

# Magnetic Level Gauges

- Leak proof design
- No calibration
- No power required
- Perfect visibility with clean or dirty liquids
- Robust construction



# Operating Principle

ABLE Magnetic Level Gauges provide clear, high clarity indication of liquid level.

A float containing a magnet rises and falls with the liquid. As the float moves, this information is transferred to the indication rail mounted on the outside of the tube. The white and red indication flaps represent air and liquid level respectively.

The Magnetic Level Gauge can be mounted in various orientations, typically onto the side of a vessel however it may be fitted onto the top as required.

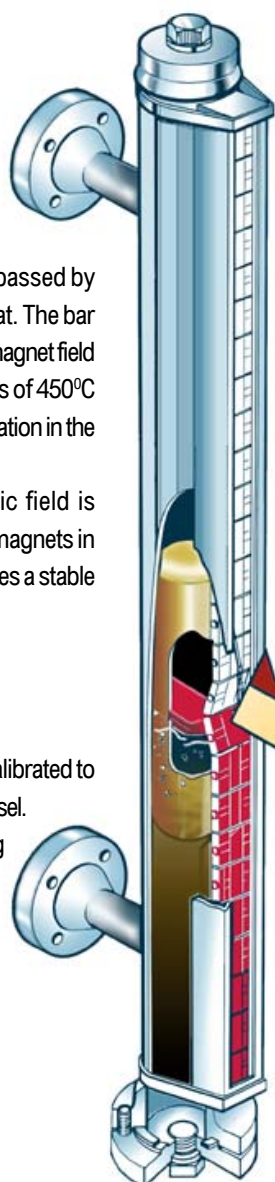
## Magnet System

Each of the coloured flaps contains a small magnet which rotates through 180° when passed by the bar magnet within the float. The bar magnet design does not lose magnet field strength even at temperatures of 450°C guaranteeing continuous operation in the most extreme applications.

The indication rail magnetic field is interlocked by the individual magnets in each of the flaps, which ensures a stable indication.

## Floats

ABLE Floats are specifically calibrated to match the conditions of the vessel. The density, operating pressure and temperature are taken into account, ensuring that the inferred level is accurate and repeatable.



# A complete range of styles, construction materials and options to suit any application

ABLE Magnetic Level Gauges are a safer alternative to traditional sight glasses as the glandless construction is totally leak-proof. Furthermore, visual indication is not impaired by any product build up within the gauge tube. Optional switch and transmitter output configurations for remote indication allow greater user flexibility. A comprehensive range of vent, drain and isolation valves provide flexibility for shutdown and system manufacture requirements.

Process compatibility is assured as the range of materials of construction includes: Stainless Steel, PVC, PP, PVDF, Hastelloy. Other exotic materials are available and all gauge designs can, if required, be lined or coated with PTFE.

Budget OEM variants are available. Whilst ABLE also offer specific designs to fulfil the requirements of industries such as hydraulics, HVAC and refrigeration.

Indication rails are available in a variety of colours to indicate liquid levels of different media types or to clearly convey measurement of an interface application. Depending upon the location of the Magnetic Level Indicator and the ambient light conditions differing colour combination of indication rail can offer significant visibility advantages.

The indication rails are available in the following configurations, the first indicated colour indicates the liquid level: -

- **Yellow / Blank Aluminium**
- **Blue / Blank Aluminium**
- **Purple / Blank Aluminium**
- **Green / Blank Aluminium**
- **Black / Yellow**
- **Red / Blue**
- **Red / Green**

## TECHNICAL SPECIFICATIONS

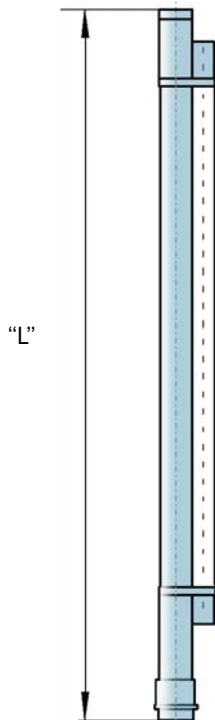
- *Screwed or flanged connections.*
- *Pressures to 400 bar  
Temperatures to 450°C.*
- *Min SG 0.35.*
- *Transmitter/Switch options for hazardous areas.*

Beside the standard colour combinations listed above other permutations, or rails with more than two colours are available to meet individual specification. Rails are also available with aluminium or stainless steel end caps.

