17.30 |
| 1302 | -25 / +25, 7 day | £17.30 |
| 433 | 0-40 / 20-100, 7 day | £17.30 |
| 564 | 0-150, 24 hr | £17.30 |
| 585 | 0-300, 24hr | £17.30 |

**Dimensions mm (in.)**



*C1900 Dimensions*

*Cut-out Size*



*Summary of Connections*

*d – 2-wire Transmitter*
*e – Thermocouple*
*g – Low Voltage (mV)*
*b – Voltage*
*c – Current (non 2-wire Transmitters)*
*f – 3-wire RTD*
*h – 2-wire RTD and Resistance*
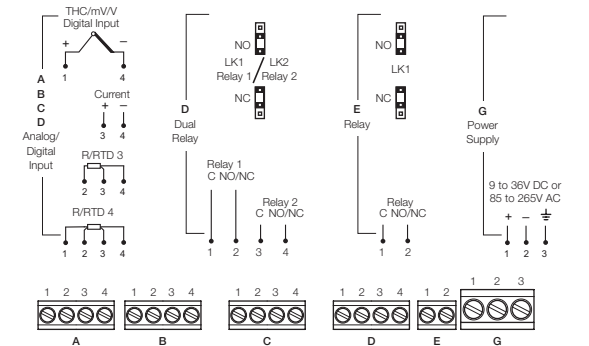
*C1900 Electrical Connections*
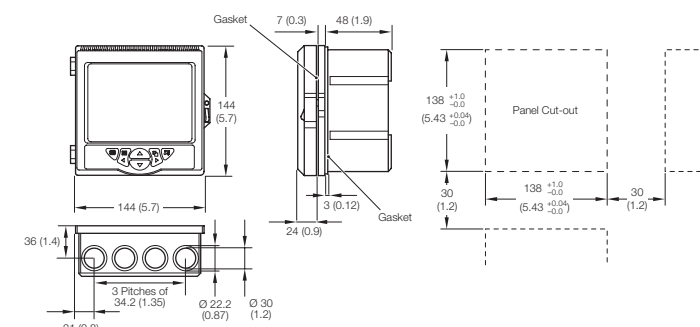
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## SM500F Videographic Process Recorders

- Unique combination of high specification recorder and rugged field performance
- Ideal for dusty, dirty, wet locations with hose down proof, enclosure to NEMA 4X and IP66
- Universal mounting – wall, pipe or panel – slim and compact
- Highest Input / Output specifications - analog/digital, wide range of input parameters, easily field upgradeable
- Highest quality TFT colour or monochrome FSTN displays
- Leading edge data technology – 8Mb internal flash memory, 2Gb removable SD card, CFR21 Part11 compliant
- Ethernet communications web enabled, File Transfer Protocol, e-mail and Modbus™ TCP
- Easy to use, simple keypad and menu driven, intuitive on-line help
- Simple installation and wiring – diagram printed on the cover
- Powerful multiple display capability, multi digit indicators, flexible software options

### SM500F Videographic recorders

| Cat. No. | Description | Price |
| --- | --- | --- |
| SM501 | One analog / digital input | £714.00 |
| SM502 | Two analog / digital inputs | £765.00 |
| SM503 | Three analog / digital inputs | £816.00 |
| SM504 | Four analog / digital inputs | £867.00 |

