



The Company

We are an established world force in the design and manufacture of instrumentation for industrial process control, flow measurement, gas and liquid analysis and environmental applications.

As a part of ABB, a world leader in process automation technology, we offer customers application expertise, service and support worldwide.

We are committed to teamwork, high quality manufacturing, advanced technology and unrivalled service and support.

The quality, accuracy and performance of the Company's products result from over 100 years experience, combined with a continuous program of innovative design and development to incorporate the latest technology.

The UKAS Calibration Laboratory No. 0255 is just one of the ten flow calibration plants operated by the Company and is indicative of our dedication to quality and accuracy.

EN ISO 9001:2000



Cert. No. Q 05907

EN 29001 (ISO 9001)



Lenno, Italy – Cert. No. 9/90A

Stonehouse, U.K.



Use of Instructions



Warning.

An instruction that draws attention to the risk of injury or death.



Note.

Clarification of an instruction or additional information.



Caution.

An instruction that draws attention to the risk of damage to the product, process or surroundings.



Information.

Further reference for more detailed information or technical details.

Although **Warning** hazards are related to personal injury, and **Caution** hazards are associated with equipment or property damage, it must be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process system performance leading to personal injury or death. Therefore, comply fully with all **Warning** and **Caution** notices.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of the Marketing Communications Department.

Health and Safety

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

BOOK 5 FAULT FINDING

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A very powerful test mode, especially useful during commissioning and plant fault finding, enables all external devices connected to the MagMaster to be tested over the full range of flow rates.

This mode can be used regardless of flow conditions in the sensor, or even with the sensor disconnected, and does not require the use of additional equipment.

SAFETY MEASURES**MESURES DE SÉCURITÉ****Warning.**

- EXPLOSION HAZARD.
SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
- EXPLOSION HAZARD.
DO NOT REMOVE FUSE OR DISCONNECT POWER LEADS WHILE CIRCUIT IS LIVE.
- THE LOCAL TERMINAL MUST NOT BE USED WHEN THERE IS AN EXPLOSION RISK.

**Avertissement.**

- RISQUE D'EXPLOSION.
SUBSTITUTION DE COMPOSANTS PEU RENDRE CE MATÉRIEL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE I, DIVISION 2.
- RISQUE D'EXPLOSION.
NE PAS RETIRER LE FUSIBLE NI DÉBRANCHER LES FILS D'ALIMENTATION TANT QUE LE CIRCUIT EST SOUS TENSION.
- NE PAS UTILISEZ LE TERMINAL LOCAL EN ATMOSPHÈRE EXPLOSIVE.

**Warning.**

- Installation and maintenance must only be carried out by suitably trained personnel.
- HAZARDOUS AREA DESIGNATION ON THE EQUIPMENT LABEL MUST BE SUITABLE FOR THE INTENDED DUTY AND LOCATION.
- All relevant sections of this manual must be read before selecting a location.
- Safety requirements of this equipment, any associated equipment and the local environment must be taken into consideration.
- The installation and use of this equipment must be in accordance with relevant national and local standards.

2 FAULT FINDING



Warning.

- Observe all safety measures (See INTRODUCTION).
- Take all precautions to avoid risk to personnel, plant and risk of explosion in hazardous areas.
- Do NOT open the transmitter main casing. There are no user serviceable parts or adjustments inside.
- Service access is restricted to the termination area

Should the MagMaster fail to operate, first check the power supply, then the power supply connections and fuse located in the termination area. If necessary, replace the fuse with one of the correct rating as listed in Book 6.



Note. All approved versions to use specified fuses – see Book 6.

Check that all external connections are made correctly.

2.1 Alarms

The transmitter has built in diagnostics with alarm indication which interrupts the transmitter local display. A data terminal connected to the transmitter will display these alarms in 'Read Alm' parameter; '16' from Main Menu (see **Warning** in next column).

The table below shows possible alarm indications and Fig. 2.1 Fault Finding Flow Chart indicates checking procedures to find the problems causing the alarms.

For method of interrogating the local display see Startup Section in Book 4.

Table 2.1 Possible Alarm Indications

Display	Alarm
MtSnsr	Empty Sensor
Hi	High flow
Lo	Low flow
Anlg	Analogue over range
Pls	Pulse frequency limited
Coil	Sensor Coil open circuit
19, 20, 21	See Fault Finding Flow Chart

2.2 Test Mode

To access the Test Mode, connect a terminal device to the Programming Connector as described in APPENDIX A Section.