# ABLE magnetic level indicators have three basic variants:-

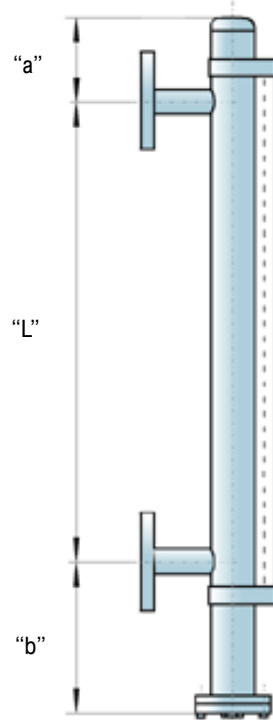
## A Type:-

Suitable for side mounting, connections to the vessel are made from the top and bottom of the gauge.



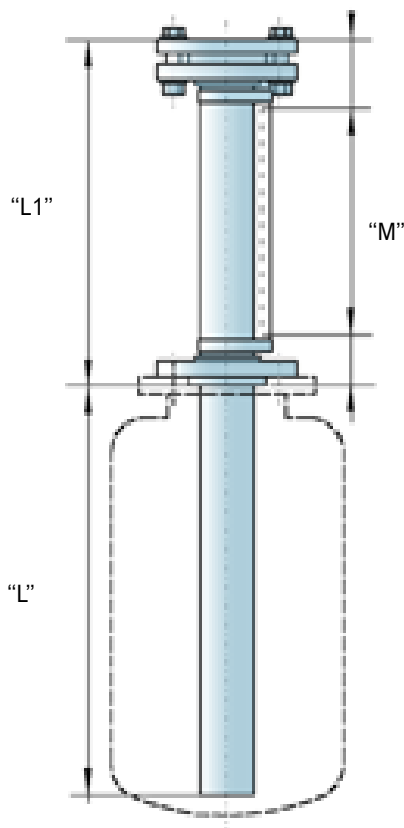
## B Type:-

Suitable for side mounting, connections to the vessel are made from the side of the gauge.



## C Type:-

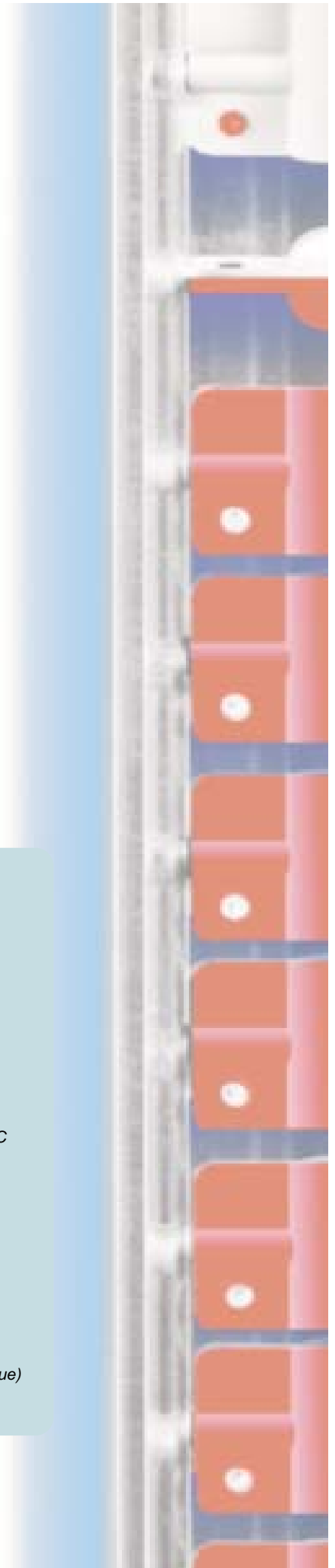
Suitable for top of tank mounting, connection to the vessel is via the bottom of the gauge.



## OPTIONS

- Vent/drain flanges
- Vent/drain valves
- Coloured indication rails
- Anti rattle springs/damping springs (power generation)
- Support brackets
- IP67 indication rails
- Frost protection below  $-30^{\circ}\text{C}$
- Steam jacket
- Trace heating
- Graduation scales in either traffolyte, aluminium or stainless steel
- Interface floats
- ASME construction
- NACE MR-01-75 (latest issue)
- Switches/transmitters

For specific gauge details, and further information contact factory.



