

Technical Datasheet



Displacer type Level Transmitter

Direct or Chamber mounted

Key Features

- Two wires 24Vdc loop powered
- 4-20mA Hart ® output
- Direct or Chamber mounted version
- Integral or remote electronics
- Wide range of wetted parts in exotic material
- Level, content or interface measurement transmitter
- Non interactive Zero & Span
- Low maintenance
- Simple Installation
- Local or remote calibration
- ATEX certified construction Ex d

Series Overview

The Delta Mobrey MLT100 Level Transmitter is one of the most advanced displacer-based devices on the market, coupling the time proven buoyancy principle with state-of-the-art electronics in an instrument of high reliability and stability.

Special care has been taken in design to ensure a small mounting envelope is maintained, resulting in reduced weight and associated savings in mounting.

The displacer element is made to length for each order and is suspended below the head on a stable spring arrangement which is designed to minimise friction effects and improve performance. The transmitter can be mounted directly into a vessel or may be externally mounted in a chamber to allow isolation for planned maintenance or in-situ calibration checks.

Other products

Other products we can offer:

- Ultrasonic level transmitter DMSP
- Submersible type level transmitter
- D Series Differential Pressure Transmitters for level



Product applications

The MLT100 is suitable for a wide range of applications in:

- Process plants
- Water treatment
- Power plants
- Oil&Gas & Petrochemical

The choice of models available

ensures that this instrument is suitable for use in:

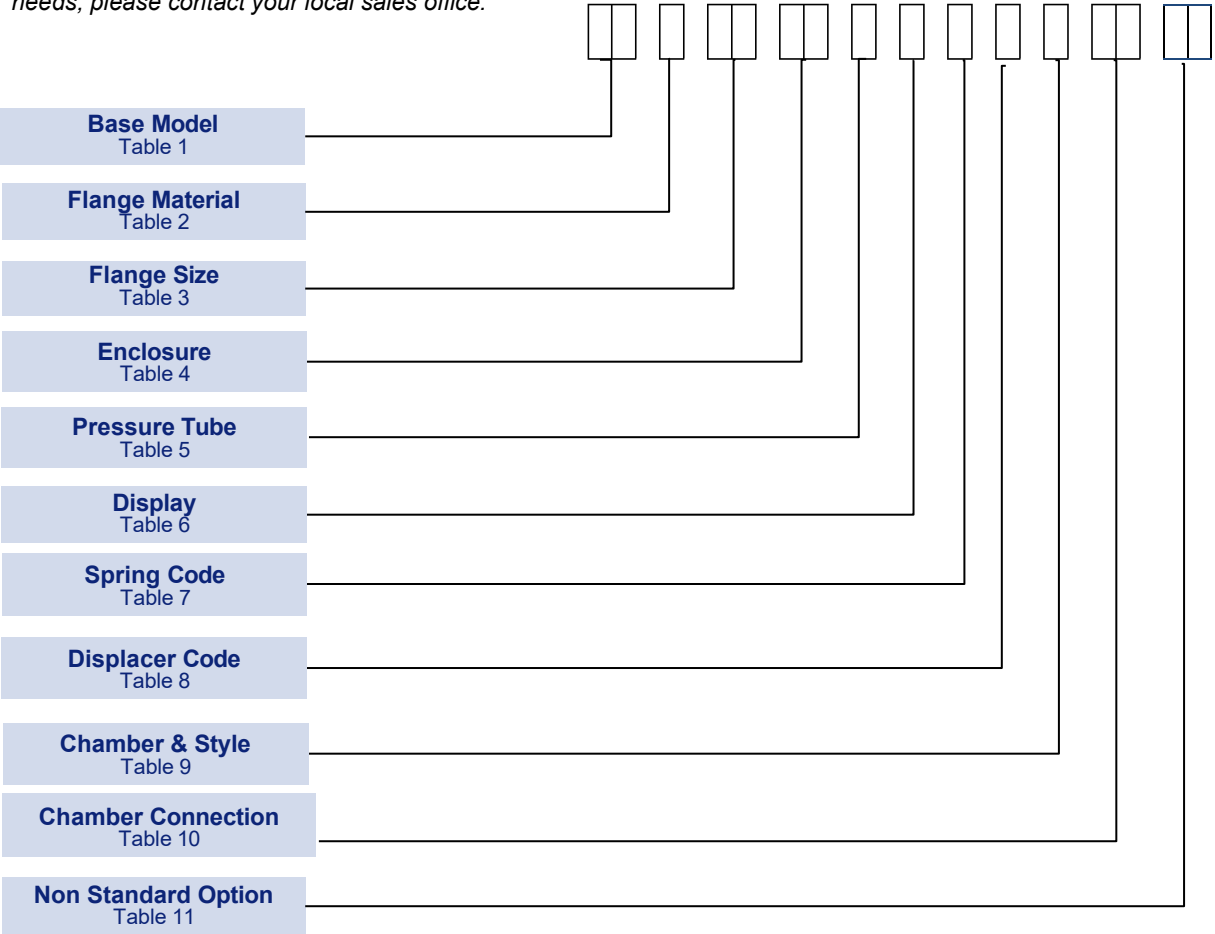
- General purpose
- Zone 1 Hazardous Areas
- Aggressive process