*SM500F Electrical Connections*



*Dimensions mm (in.)*

# Recorders

## Videographic Process Recorders

### SM1000 Videographic Process Recorders

The SM1000 is a state-of-the-art solution to recording and data storage. It provides 12 recording channels and up to 12 universal analogue inputs which can be viewed in a variety of display formats: chart, bargraph, digital indicator and process summary. Historical logs are provided for recording alarms, operator and system events and totaliser values. The SM1000 has onboard Flash memory for secure storage of process data. A choice of removable storage devices are available; either SmartMedia or Compact Flash.
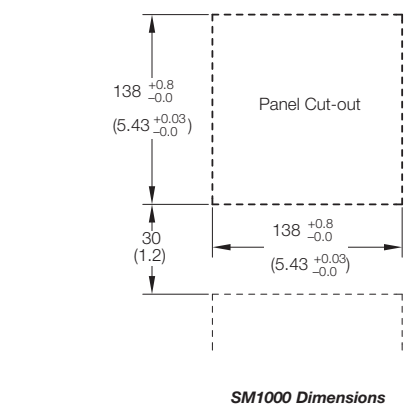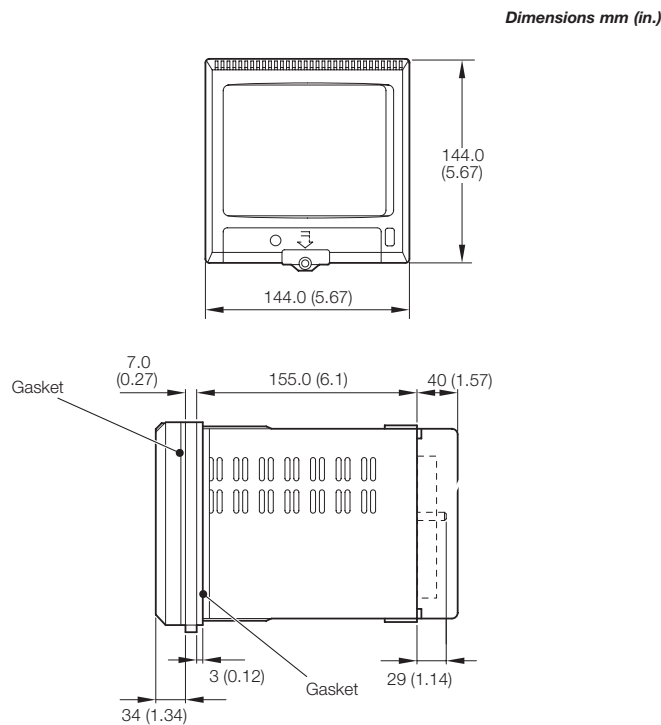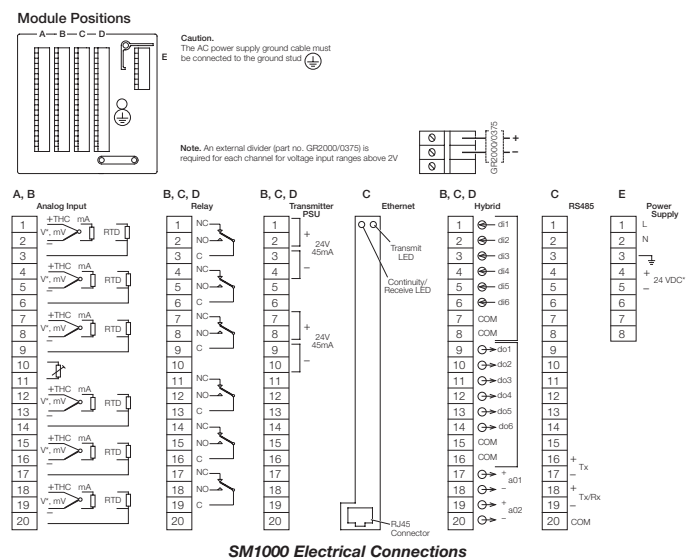
### SM1000 Videographic Process Recorders

- Ideal replacement for paper recorders
- Up to 12 analogue inputs
- Robust, convenient high capacity memory card options
- Intuitive use interface, Windows™ style menus
- Remote monitoring and access via ethernet communications
- IP66 / NEMA 4X hosedown protection

#### SM1000 ScreenMaster videographic recorders

| Cat. No. | Description | Price |
|---|---|---|
| SM106 | Six channel videographic recorder | £1210.00 |
| SM112 | Twelve channel videographic recorder | £1430.00 |
| SM106T | Six channel videographic recorder with totaliser function | £1430.00 |
| SM112T | Twelve channel videographic recorder with totaliser function. | £1650.00 |

**Datamanager Software now available as free download from www.abb.com**



*Module Positions*

Caution.
The AC power supply ground cable must be connected to the ground stud ⏚

Note. An external divider (part no. GR2000/0375) is required for each channel for voltage input ranges above 2V

*SM1000 Electrical Connections*

144.0 (5.67)

144.0 (5.67)

7.0 (0.27)   155.0 (6.1)   40 (1.57)

