

Specification DataFile

- **Unrivalled, fully traceable flow performance, $\pm 0.2\%$ accuracy. Operable flow range: 1000 : 1**
 - ensures precise revenue measurement; superior process control

- **Approved hygienic/sanitary design with choice of connections**
 - allows clean-in-place and total flexibility of installation

- **Designed and manufactured to internationally accepted standards ISO 9001, 3A, FDA**
 - ensures reliable, maintenance-free operation

- **Fully-featured transmitter with comprehensive display and output options, including HART**
 - allows easy integration into other systems and clear operator interface

- **Corrosion free polypropylene transmitter enclosure IP65/NEMA4X**
 - suitable for all brewing, food, pharmaceutical and dairy environments



MagMaster – bringing unsurpassed flowmetering performance to the brewery, dairy, pharmaceutical and food processing industries.

Introduction

Setting the Standard

MagMaster – the high performance flowmeter from ABB Kent-Taylor – is now available in a hygienic/sanitary version for food processing and pharmaceutical applications. MagMaster is designed for use in dairies, breweries, pharmaceutical and liquid food processing markets and it takes hygienic/sanitary flowmetering to new levels of capability and performance. The new range brings to these industries a proven level of performance which is unsurpassed in electromagnetic flow measurement.

Unrivalled Performance

MagMaster provides reliable measurement from high capacity down to virtually zero flow rates. Its potential operating flow range of 1000:1 enables previously unregistered minimal flows to be metered with an accuracy of $\pm 0.2\%$ of reading or $\pm 0.001\text{m/s}$ (0.0033ft/s) (whichever is the greater). Users can now achieve more precise revenue measurement and superior process control.

Hygienic/sanitary Design

MagMaster's wide temperature, hygienic/sanitary design eliminates germ traps and is suitable for CIP (Clean-in-Place) using chemical cleansers, hot water and steam rinses. All external crevices have been eliminated from the sensor to ensure easy and effective hose-down.



Flowmeters, Transmitter and Couplings

Fully Approved to International Standards

MagMaster conforms to a wide range of national and international standards to meet hygienic/sanitary requirements for measurement and food processing legislation. Approvals include: 3A licensed, FDA, FM and CSA general purpose. The meter's PTFE lining is approved and its housing is designed to be compatible with a hygienic/sanitary environment.

Flexible Installation

The new range is available in sizes from 20mm (0.75in.) to 80mm (3in.) – the latter size also being available with 100mm (4in.) mating couplings. The standard installation connections are tri-clamp, ISO 2852 or DIN 11851 male screw connectors.

Tough in Service

The new range of meters is extremely robust and can withstand the stresses of being installed in a tanker and also accommodates the widely differing operating conditions encountered in liquid food and pharmaceutical applications.

Fully Featured Transmitters

There is a choice between the 'Industry Reference' MagMaster transmitter and the hygienic/sanitary version. The hygienic/sanitary version minimizes germ traps, thus facilitating cleaning. The local communication connector is omitted and a hygienic/sanitary terminal cover is fitted to the front of the unit. The transmitter is tamper-proof thus ensuring integrity of measurement.

Easy-to-Use – Simple to Interface

Both transmitters feature the option of a display which provides three internal totalizers covering forward, reverse and nett flow in a wide range of volumetric units. Flowrate display in forward and reverse directions in volumetric flowrate units is also provided. The display option, together with the wide choice of outputs – analog, pulse, serial data, Hart, etc. – ensures compatibility with both the user's display and control system requirements. Installation of the system is simplified by the universal power supply (available for a.c. or d.c. supplies) which enables the system to be used over very wide ranges of voltage with no manual voltage selection being required.

Maintaining the Standard

MagMaster is designed and manufactured in accordance with international quality procedures (ISO 9001) and all flowmeters are calibrated on nationally traceable calibration rigs to provide the end user with complete assurance of both quality and performance of the meter.