How can we help you?

Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on: **+44 (0)1252 729140**

How to order

The instrument can be configured by selecting codes representing the desired features from the tables that follow. The chart below, describes how the model code is built up. For assistance in configuring the product that best suits your needs, please contact your local sales office.



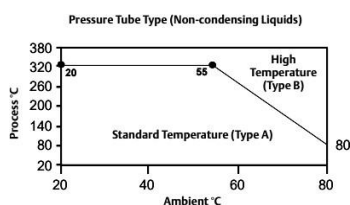
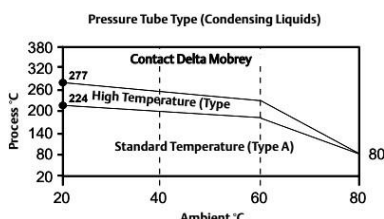
Technical Specification

Accuracy:	< 1% of span
Repeatability:	+/- 0.2% of span
Linearity:	+/- 0.2% of span
Resolution:	+/- 0.1% of span
Hysteresis:	+/- 0.3% of span
Ambient Temperature:	-40°C to +80°C / -40°F to 176°F
Operating Temperature:	minimum -60°C / 76°F max 277°C / 530°F — condensing integral max 320°C / 608°F — non-condensing integral max 320°C / 608°F — condensing with remote electronic
Operating Pressure:	-1 to 120 bar / 1740 psi
Specific Gravity range:	Standard = 0.5 to 1.5 Interface = 0.1 difference
Measuring range limits:	300 to 3000mm / 11.8 to 118ft. (to be required with the order)
Enclosure classification:	Weatherproof & Flameproof
Transmitter head protection:	IP 66 / IP67
Output signal:	4/20mA + Hart (ver.5)
Power supply:	12 to 40 Vdc loop powered
Power consumption:	21mA / 40 Vdc / 840mW max.
Grounding Connection:	One internal and one external suitable for wire section up to 4 mm ² / 11 AWG
Approximate Weight:	Depending on model
Material of enclosure	See description on table below (optional white paint for off-shore/coastal use)
Material of wetted parts	316 Stainless Steel
Spring Material:	Corrosion resistance NIMONIC
Pressure tube & Chamber:	See description on table below

Product Description & Operating Principle

The 4–20 mA output from the head is proportional to the level or contents in the vessel, or may be set to follow an interface. The transmitter supports the HART protocol, which is superimposed on the 4–20 mA signal. Changes of liquid level in the vessel cause the displacer element, which is supported on a spring, to rise or fall. A core, located in the **PRESSURE TUBE** of the head, is connected to the displacer and moves linearly up and down with the element. Around the outside of the pressure tube in the head is a Linear Variable Differential Transformer (LVDT), the output of which is proportional to the position of the core.