# Accessories

## Switches

### MLS-16

#### SPDT bistable

**Housing:** Makrolon, yellow

**Media temp.:** -50 to 150° C

**Switch-Rating:** max. 250 V  
max. 1.0 A  
max. 60 VA ~  
max. 40 W =

**Contacts:** Rhodium

**PVC-Cable, grey harmonised:** 3 x 0.75 mm<sup>2</sup>

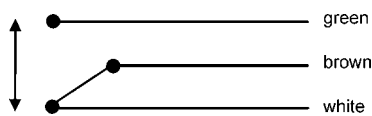
**Cable gland:** Agromid, grey

**Gland seal:** Pepunan N

**Enclosure:** IP68

*(Suitable for use in an Intrinsically Safe circuit)*

#### Wiring - Diagram



### MLS-02

#### SPDT bistable EExdIICT6

**Housing:** 1.4435 (ST/ST)

**Media temp.:** -50 to 120° C

**Switch-Rating:** max. 250 V  
max. 1.0 A  
max. 60 VA ~  
max. 40 W =

**Contacts:** Rhodium

**PVC-Cable, grey harmonised:** 4 x 1.00 mm<sup>2</sup>

**Cable gland:** Nickel plated brass

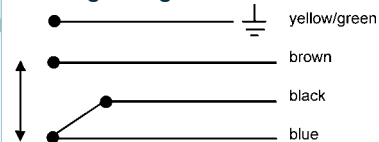
**Gland seal:** Perpunan N

**Enclosure:** Design according to IP68

**Certification:** EN 50014  
EN 50018

INIEX 91C.103.925X

#### Wiring - Diagram



### MLS-03

#### SPDT bistable EExiaII

**Housing:** 1.4435 (ST/ST)

**Media temp.:** -50 to 120° C

**Parameters:**  $C_{int} = 250 \text{ pF}$   
 $L_{int} = 5 \text{ H}$   
 $T_{max} = 80^\circ\text{C}$