General Specification

Sizes:

Size		Flow Range			
mm	in.	†Minimum		Maximum	
		m ³ /h	US g/min	m ³ /h	US g/min
*20	*0.75	0.0113	0.05	17	75
25	1	0.0177	0.08	27	115
40	1.5	0.0452	0.20	68	300
50	2	0.0707	0.30	107	450
65	2.5	0.1194	0.53	179	790
80	3	0.1809	0.80	271	1194
100‡	4‡	0.1809	0.80	271	1194

*DIN only.

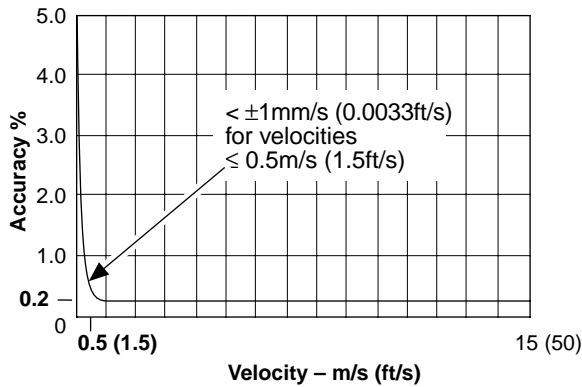
† For accuracy see graph below.

‡ 100mm/4inch couplings with 80mm/3inch sensor

Transmitter/Sensor

Separation: < 100m (328ft)

Accuracy (under reference conditions)



Analog output: Additional <math>< \pm 0.008 \text{ mA}</math>.

Temperature effect:

Transmitter: <math>< \pm 0.08\% \text{ of reading}/10^\circ\text{C}</math>.
Analog output – Additional <math>< \pm 0.08\% \text{ of reading}/10^\circ\text{C}</math>.

Sensor: <math>< \pm 0.02\% \text{ of rate}/10^\circ\text{C}</math>.

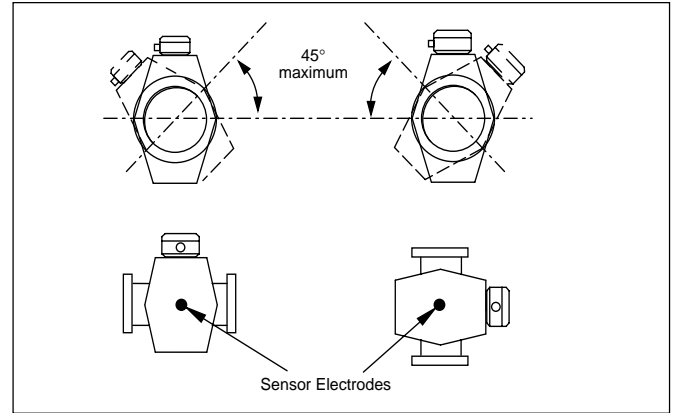
Repeatability and Reproducibility:

<math>< \pm 0.05\%</math> or <math>< \pm 0.25 \text{ mm/s}</math>, whichever is the greater.

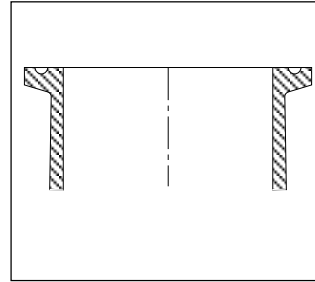
Power supply variation:

Negligible.

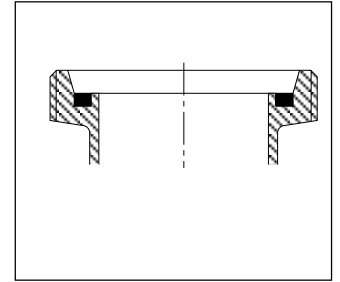
Mounting:



Connections:

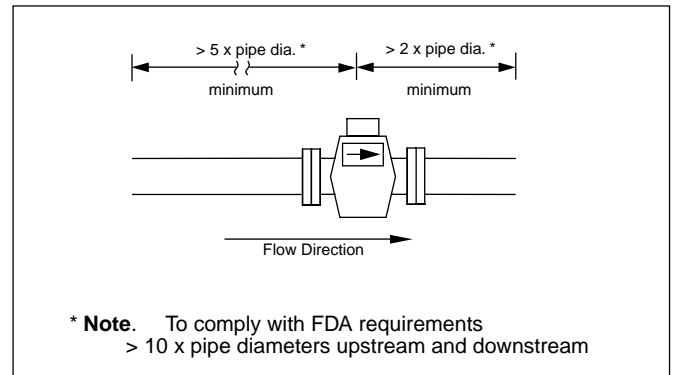


Tri-clamp ISO 2852



DIN 11851.

Straight pipe requirements:



Power consumption: < 20VA.

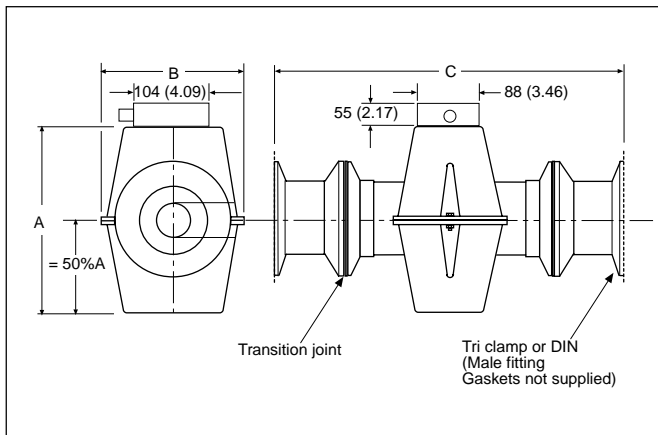
Conductivity: $\geq 5 \mu\text{S/cm}$.

Sensor Specification

Sizes:

Size mm (in.)	Dimensions – mm (in.)			Approx. Weight	
	A	B	C	kg	lb
20 (0.75)	174 (6.85)	122 (4.80)	285 (11.22)	7	15
25 (1)	174 (6.85)	122 (4.80)	285 (11.22)	7	15
40 (1.5)	210 (8.27)	128 (5.04)	284 (11.18)	9	20
50 (2)	210 (8.27)	128 (5.04)	284 (11.18)	10	22
65 (2.5)	280 (11.02)	122 (4.80)	312 (12.28)	13	29
80 (3)	280 (11.02)	122 (4.80)	312 (12.28)	13	29
100 (4) *	280 (11.02)	122 (4.80)	392 (15.43)	14	31

* 100mm/4inch couplings with 80mm/3inch sensor.



Materials:

Item	Material
Metering tube & fittings	Stainless steel 316
Lining	PTFE (complies with FDA & 3A regulations)
Gaskets (Transition joints)	Nitrile rubber: 105°C (221°F)
	EPDM: 135°C (275°F)
Electrodes	Stainless steel 316
	Hastelloy 'C'
Sensor & terminal box housings	White nylon-coated aluminium

Pressure Limitations:

Size mm (in.)	Pressure – bar (lb/in2)	
	Minimum*	Maximum
20 to 65 (0.75 to 2.5)	0.25 (3.75)	17 (250)
80 (3) 100 (4)	0.25 (3.75)	17 (250)

*Absolute

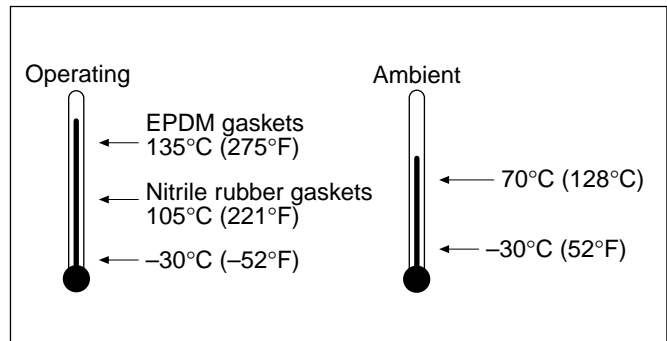
Environmental Protection

(when installed): IP65/NEMA 4X

Approvals/Licenses:

3A;
FDA
FM/CSA applied for.