Gasket

3 (0.12)   Gasket   29 (1.14)

34 (1.34)

138 $^{+0.8}_{-0.0}$
(5.43 $^{+0.03}_{-0.0}$)

Panel Cut-out

30 (1.2)   138 $^{+0.8}_{-0.0}$
(5.43 $^{+0.03}_{-0.0}$)

*SM1000 Dimensions*

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# Recorders

## Videographic Process Recorders

### SM2000 Advanced Videographic Process Recorder

The SM2000 is a state-of-the-art solution to recording and data storage. It provides 12 recording channels and up to 12 universal analogue inputs which can be viewed in a variety of display formats: chart, bargraph, digital indicator and process summary. Historical logs are provided for recording alarms, operator and system events and totaliser values. A high quality, 14cm (5.7 in.), TFT display and touchscreen provide a clear and intuitive user interface. The SM2000 has an onboard Flash memory capacity of 8Mb providing storage of up to 2.9 million samples. A choice of removable storage devices are available: SmartMedia or Compact Flash both providing high capacity solid state data storage.

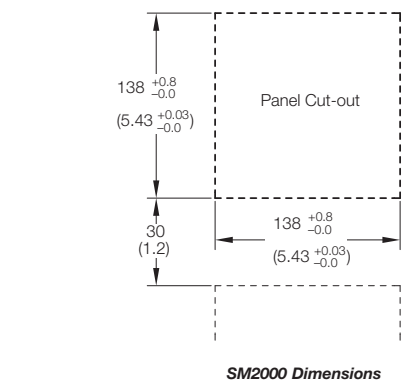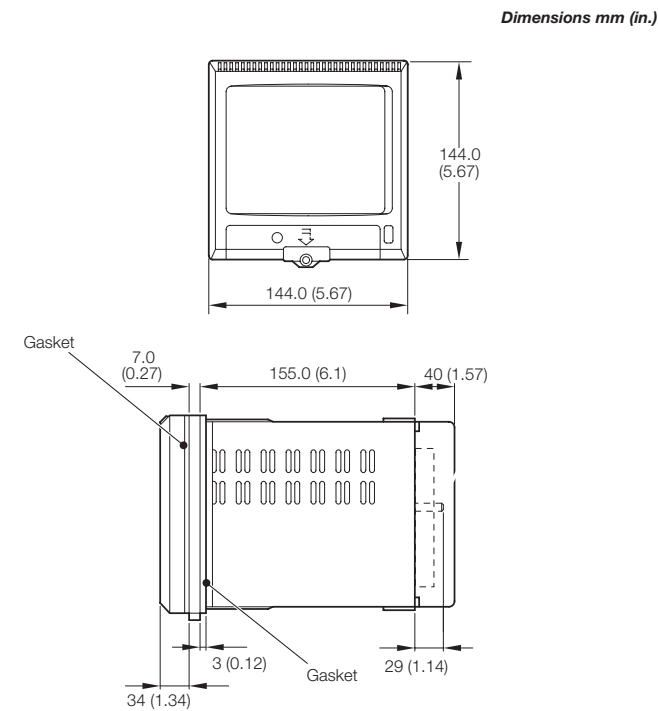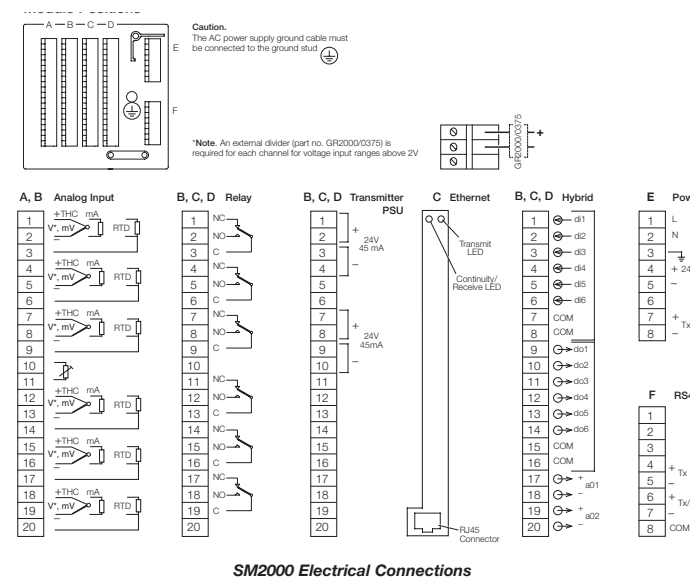### SM2000 Advanced Videographic Process Recorder