**Contacts:** Rhodium

**PVC-Cable, blue shielded:** 3 x 0.75 mm<sup>2</sup>

**Cable gland:** Polyamid, blue

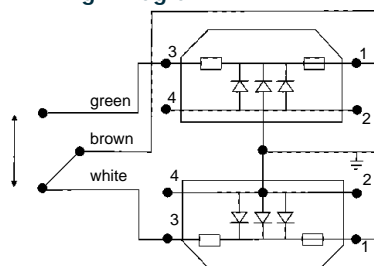
**Gland seal:** Neoprene

**Enclosure:** IP68

**Design according to:** EN 50014  
EN 50020

**Certification:** INIEX 91C.101.157U

#### Wiring - Diagram

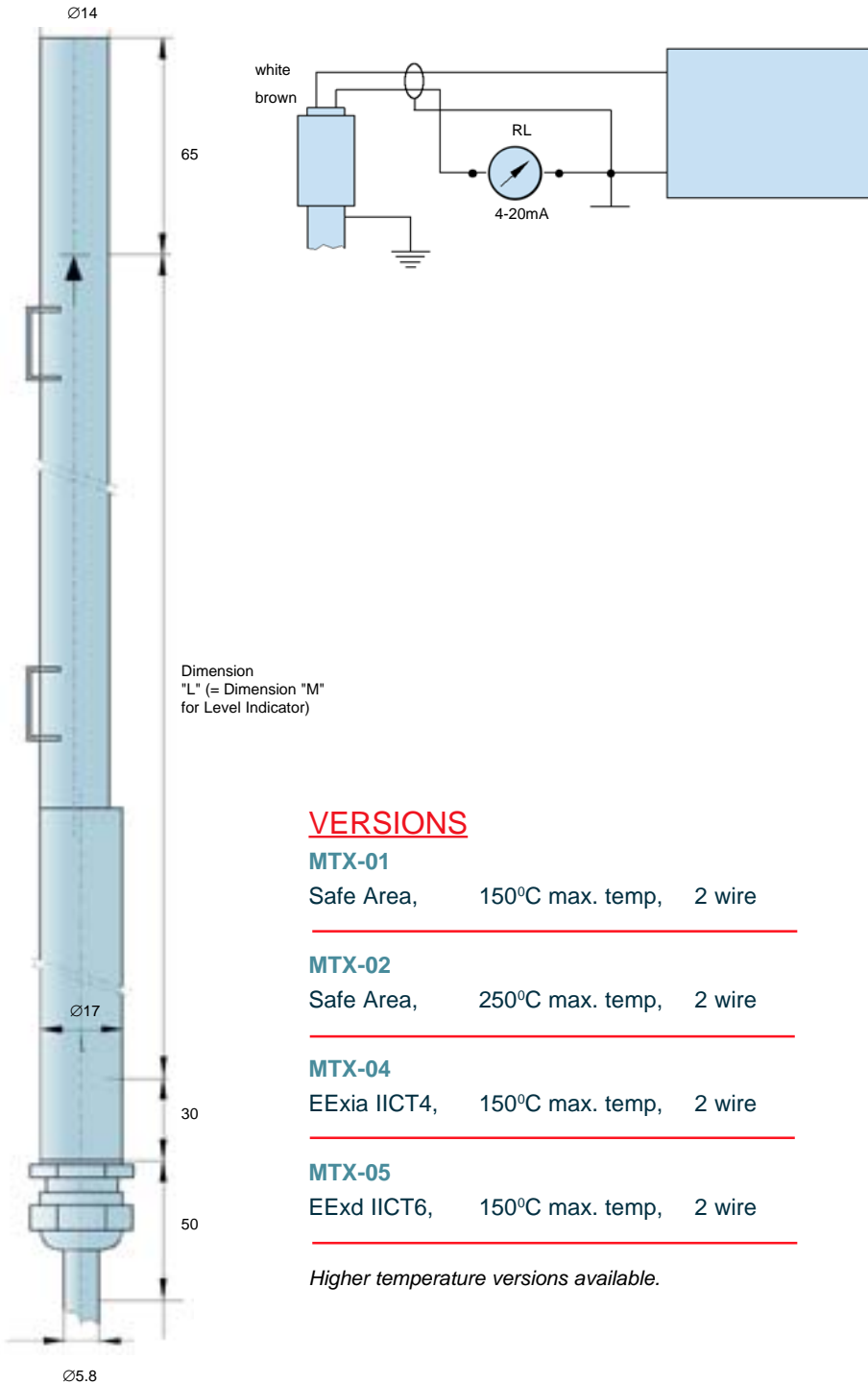


The Clamp-on Switch is attached to the gauge in the same way as the indication rail. High temperatures, higher contact ratings, pneumatic outputs are available. It is standard for 3 metres of cable to be provided with the switches and transmitters but longer cable lengths are available. The switches can be terminated in enclosures if required. We can also provide as standard a terminal junction box with M20 entry as opposed to flying leads for both standard & EExd switch and transmitters.

# Accessories

## Transmitters

The transmitter is mounted on the outside of the gauge tube within a 30° angle opposite the indication rail. Level changes cause the magnet inside the float to operate the contacts of a reed resistor chain, wired up as a voltage divider. The varying signal is measured and converted by means of an I.C. logic circuit. The signal is proportional to the change of liquid providing 4-20mA output.