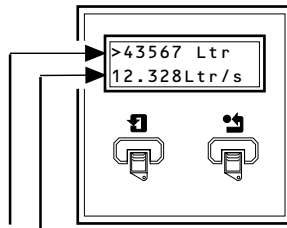
Temperature Ranges:



Transmitter Specification

Display (optional):

- Forward flow total
- Reverse flow total
- Net flow total
- Alarms
- Flow Velocity in m/s or ft/s
- Flow Rate % of Range
- Flow rate

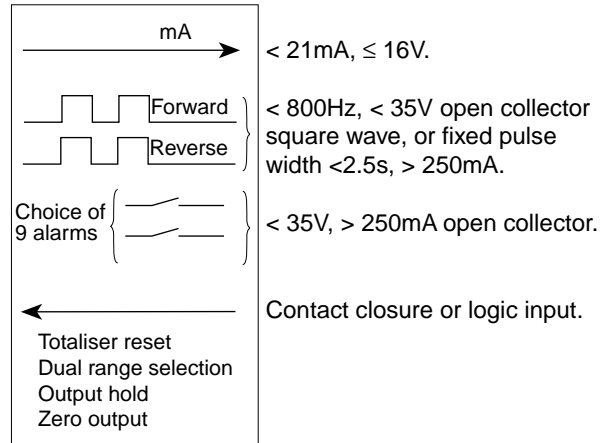


Power Supply:

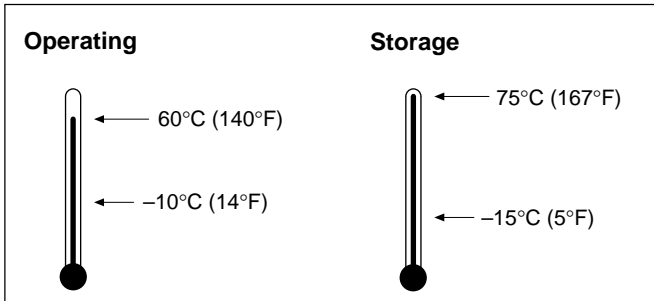
Voltage Type	Voltage Range (V) Absolute rating	Frequency (Hz)	VA
a.c.	85 to 265	47 to 440	<2 0
d.c.	11 to 40	-	<2 0

Electrical connections: 20mm plastic glands, or accepts 0.5in. NPT connectors. (Face seals required).

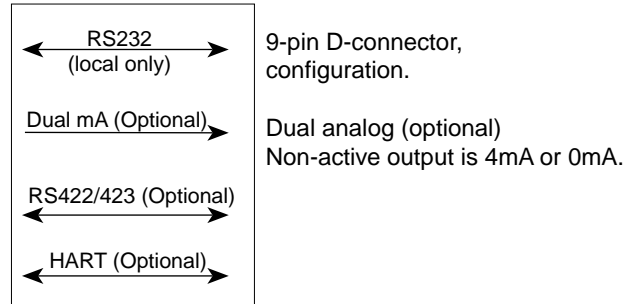
Common



Temperature Ranges:



“Industry Reference” Transmitter



Environmental protection:

IP65/NEMA 4X.

Approvals:

Electrical safety – BS4743 Class 1. (IEC 348).
FM and CSA applied for.

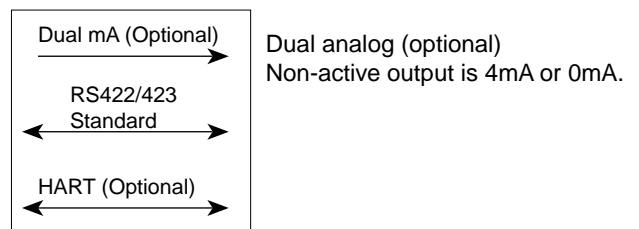
EMC Specification:

Conforms to –
EMC Directive 89/336/EEC

Enclosure:

Glass loaded polypropylene, polycarbonate window, polycarbonate terminal cover (Hygienic/sanitary version).