- Up to 12 recording channels
- 6 or 12 universal inputs, I/O modules, math and communications
- 14cm TFT colour display and touch screen
- Intuitive use interface, Windows™ style menus and operator keys
- 8Mb onboard Flash memory plus removable cards
- Remote monitoring and access, Ethernet communications and embedded web server protocols
- IP66 / NEMA 4X hosedown protection

#### SM2000 ScreenMaster videographic recorders

| Cat. No. | Description | Price |
|---|---|---|
| * SM206 | Six channel advanced videographic recorder | £1874.00 |
| * SM212 | Twelve channel advanced videographic recorder | £2094.00 |

* Call for delivery

**Datamanager Software now available as free download from www.abb.com**



*Module Positions*

Caution.
The AC power supply ground cable must be connected to the ground stud ⏚

*Note. An external divider (part no. GR2000/0375) is required for each channel for voltage input ranges above 2V

*SM2000 Electrical Connections*

144.0 (5.67)

144.0 (5.67)

Gasket

7.0 (0.27)   155.0 (6.1)   40 (1.57)

3 (0.12)   Gasket   29 (1.14)

34 (1.34)

138 $^{+0.8}_{-0.0}$
(5.43 $^{+0.03}_{-0.0}$)

Panel Cut-out

30 (1.2)   138 $^{+0.8}_{-0.0}$
(5.43 $^{+0.03}_{-0.0}$)

*SM2000 Dimensions*

# Recorders

## Videographic Process Recorders

The **SM3000 Multipoint Videographic Recorder** features state-of-the-art data storage and security technologies. Up to 36 universal analogue inputs, communicated inputs or math results can be recorded and displayed in a variety of operator views. Standard 10BaseT Ethernet communications ensure full integration into PC networks for remote process monitoring and secure access to archived process data. 8Mb of onboard flash memory, capable of storing 2.8 million samples of data and the option of either SmartMedia or Compact Flash removable memory cards, provide extensive data storage capability. A bright, clear high-contrast 31cm (12.1 in.) TFT display, Windows-style operation and configuration menus ensure clear and simple operator interface.

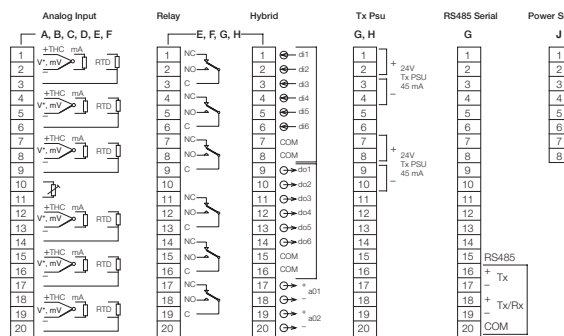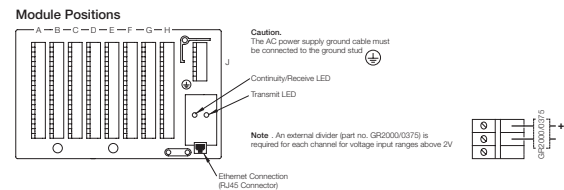### SM3000 Multi-point Videographic Process Recorders