There are two configuration of **PRESSURE TUBE**, both made of stainless steel and is welded to the union which connects the head to the process



pressure and temperature:

A = Standard (for process up to 224°C, condensing)

B = High temperature (for condensing process 224 °C to 277 °C or non-condensing process up to 320 °C or for condensing process up to 320 °C but with remote electronics). See below the tables with pressure & temperature limits.

The transmitter is designed and set up by Delta Mobrey to operate in the conditions advised at the time of order, and the displacer element dimensions are chosen to suit.

Local Calibration (without a Field Communicator)

Fine-tune adjustments on-site may be made with the instrument in an empty vessel at 20 °C, which ensures correct readings at operating conditions. Several adjustments can be made using the unique “Mobrey Magnetic Scroller” (MMS) and the “Caliplug”. The MMS is a calibration tool with a magnetic tip and is used on this and other Delta Mobrey instruments to access and adjust certain operating parameters. The MLT100 is fitted with a calibration plug (Caliplug) which contains docking ports for the MMS along with a heartbeat LED. The adjustments which may be made are setting the 4 mA and 20 mA points, and damping.

Remote Calibration (not necessary for standard 4-20mA operation)

Ranging can be carried out remotely using a Field Communicator to establish digital communications and set the 4 and 20mA points electronically without the need for changing the liquid level. All the remaining operating, diagnostic, and Process Value (PV) data is also available using a Field Communicator.

Local indication display (optional)

The optional multi-function LCD indicator is housed in a cast aluminium Exd enclosure, and finished in a two-pack epoxy white paint. The 2-line LCD display can be programmed to show the output in %, engineering units, and other operating parameters by using a Field Communicator

Each transmitter is fitted with a visible LED which flashes once every 3 seconds to show the instrument is healthy and working. are chosen to suit

Wetted parts are made from stainless steel, including the element, trim, and pressure tube, except for the spring which is manufactured from a specialist corrosion resistant spring material, NIMONIC, chosen for its stability and repeatability under changing process conditions.



Mobrey MLT100 Transmitter With Optional Display Fitted



Mobrey MLT100 Transmitter in a Side-Bottom type Chamber

The material used is either as specified on the order or selected by Delta Mobrey to suit the application. Only certified materials are used, and welding is qualified to ASME IX, BS EN 287, and EN ISO 15614-1. All pressure retaining parts are hydrostatically pressure tested to a minimum of 1.5 times working pressures.

NDT including radiography and dye penetrant testing is available when specified at time of ordering. Inspection by customers or their appointed agents is welcome provided that this is requested at time of ordering.

Option:

- Wetside materials in Alloy C276 (UNS N10276),
- Alloy 625 (UNS N06625), Option:
- compliance with NACE MR-01-75 for sour service duty
- others on request

Base Model

TABLE 1



Description	Code
Mobrey Level Transmitter	LT

Flange Material

TABLE 2



Description	Code
Carbon steel	C
Stainless steel	S
No flange (1-in. NPT connection)	N

Flange Size

TABLE 3



Description	Code
3" ASME B16.5 Class 150 Raised Face (RF)	60
3" ASME B16.5 Class 300 Raised Face (RF)	61
3" ASME B16.5 Class 600 Raised Face (RF)	62
4" ASME B16.5 Class 150 Raised Face (RF)	65
4" ASME B16.5 Class 300 Raised Face (RF)	66
4" ASME B16.5 Class 600 Raised Face (RF)	67
DN80 PN16	71
DN80 PN25	72
DN80 PN40	73
DN100 PN16	76
DN100 PN25	77
DN100 PN40	78
No flange (1-in. NPT connection)	00

Enclosure

Note: Flameproof Ex d construction is available.