Hygienic/Sanitary Transmitter



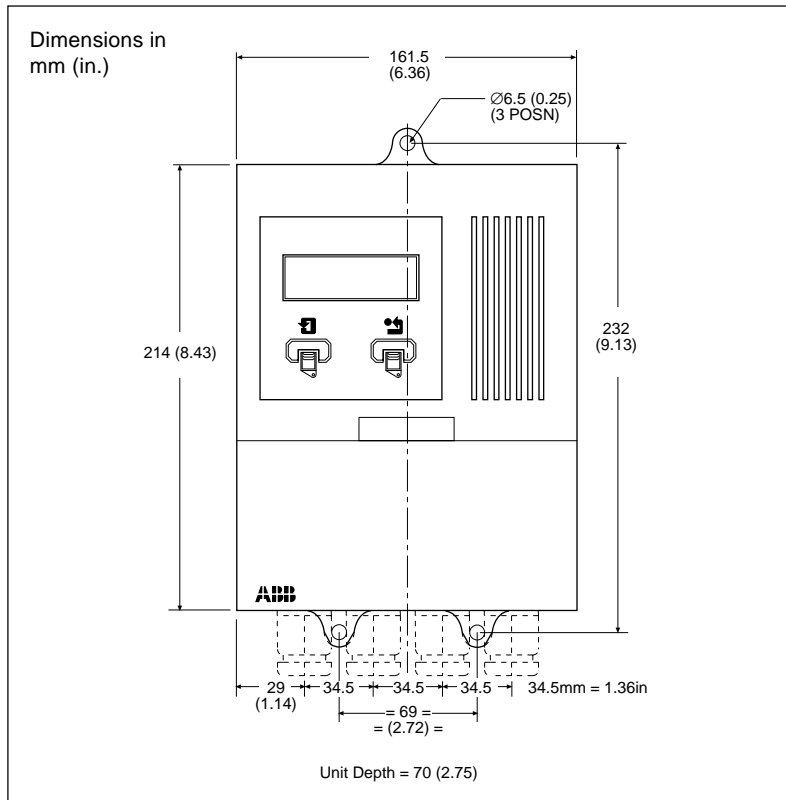
Outputs/Inputs:

Galvanic separation to 50Vd.c. between analog, pulse/alarm and earth/ground.