- Up to 36 universal analogue inputs, physical inputs, math results and communications signals can be recorded and displayed
- 31cm TFT colour display, Windows™ style operation
- Intuitive use interface, screen and operator keys
- 8Mb onboard Flash memory plus removable cards
- Remote monitoring and access, 10BaseT Ethernet communications and embedded web server protocols as standard
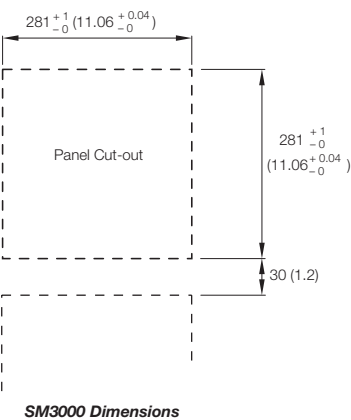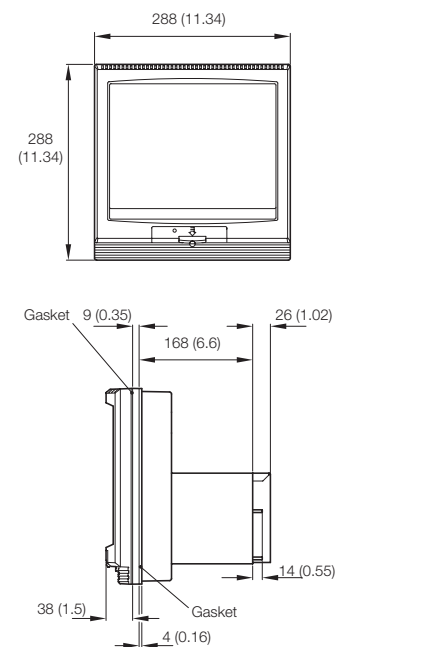
#### SM3000 ScreenMaster

| Cat. No. | Description | Price |
|---|---|---|
| * SM312 | Twelve channel large screen videographic recorder | £2969.00 |
| * SM324 | Twenty Four channel large screen videographic recorder | £3409.00 |
| * SM326 | Thirty Six channel large screen videographic recorder | £3849.00 |

* Call for delivery

**Datamanager Software now available as free download from www.abb.com**

**Module Positions**

**SM3000 Electrical Connections**

*Dimensions mm (in.)*

288 (11.34)

288 (11.34)

Gasket  9 (0.35)  168 (6.6)  26 (1.02)

14 (0.55)

38 (1.5)  Gasket
4 (0.16)

281 $^{+1}_{-0}$ (11.06 $^{+0.04}_{-0}$ )

Panel Cut-out

281 $^{+1}_{-0}$ (11.06 $^{+0.04}_{-0}$ )

30 (1.2)

**SM3000 Dimensions**

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# Positioners

## TZID-C Smart Positioners

**TZID-C Smart Positioners** are ideal for the widest possible range of valve actuators – one model is all you need. These microprocessor-based positioners, with unequalled vibration and shock immunity, have advanced diagnostic and self-monitoring features, and reduced commissioning time for a wide range of applications.

### TZID-C Smart Positioners

- One model for either linear or rotary actuators
- One model for either single (spring return) or double air action
- One model for either forward or reverse action (field selectable)
- Fully configurable via push-button operator panel – no need for software or hand-held communicator
- Immune to shock and vibration (up to 10g @ 20-80Hz)
- Auto calibration and adaptation to any size valve in less than 5 minutes
- Visual position indicator
- Input signal 4-20 mA
- Temperatures –40° C to +85°C
- HART® compatible (PROFIBUS PA, FOUNDATION FIELDBUS versions available)
- Air connection thread 1/2-14"NPT, Electrical connection thread 1/2-18"NPT
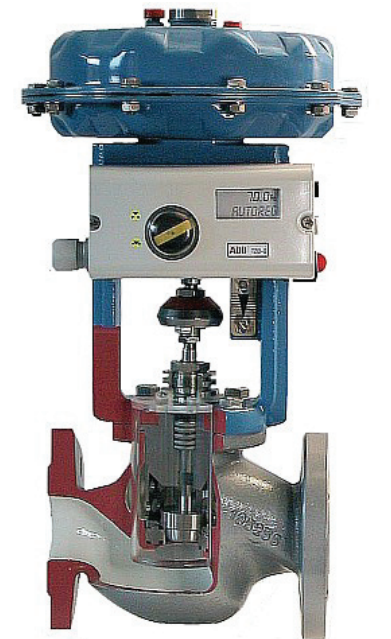
#### TZID-C, HART, Eex ib IIC, 4-20mA I/P, without feedback modules

| Cat. No. | Description | Price |
|---|---|---|
| 18345–2021420001 | Double action failsafe | £970.00 |