### VERSIONS

#### **MTX-01**

Safe Area, 150°C max. temp, 2 wire

#### **MTX-02**

Safe Area, 250°C max. temp, 2 wire

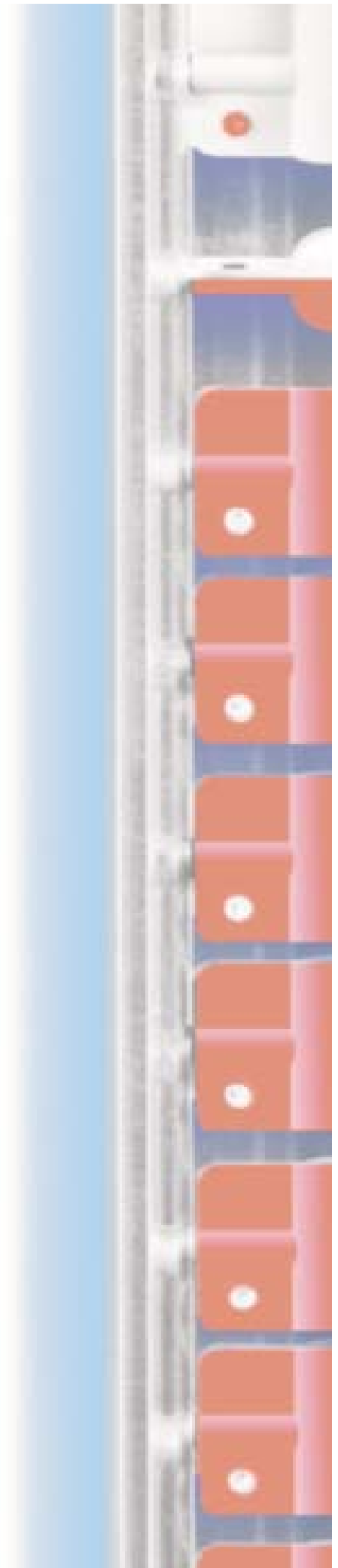
#### **MTX-04**

EExia IICT4, 150°C max. temp, 2 wire

#### **MTX-05**

EExd IICT6, 150°C max. temp, 2 wire

*Higher temperature versions available.*

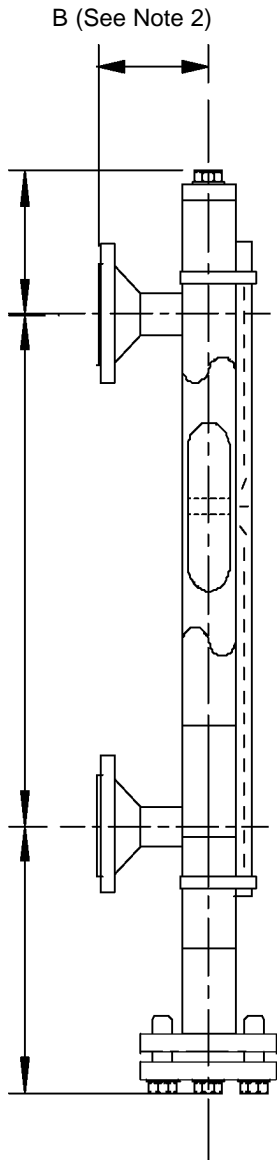


# MAGNETIC LEVEL INDICATOR QUOTATION REQUEST

**FAXBACK +44 (0)118 931 2161 • EMAILBACK info@able.co.uk**

For an IMMEDIATE quotation, PHOTOCOPY THIS PAGE, fill in the appropriate details and FAXBACK to us on **+44 (0)118 931 2161**

Name: \_\_\_\_\_ Postcode: \_\_\_\_\_  
 Company: \_\_\_\_\_ Telephone: \_\_\_\_\_  
 Address: \_\_\_\_\_ Fax: \_\_\_\_\_  
 \_\_\_\_\_ Email: \_\_\_\_\_  
 \_\_\_\_\_ Website: \_\_\_\_\_



## GAUGE TYPE (see page 2)

Please tick 4 adjacent box

- A
- B (as shown)
- C top of tank

## PROCESS DETAILS

- Lower Phase SG
- Upper Phase SG
- OP Pressure
- Max/Min Temp
- Area Classification

## MATERIAL

- All 316 ST.ST
- Hastelloy
- Other (Specify)

## CONNECTIONS

- Connection Size & Type
- Vent Conn.
- Drain Conn.
- Indication Length (L)

## OPTIONS

- Clamp On Switches
- 4-20mA Transmitter
- P 67 Indication Rail

### Notes

1 Dependant on process details

2 Dependant on pressure rating

All sketches shown here are representative only and should not be taken to indicate engineering detail.

Able reserve the right to modify gauge specifications at any time prior to order, and after that point subject to negotiation.



# Applications

## Power Generation

- LP/HP heaters, De-aerators,  
Condensers and Storage tanks.

## Refridgeration

- Specials designs on request.  
However R404A, R22 etc uses type  
MLG-MID-10 as standard. - contact us  
for data sheets.

## HVAC

- Lube oil levels, various application  
sizes as small as 300mm.

## Refineries/Chemical Plants

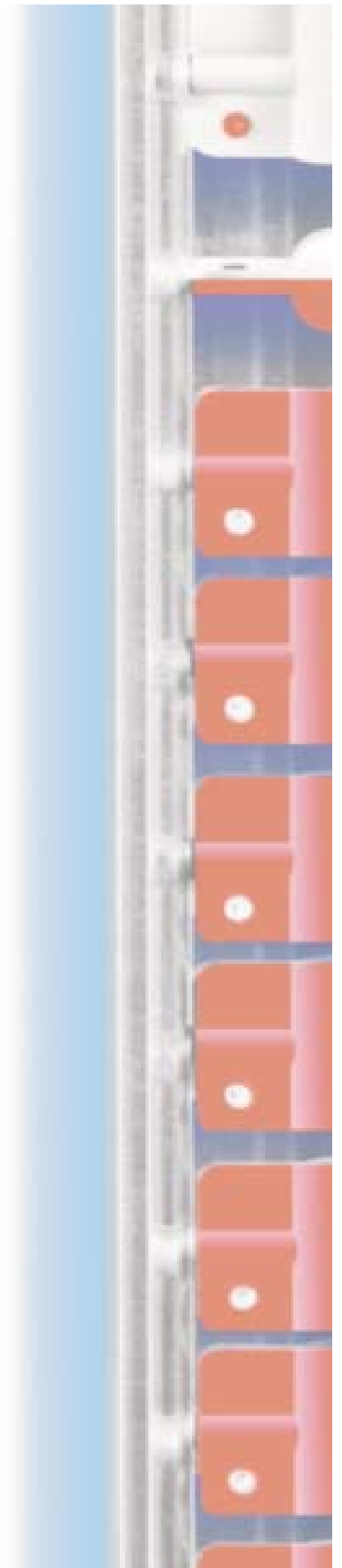
- Numerous applications such as ammonia,  
dyes, NAOH to 46%, solvents, thermex, diesel.

