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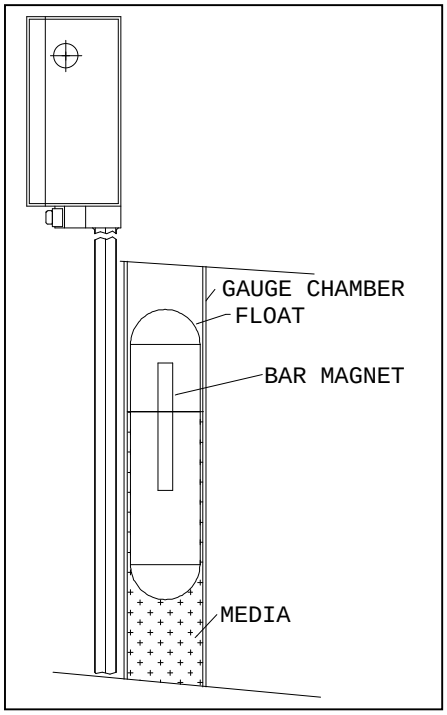
KMS/EExia Transducer

Installation and Operating Instructions

ATEX

INTRODUCTION

A 4-20mA loop powered transducer for measuring the level of liquid in a vessel either directly (immersion application) with an annular float, or indirectly by mounting on a magnetic level gauge. The EExia intrinsically safe version can be used in all hazardous area zones when connected through an approved isolation barrier. The EExia type nL version can be installed in Zone 2 area only.



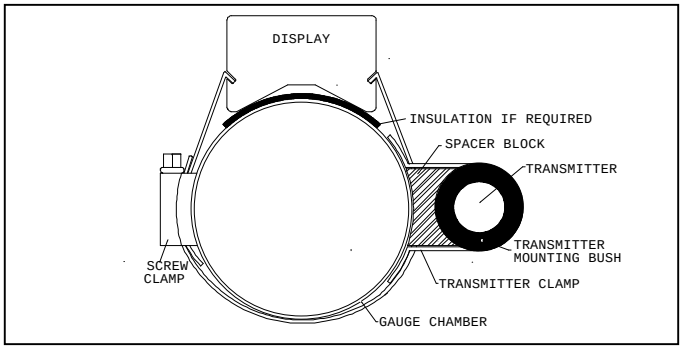
1- GENERAL

The transducer consists of a stainless steel tube, containing the magnetostrictive measuring element, and a cast aluminium case, housing the electronic circuit board.
The unit operates by sending an electrical pulse down the sensing element; the resulting magnetic field reacts with the field from the magnetic float to produce a return signal. The time taken for the return signal to be detected enables a level measurement to be made since the precise velocity of the return signal along the sensing element is known.

MOUNTING INSTRUCTIONS

The unit when supplied with a magnetic level gauge should be fitted to the gauge using the mounting clips and insulation (if provided). The unit should be positioned such that the XXXX marks around the circumference align with the upper and lower vessel connection points.

Under no circumstances should the unit be subjected to any loads that may cause distortion of the sensing tube or the unit modified in any way, otherwise the warranty and or the ATEX certification will be invalidated



When used as an immersion application any Teflon washers fitted must not be removed as they prevent the risk of sparking if the float was to fall against the float stop.

CABLE CONNECTION

Unscrew the four M4 screws to remove the lid to gain access to the connection terminals and calibration switches.

The connection cable should be a twisted pair type suitable for the expected ambient conditions. Where a screened cable is used an internal earth connection is provided.

Hazardous area Installation

The installation of this unit must be in compliance with the applicable national requirements i.e. EN60079-14:1977.