#### Accessories – position feed back

| Cat. No. | Description | Price |
|---|---|---|
| 18391-7959128 | Plug-in analogue module | £189.00 |
| 18391-7959129 | Plug-in digital module | £179.00 |
| 18391-7959133 | Digital kit, proximity switch P&F SJ2 | £260.00 |

#### Linear mounting kits

| Cat. No. | Description | Price |
|---|---|---|
| 18391-7959125 | DIN/IEC 534 NAMUR, stroke 10...35mm | £63.00 |
| 18391-7959126 | DIN/IEC 534 NAMUR, stroke 20...100mm | £63.00 |

#### Rotary adaptor

| Cat. No. | Description | Price |
|---|---|---|
| 18391-7959110 | Rotary actuator axle adaptor (VDI/VDE 3845) | £42.00 |

#### Rotary mounting brackets

| Cat. No. | Description | Price |
|---|---|---|
| 18391-0319603 | 80/20mm | £68.00 |
| 18391-0319604 | 80/30mm | £68.00 |
| 18391-0319605 | 130/30mm | £68.00 |
| 18391-0319606 | 130/50mm | £68.00 |

# Positioners
## I/P Signal Converters

**TEIP11** current-to-pneumatic converters are a well-regarded family of reliable, compact and rugged instruments. Its patented signal conversion system gives it the best vibration immunity available. Choice of rack or field mounted versions with intrinsically safe options.

# Positioners

ABB offers a complete product portfolio of positioner solutions, which match value with functionality to meet your plant and budget needs precisely.

**For more information about these products please phone 0870 600 6122.**

## Signal Converters

- Immune to shock and vibration (<1% at 10g)
- Temperature range  -40°C to +85°C
- Input signal 4-20 mA
- Standard DIN Rail for panels, IP 20 and Ex ia
- Field mount IP65 and Ex ia/ Ex D, ATEX / NEMA 4X
- CE compliant, EMC 89/336/EWG compliant

*Dimensions mm*

**TEIP11 Dimensions**

**Control Room Housing Unit**

### DIN rail mount, IP20 4-20mA I/P

| Cat. No. | Description | Price |
|---|---|---|
| 18311–1121101 | 0.2 –1.0 bar o/p | £298.00 |
| 18311-1122101 | 3-15 psi o/p | £298.00 |

### Ex ia DIN rail mount, IP20 4-20mA I/P

| Cat. No. | Description | Price |
|---|---|---|
| 18311-3121101 | 0.2 –1.0 bar o/p | £317.00 |
| 18311-3122101 | 3-15 psi o/p | £317.00 |

### Alu Field Housing, IP 65 4-20mA I/P

| Cat. No. | Description | Price |
|---|---|---|
| 18311-1821101 | 0.2 –1.0 bar o/p | £328.00 |
| 18311-1822101 | 3-15 psi o/p | £328.00 |

### Ex ia Alu Field Housing, IP 65 4-20mA I/P

| Cat. No. | Description | Price |
|---|---|---|
| 18311-3821101 | 0.2 –1.0 bar o/p | £347.00 |
| 18311-3822101 | 3-15 psi o/p | £347.00 |

### Ex D Alu Field Housing, IP 65 4-20mA I/P

| Cat. No. | Description | Price |
|---|---|---|
| 18311-4821101 | 0.2 –1.0 bar o/p | £407.00 |
| 18311-4822101 | 3-15 psi o/p | £407.00 |

### Accessories

| Cat. No. | Description | Price |
|---|---|---|
| 18311-03119345 | Universal mounting: wall 1/2 in. pipe bracket | £28.00 |

PG 13.5 cable gland or thread M 20 x 1,5 or thread 1/2 NPT (depending on type)

**Field Housing Unit**

**ATEX CERTIFIED**

## TZID Smart – Electro-pneumatic Positioner

**ATEX CERTIFIED**

These digital, intelligent positioners offer a progressive functionality, with resistance to harsh conditions and hazardous area operation certification; aluminium or stainless steel housing options. As well as extended diagnostics, HART. FM/CSA Ex ia/ATEX and Ex ia/ATEX with flammable gas as operating medium.

## TZID-C  /110 (PROFIBUS PA) /120 (FOUNDATION FIELDBUS)

Compact, intelligent positioners offering Ex ib, Intrinsically Safe linear or rotary actuation.