## Other Industry User

- Petrochemical/offshore, pharmaceuticals,  
water treatment, foodstuffs/beverages.

## Major Contractor Projects

- Contact us for up to  
date reference list of previous supply.



# FAXBACK RESPONSE FORM

**FAXBACK +44 (0)118 931 2161 • EMAILBACK info@able.co.uk**

ABLE's product portfolio is listed below, to receive information on any of these products please indicate your interest and return this form to us:-

## LEVEL

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Float Switches   | <input type="checkbox"/> Ultrasonic Switches & Transmitters | <input type="checkbox"/> Magnetic Level Indicators |
| <input type="checkbox"/> Nucleonic Gauges | <input type="checkbox"/> R.F. Admittance                    | <input type="checkbox"/> Capacitance               |
| <input type="checkbox"/> Radar            |   |  |

## FLOW

- |  |  |                                      |
|--|--|--------------------------------------|
| <input type="checkbox"/> Open Channel Flow | <input type="checkbox"/> Clamp-on Ultrasonic | <input type="checkbox"/> Pitot Tubes |
| <input type="checkbox"/> Turbines          | <input type="checkbox"/> Coriolis            | <input type="checkbox"/> Mag Meters  |
| <input type="checkbox"/> Thermal Mass Flow |  |                                      |

## TEMPERATURE & PRESSURE

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Temperature & Pressure Transmitters | <input type="checkbox"/> Differential Pressure Gauges | <input type="checkbox"/> Temperature & Pressure Switches |
| <input type="checkbox"/> Pressure Regulators                 |   |  |

## PROCESS CONTROLLERS

- |   |  |
|---|--|
| <input type="checkbox"/> Hybrid Control Systems | <input type="checkbox"/> Signal Loop Controllers |
|---|--|

## HUMIDITY & MOISTURE

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> RH & Dew Point | <input type="checkbox"/> Moisture in Solids Analysers | <input type="checkbox"/> Trace Moisture |
|---|---|---|

## RADIOMETRY

- |                                      |                                  |                                    |
|--------------------------------------|----------------------------------|------------------------------------|
| <input type="checkbox"/> Ultraviolet | <input type="checkbox"/> Visible | <input type="checkbox"/> Infra-red |
|--------------------------------------|----------------------------------|------------------------------------|

## COMPOSITION

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Liquid Analysis | <input type="checkbox"/> Gas Analysis |
|--|---------------------------------------|

Please send me more general information about your products and services

I have completed the faxback form and would like to be included in your monthly prize draw

Mr/Ms/Other \_\_\_\_\_ Initials \_\_\_\_\_ County: \_\_\_\_\_  
Surname: \_\_\_\_\_ Country: \_\_\_\_\_ P/c.: \_\_\_\_\_  
Job Title: \_\_\_\_\_ Tel: \_\_\_\_\_  
Company: \_\_\_\_\_ Fax: \_\_\_\_\_  
Address: \_\_\_\_\_ Email: \_\_\_\_\_  
\_\_\_\_\_ Website: \_\_\_\_\_

What industry is your Company associated with? \_\_\_\_\_

Do you have access to the internet?  
 Yes  No

Where did you learn of our Company? \_\_\_\_\_



### ABLE Instruments & Controls Ltd.

Cutbush Park, Danehill, Lower Earley, Reading, Berkshire. RG6 4UT. U.K.  
Tel: +44 (0)118 9311188 Fax: +44 (0)118 9312161 Email: info@able.co.uk  
Website: <http://www.able.co.uk> E-commerce: <http://www.247able.com>