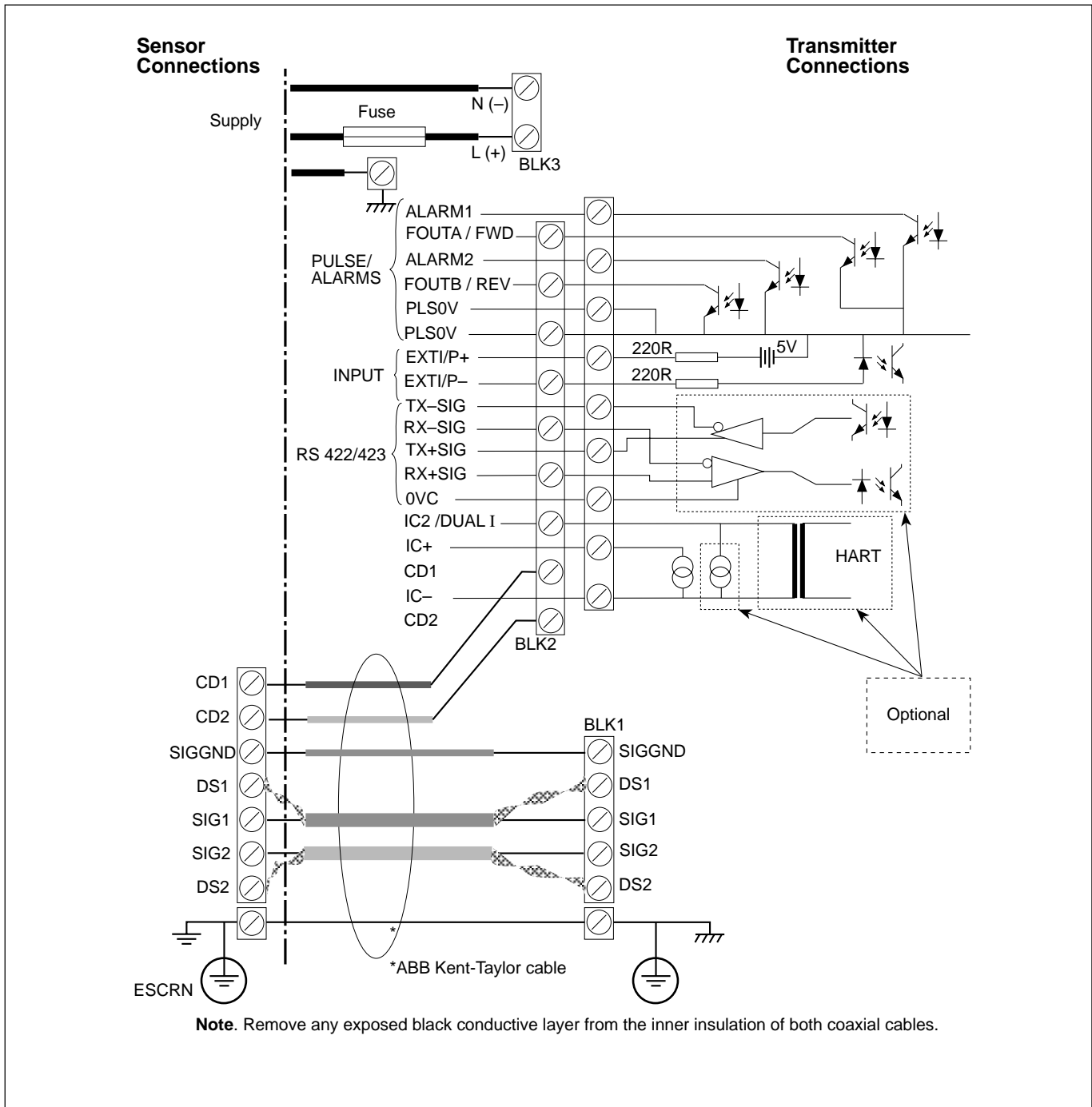
Sensor Ordering Guide

		Ordering Code	MF/E	XXX	X	A	X	1	X	1	XX	X
Calibrated Bore												
	20mm (0.75in.). DIN ONLY.			200								
	25mm (1in.)			250								
	40mm (1.5in.)			400								
	50mm (2in.)			500								
	65mm (2.5in.)			650								
	80mm (3in.)			800								
	100mm (4in)			109								
End Connections												
	Hygienic, ISO 2852 (Tri-clamp/Clover)					G						
	Hygienic, DIN 11851					H						
Electrodes												
	316 stainless steel									1		
	Hastelloy 'C'									2		
Gasket Material												
	Nitrile rubber										A	
	EPDM										B	
Cable Length												
	No cable											00
	10m (33 ft)											10
	20m (66 ft)											20
	30m (98 ft)											30
	40m (131 ft)											40
	50m (164 ft)											50
	User specified length in metres											X0
Glandng												
	20mm plastic conduit entry											1
	0.5in. NPT											4

Transmitter Overall Dimensions



General Specification



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

© ABB 1999

(7.99)

ABB Instrumentation Ltd
 Oldends Lane
 Stonehouse, Glos.
 England, GL10 3TA
 Tel: +44 (0)1453-826-661
 Fax: +44 (0)1453-827-856

**ABB Automation Inc
 Instrumentation Division**
 125 E. County Line Road
 Warminster, PA 18974 USA
 Tel: +1 215-674-6000
 Fax: +1 215-674-7183

ABB Instrumentation
 22016 Lenno
 Como
 Italy
 Tel: +39 (0)344-58111
 Fax: +39 (0)344-58278