## TZID-C200 HART, TZID-C /210 (PROFIBUS PA) /220 (FOUNDATION FIELDBUS)

**ATEX CERTIFIED**

Compact, intelligent positioners for single or double, linear or rotary actuation with Flameproof enclosures to FM / CSA, EEx d (ATEX ), and Intrinsically Safe (ATEX). Dual certified Ex ib/Ex d ATEX.

# Instrument Configuration
## 691HT HART Hand Held Communicator

For easy and convenient configuration of all ABB HART pressure and temperature transmitters, the HART hand held communicator offers full ATEX EEx ia intrinsic safety hazardous area certification. The communicator includes generic HART functions for configuration of Universal and Common Practice commands with HART devices. ABB also offers a combined CoMeter and HART configuration in a single housing for temperature (page 16) and pressure applications (page 26).

**Hart communicator**

| Cat. No. | Description | Price |
|---|---|---|
| 691HT21E0000000 | Hand held communicator | POA |
| B11180 | Supplied with 230/240 V AC 3 pin plug battery charger | |

**ATEX CERTIFIED**

### Smart Vision™ – Field Instrument Device Management Tool

Smart Vision is ABB's standalone engineering tool to support intelligent field devices which have a communications capability such as HART and PROFIBUS. It offers all aspects of instrument engineering, commissioning and maintenance in one centrally controlled package. At the core of Smart Vision is the Field Device Tool standard allowing full device support via Device Type Managers (DTMs). These DTMs provide full and complete device support for all features available independent of an instrument manufacturer.

- Configuration – online and offline with plausibility check
- Parameter setting, with automatic documentation and storage of all data
- Calibration – for improved process quality
- Commissioning – easy checking of process situations
- Diagnosis, with easy, remote debugging through detailed diagnostic data
- Maintenance – generation and control of maintenance plans

Smart Vision supports a choice of communication to suit your plant, from traditional wiring to digital protocols, from PC to notebook or laptop. Smart Vision uses familiar Windows™-based applications and concepts so that you only need to use one program for all your instruments, employing the same operating and display philosophy for maximum transparency and efficiency.

- Display of dynamic data
- User group and password protected structure
- Easy handling of all devices with a single program, no additional expense for purchase, administering or updating software over many different devices
- Complete, automatic data transfer to supervisory system, retains all device data in control system
- Single entry minimises repeated key errors
- Simplifies addition of new instruments, saves time and money
- On-line help at any time, with a keystroke

All ABB field instruments are compatible with Smart Vision, as well as intelligent devices from other manufacturers, so Smart Vision is easy to integrate into your plant.

**90 Day demo version available free of charge**

Although ABB's Smart Vision is not currently available through Assist Direct, we will be very pleased to provide you with further details on these and other ABB software tools.

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# ABB Instrumentation Service
## Full range of options to meet your needs

In our Instrumentation Group, we have over 40 Service Professionals backed up by a central Service Co-ordination Centre (01480 488080), and 3 comprehensive factory based workshops for return-to-base repair and calibration options.

ABB provides three levels of service: Instrumentation*Advantage*, Instrumentation*Active* and Instrumentation*Active+*. The three service levels mean your exact operational and financial needs can be met, maximising the reliability of your plant over its entire lifecycle. Elements from the three levels can be combined into a service contract.

### Instrumentation*Advantage*

- An entry level service package to optimise instrumentation product performance and ensure correct function for the specific application
- A local support service for rapid response
- Support includes Start Up and validation backed by ABB's experts and/or our certified Alliance Partner or contractor

### Instrumentation*Active*

- A Primary Service Product that provides optional 24/7 support with a high level of technical expertise
- Emphasis on delivering the right level of service for the circumstances
- Portfolio of complementary services such as corrective and preventative maintenance, calibration and verification
- Maximises reliability, accuracy and performance of instrumentation equipment
- Lifecycle support services programme that applies ABB's expertise to preinstalled systems and products, including third party instrumentation products

### Instrumentation*Active+*

- Service agreements developed to provide specialist and customised solutions to your specific circumstances
- Customised Preventative Maintenance and Total Care packages to suit your specific and holistic needs
- Instrument calibration and performance checking, loop tuning and maintenance assessment
- Phased migration and upgrades available to specification
- Easy parts ordering, repairs and calibration traceable to UKAS
- Lifecycle management programme