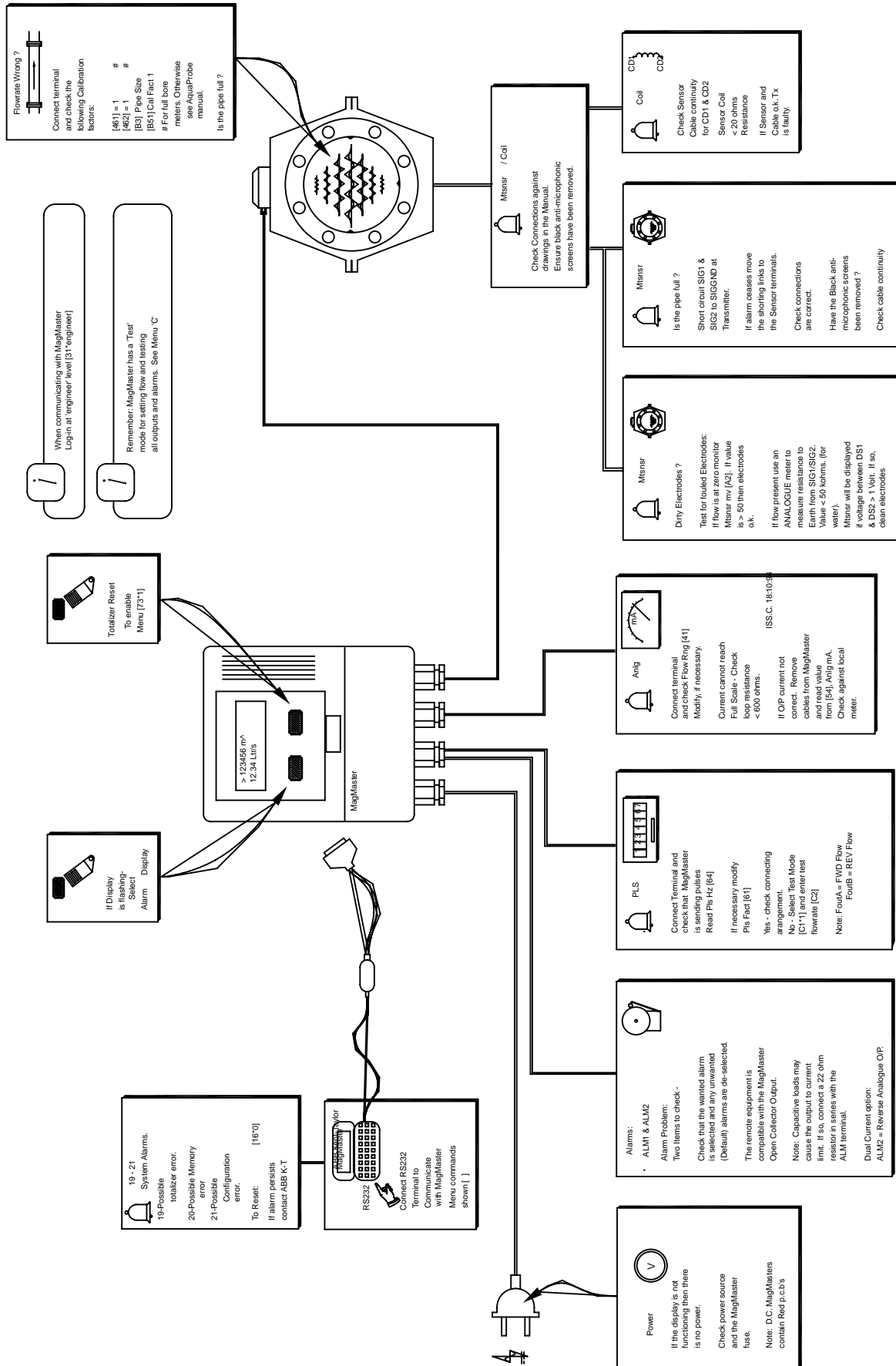
Select 'Engineer' security level (see Configuration Section). Set 'Test Mode' parameter to '1' and enter an appropriate flow rate in the 'Test Flow' parameter.

Output responses may now be viewed from the various 'Test' parameters. (See Configuration Section for full details of operation.)



Warning. Refer to Safety Measures if a data terminal is to be used to diagnose faults in hazardous locations.

2.3 Fault Finding Flow Chart



NOTES

PRODUCTS & CUSTOMER SUPPORT

Products

Automation Systems

- *for the following industries:*
 - Chemical & Pharmaceutical
 - Food & Beverage
 - Manufacturing
 - Metals and Minerals
 - Oil, Gas & Petrochemical
 - Pulp and Paper

Drives and Motors

- *AC and DC Drives, AC and DC Machines, AC motors to 1kV*
- *Drive systems*
- *Force Measurement*
- *Servo Drives*

Controllers & Recorders

- *Single and Multi-loop Controllers*
- *Circular Chart, Strip Chart and Paperless Recorders*
- *Paperless Recorders*
- *Process Indicators*

Flexible Automation

- *Industrial Robots and Robot Systems*

Flow Measurement

- *Electromagnetic Flowmeters*
- *Mass Flow Meters*
- *Turbine Flowmeters*
- *Flow Elements*

Marine Systems & Turbochargers

- *Electrical Systems*
- *Marine Equipment*
- *Offshore Retrofit and Refurbishment*

Process Analytics

- *Process Gas Analysis*
- *Systems Integration*

Transmitters

- *Pressure*
- *Temperature*
- *Level*
- *Interface Modules*

Valves, Actuators and Positioners

- *Control Valves*
- *Actuators*
- *Positioners*

Water, Gas & Industrial Analytics Instrumentation

- *pH, conductivity, and dissolved oxygen transmitters and sensors*
- *ammonia, nitrate, phosphate, silica, sodium, chloride, fluoride, dissolved oxygen and hydrazine analyzers.*
- *Zirconia oxygen analyzers, katharometers, hydrogen purity and purge-gas monitors, thermal conductivity.*

Customer Support

We provide a comprehensive after sales service via a Worldwide Service Organization. Contact one of the following offices for details on your nearest Service and Repair Centre.

United Kingdom

ABB Limited
Tel: +44 (0)1453 826661
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United States of America

ABB Inc.
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Client Warranty

Prior to installation, the equipment referred to in this manual must be stored in a clean, dry environment, in accordance with the Company's published specification.

Periodic checks must be made on the equipment's condition. In the event of a failure under warranty, the following documentation must be provided as substantiation:

1. A listing evidencing process operation and alarm logs at time of failure.
2. Copies of all storage, installation, operating and maintenance records relating to the alleged faulty unit.

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

www.abb.com

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

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