TABLE 4



Description	Code
IP66 Safe Area with Cast Iron, white epoxy painted	ZF
IP66 Flameproof enclosure certified Ex d for hazardous area use, Cast Iron, white epoxy painted.	TF
IP66 enclosure certified Ex d for hazardous area use, Cast Iron white epoxy painted, with electronics in a remote IP66 aluminum enclosure. Note: Remote electronics must be in the non-hazardous area.	TR
IP66 Flameproof enclosure certified Ex d for hazardous area use, AISI 316 SS	TG

Pressure Tube

Note: Select the pressure tube according to the process conditions. See page 3

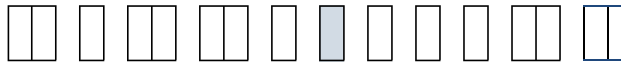
TABLE 5



Description	Code
Standard (up to 224 °C condensing)	A
High temperature (224 °C to 277 °C) condensing or 320 °C non-condensing or to 320 °C condensing but with remote electronics)	B

Display

TABLE 6

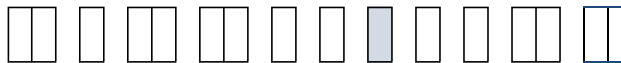


Description	Code
Display	D
No display	N

Spring Code

Note: This data is unique for each instrument and depends by the process condition. Please contact our Engineering department.

TABLE 7



Description	Code
The code for the spring will be selected by Delta Mobrey at time of ordering	*

Displacer Code

Note: This data is unique for each instrument and depends by the process condition. Please contact our Engineering department.

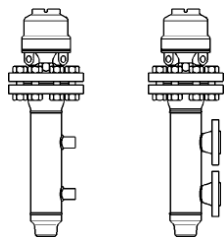
TABLE 8



Description	Code
The code for the displacer will be selected by Delta Mobrey at time of	*

Chamber & Style

SIDE-SIDE chamber configuration



SIDE-BOTTOM chamber configuration

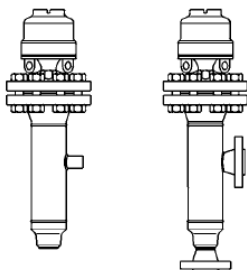


TABLE 9



Description	Code
No chamber	A
Side/bottom, no vent	B
Side/bottom, 1/2" NPT vent	C
Side/bottom, 3/4" NPT vent	D
Side/bottom, 3/4" flanged vent	F
Side/side, no vent, 1/2" NPT drain	G
Side/side, no vent, 3/4" NPT drain	H
Side/side, no vent, 1" NPT drain	J
Side/side, 1/2" NPT drain and vent	K
Side/side, 3/4" NPT drain and vent	L
Side/side, 1-in. NPT drain and vent	M
Side/side, no vent, 3/4" drain	N
Side/side, 3/4" NPT vent, 3/4" flanged drain	P
Side/side, 3/4" flanged drain and vent	Q

Chamber Connection

Note: Flange rating, to be verified according to the process condition.

TABLE 10



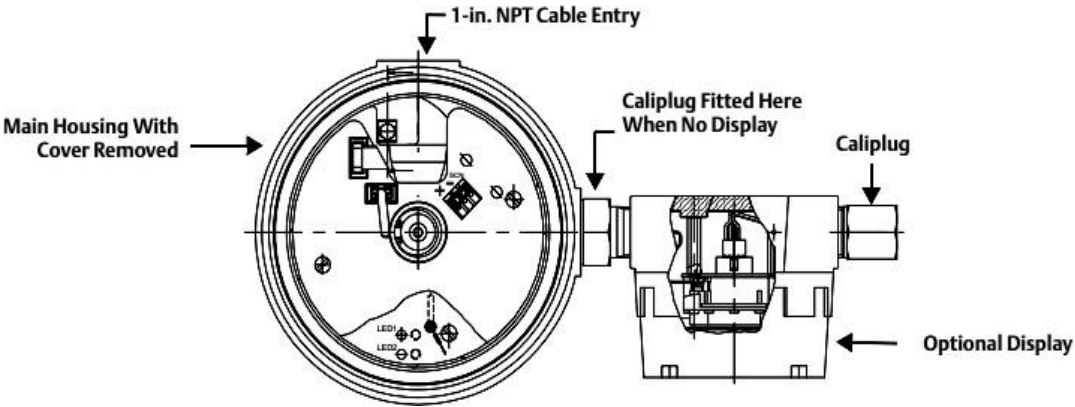
Description	Code
Screwed 1-in. NPT	01
No Chamber	00
1" ASME B16.5 Class 150 Raised Face (RF) flange	11
1" ASME B16.5 Class 300 Raised Face (RF) flange	12
1" ASME B16.5 Class 600 Raised Face (RF) flange	13
DN25 PN16	15
DN25 PN25	16
DN25 PN40	17
1 1/2" ASME B16.5 Class 150 Raised Face (RF) flange	21
1 1/2" ASME B16.5 Class 300 Raised Face (RF) flange	22
1 1/2" ASME B16.5 Class 600 Raised Face (RF) flange	23
DN40 PN16	25
DN40 PN25	26
DN40 PN40	27
2" ASME B16.5 Class 150 Raised Face (RF) flange	31
2" ASME B16.5 Class 300 Raised Face (RF) flange	32
2" ASME B16.5 Class 600 Raised Face (RF) flange	33
DN50 PN16	35
DN50 PN25	36
DN50 PN40	37