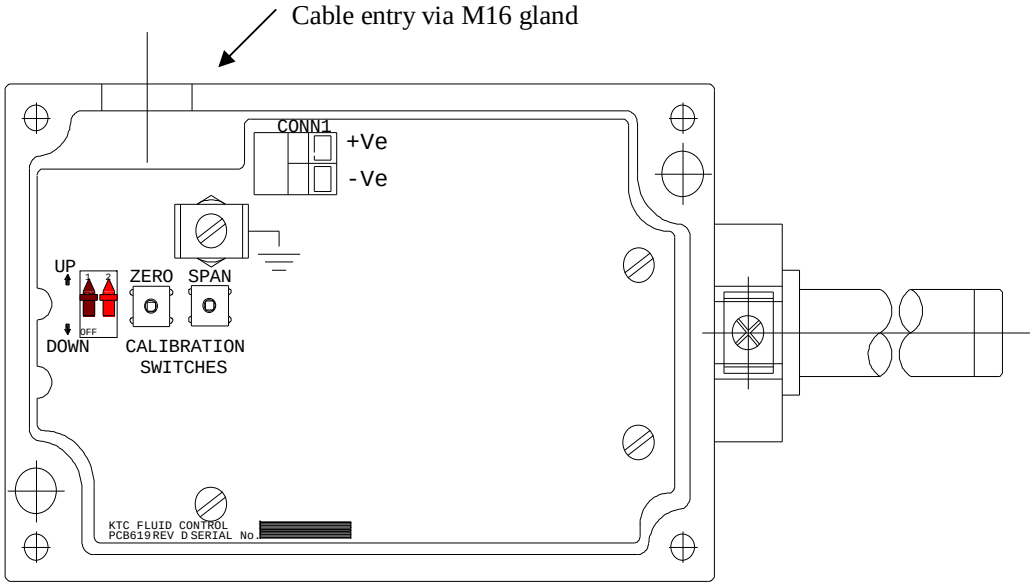
Intrinsically Safe Circuits

The connection cable shall be identified to prevent confusion with non-intrinsically safe circuits where a colour code is used it shall be light blue.
The total inductance and capacitance of the cable shall not exceed the values stated on the intrinsically safe control device for the required gas group.
The connection cable should be bought in through the M16 cable entry via a suitable gland as necessary to maintain the required IP rating (minimum IP54).

Type 'n' installations (Zone 2 only)

For EEx n applications the gland must be either approved EEx e or EEx n certified by an EU approved Certification body.

When refitting the lid ensure that the sealing gasket is correctly fitted into the lid recess.



Internal layout of case showing calibration push button switches

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TECHNICAL SPECIFICATIONS

Connection conductor size: - 0.5mm² - 2.5mm²

Supply voltage range: - 15-28VDC

Measured Current range: - 4-20mA
Alarm Current: - 3.5mA…. 23mA
NAMUR NE43 Upscale 23mA (overfill)
NAMUR NE43 Downscale 3.5mA (Float failure)

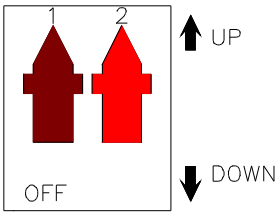
Fixed Output 4/20mA
(For loop calibration)
Ambient temperature range -40°C / + 60°C
Higher temperatures available for use in non-hazardous locations

CALIBRATION

The unit is normally supplied from the factory calibrated.
If the default calibration is unsuitable or adjustment is required the following procedure should be followed.

Note! **Turn power off before changing function switch settings**.
Calibration should only be carried out using the float provided.

1) Set alarm and output sense switches as required.



1) Output Sense
Up Top Mount
Down Bottom Mount
2) Alarm Function
Up No Alarm Output Remains at 4mA
Down Float Failure Alarm (3.5mA)

It is important that the float is kept stationary for approximately 5 seconds before and after operation of the calibration procedure to ensure that the data averaging routines have stabilised to the correct values.

2) A) Set the float to the required zero position,
b) Hold down both buttons, output signal changes to 12mA,
c) Release both buttons and wait 2 seconds,
d) Press zero button output signal changes to 4mA

3) a) Set the float to the required span position,
b) Hold down both buttons, output signal changes to 12mA
c) Release both buttons and wait 2 seconds,
d) Press span button output changes to 20mA.

The unit will then calculate the new calibration constants and store to Non-volatile memory, this will take approximately 5 seconds.

FIXED OUTPUT

To allow for loop calibration the transducer output can be fixed to either 4 or 20mA. The zero or span button should be depressed for 5 seconds the output will then remain static. To reset to normal operation either depress the opposite button or cycle the power.

Note: - Other fixed values can be set on request.

CERTIFICATION

BAS00ATEX1094X EEx ia IIC T4 (-40°C<Ta<+60°C) CE1180

Ui = 28V, Ii = 200mA, Pi = 1W, Ci = 0, Li = 0.

BAS00ATEX3095 EEx nL II T4 (-40°C<Ta<+60°C) Max Input 28V

MAINTENANCE

The unit contains no user serviceable parts; therefore no routine maintenance is required. Where the case of the device may be subjected to impact or friction, periodic examination is required to ensure that the integrity of the stove enamelled finish is maintained
When used in immersion applications the sensor tube must be kept clean to prevent the float "sticking".

FAULT ANALYSIS SHEET

Problem	Possible Fault	Action
Zero reading i.e. 0mA	Supply Voltage to low	Check voltage and adjust accordingly
	Supply Connections reversed	Swap supply cables
	Cables/Connecting circuit faulty	Rectify as required
	Faulty Unit	Consult Technical Sales
Reading Greater than 23mA	Supply voltage to high	Adjust voltage to less than 28V
Continual Reading of 3.5mA (alarm)	Float damaged (sunk)	Fit new float
	Chamber empty	Open check valves
Continual reading of 23mA(Alarm)	Float magnetic field not being sensed	Check gap distance between chamber and transmitter
	Unit incorrectly calibrated	Carry out calibration procedure
	Float Under magnetised	Check with spare float if available
Output static at a particular level	Float stuck or damaged	Check against visual display if fitted. Check float condition
4-20mA not proportional to liquid level	"XXXX" marks not inline with vessel connections	Realign transmitter marks correctly
	S.G range of float incorrect for media type	Check S.G etched on float against media S.G