**Start Up** - Initial product start up, test and parameterisation
**Commissioning** - Full commissioning of products to meet application requirements.
**Maintenance** - Preventative or Corrective, On Site or at our Repair Workshop
**Calibration** - Tests and checks for long term stability and repeatability of measurement to maintain operational and quality assurance standards
**Verification** - Flowmeter verification to meet regulatory and application standards for measurement stability
**Migration** - Upgrades of parts or whole products to benefit from latest features.
**Lifecycle Management** - Complete planning packages to assess and take care of products throughout their lifetime, including recommendations for maintenance, spares and upgrades. Total Care - Combination of services to create cost effective and efficient solutions that are specifically designed for your asset groups and to fit with your own operational circumstances.

**For our comprehensive catalogue listing our service portfolio, call 01480 488080.**

# The Big Issues - MCERTS, Energy Saving and other issues


Reducing your Carbon Footprint

## The Big Issues and ABB

As a world leader in instrumentation, automation and many other fields of industry, ABB is at the forefront of many of the key industry issues.

Through our position and the calibre of our personnel, we are able to offer informed opinion and guidance on many issues. While these pages provide an overview of the different subjects, additional information can be found on **www.abb.co.uk/bigissues.**

Issues covered in depth on this site include:
• **The Pressure Equipment Directive**
• **Flowmeter Calibration**
• **The Urban Waste Water Treatment Directive**
• **The ATEX Directive**

We offer additional information in the form of handy wall chart guides and brochures that cover more specialist instrumentation product areas. These are listed on the Faxback Form (inside back cover).

## Obtaining Permission to Continue in Business - IPPC

Prevention and control of pollution from manufacturing and other business processes has been regulated carefully in the UK since the 1990 Environmental Protection Act (which established Integrated Pollution Control). Your business may already have to operate under a permit that allows certain strictly controlled emissions or pollution to the environment; however the stakes are being raised. Integrated Pollution Prevention Control is a regulatory regime that covers manufacturing operations considered to be the most polluting. The IPPC Directive (96/61 EC) was passed by the EU in October 1996. The UK passed the Pollution Prevention and Control Act (1999) and The Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 1973) to enact the Directive. Statutory Instruments (SIs) define the rules of England and Wales (SI1973) and also Scotland (SI 323).



Key considerations are:

• **New industry sectors are now covered with a wider reach within existing affected (IPC) industry sectors**

• **More substances will be assessed for their impact on the environment – especially affecting water discharge**

• **Sustainability of permitted processes has to be justified on many factors such as energy efficiency, minimal waste, efficient water and raw material use as well as actual pollutant emissions**

• **Cradle to cradle coverage of a process and installation including ancillary operations, from design and commissioning to operation, decommissioning and site restoration**

• **Applications for permits to operate must be made each year. Target emissions (Emission Limit Values - ELVs) and conditions must be met**

• **Forward improvement programme will be included**

Most importantly, all measurement and control permits will be based on your use of the Best Available Techniques (BAT) to monitor and control your process. You will have to invest in your plant equipment procedures to be able to convince the regulatory officials that your data and processes are meeting the requirements. Also, there is no standing still; the targets you will have to meet will be reviewed regularly.

## The importance of MCERTS

One element of the IPPC is the Environment Agency's MCERTS scheme, with more and more instrumentation and installation packages being certified as providing sufficient self-monitoring accountability. Where a category of instrumentation has not yet been incorporated within MCERTS, then the manufacturer's product performance and reputation must be carefully considered to ensure it meets the BAT criteria.



## The need for verification and records

One vital aspect of the IPPC legislation is ensuring that instruments are correctly calibrated and their accuracy and accountability are properly verified. Records of these processes will be essential for BAT justification. Verification and calibration processes are currently part of the ongoing development of MCERTS categories.

A typical example is in flowmeter operation, vital to water and waste water discharge consents. Where calibration and verification used to mean costly downtime and factory recalibration, now in-situ calibration standard methods are being evaluated which will significantly reduce the cost.

Modern recording instrumentation can store and share extensive records of process operations, providing full records which can be appended to BAT justifications.