Non Standard Options

TABLE 11	
Description	Code
None	00
The code for non-standard options will be allocated at time of ordering i.e. AQ for Seal welded union/flange and M20 conduit	**
Typical Model Number: LT C 61 TS A D * * B 11 00	

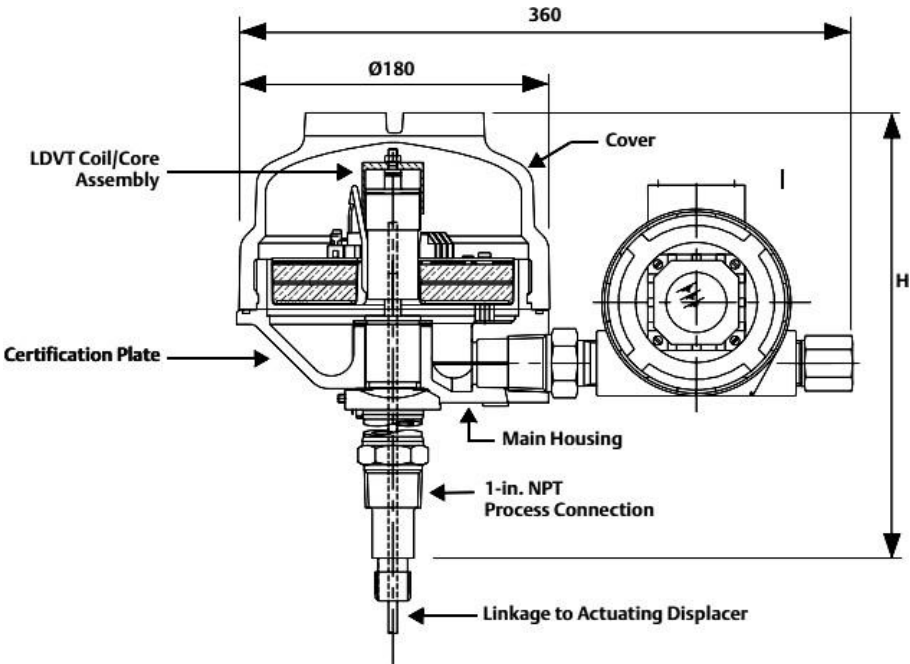
Dimensions

MLT100 with Optional Display Note: Dimensions are in mm.



Head height dimension H (see table 5)

Head Height	H
Pressure Tube A	200 mm
Pressure Tube B	422 mm
Note: allow an extra 90 mm for cover removal	



Approvals



EUROPEAN DIRECTIVES

Electromagnetic Compatibility Directive (EMC) 2014/30/EU

Compliant to EMC directive

Pressure Equipment Directive (PED) 2014/68/EU:

The product has been designed and manufactured according to Sound Engineering Practice (SEP)



FLAMEPROOF Certificate No. Sira 03ATEX1190X

II 1/2 G "Process Sealed"

Ex db IIC 'T6...T1' Ga/Gb (-40°C ≤ Tamb ≤ +75°C)

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