

Technical Datasheet



Ultrasonic Transmitters

Liquid Level & Flow Measurement

Series: DMSP900

Key Features

- Non-contacting measurement with no moving parts
- Continuous measurement of Level, Contents, or Open Channel Flow
- Simple to install and configure via Delta Mobrey's DMCU900 HART® controller or other HART master
- Loop powered 4-20mA and HART® output
- Configure to ignore disturbing object false echo
- Factory sealed IP68
- Rugged PVDF construction ideal for applications on exposed sites

Series Overview

The DMSP900SH for level, contents and open channel flow) uses ultrasonic technology.

Ultrasonic pulses are transmitted to and reflected from the liquid surface. The transmitter measures the 'time-of-flight' and determines the distance to the surface. By configuring the distance to the bottom of a vessel, the transmitter can then calculate the liquid level and contents (volume) for linear or non-linear vessels (domed, spherical, etc). For open channel flow, the transmitter can calculate the flow rate from the level for a wide variety of flumes and weirs.

An internal temperature sensor compensates for temperature affects. The level, contents or flow measurement is transmitted through the 4–20 mA and HART output. If used with the DMCU900 HART® controller, this simplifies configuration and has local display

Other products

Other products we can offer :

- Ultrasonic level transmitters with display
- Control unit for configuration, display and pump control
- Submersible type level transmitters



Product applications

- Liquid level or contents measurement in storage tanks
- Level measurement and pump control for wet wells and pumping stations
- Pump control for feeder tanks
- High or low level alarms in storage tanks
- Small or thin wall tanks
- Bund level measurement
- Open channel flow
- Chemical or Hydrocarbon storage tanks
- Differential measurement by two transmitters for blocked filter detection

How can we help you?

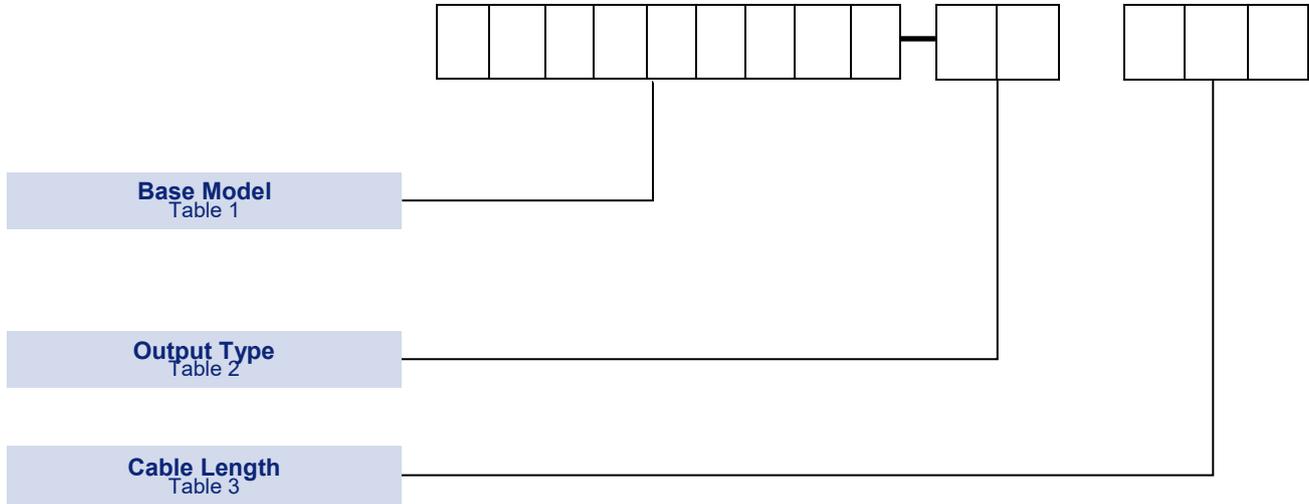
Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our web site at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0)1252 729140

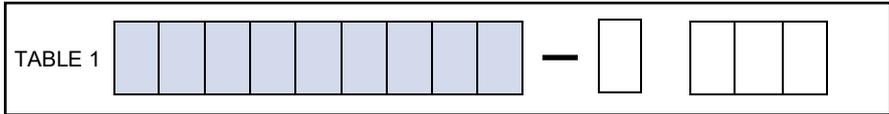
How to order

Transmitters 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 a transmitter that best suits your needs, please contact your local sales office.



Models



Standard sensor.
Range up to 6m

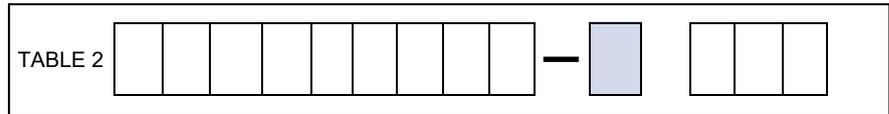
Standard sensor.
Range up to 6m

Large sensor.
Range up to 10m

Large sensor.
Range up to 15m

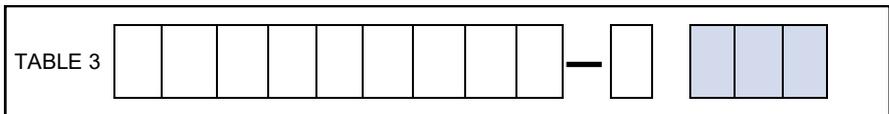
| All models are capable of giving Level, Contents and Open Channel Flow | Code |
|---|------------------|
| Range 0.25m to 6m. Process connections 1" BSP upper, 2" BSP lower. PVDF, with weather protection IP68, cable length as required (see table 3). | DMSP900SH |
| Range 0.25m to 6m. Process connections 1" BSP upper, 2" NPT lower. PVDF, with weather protection IP68, cable length as required (see table 3). | DMSP901SH |
| Range 0.35m to 10m. Process connections 1" BSP upper. PVDF body with weather protection IP68, cable length as required (see table 3). | DMSP902SH |
| Range 0.45m to 15m. Process connections 1" BSP upper. PVDF body with weather protection IP68, cable length as required (see table 3). | DMSP903SH |

Certification



| Description | Code |
|---|----------|
| No Ex approval. | N |
| ATEX Intrinsically Safe certification: Ex II 1 G Ex ia IIB T6...T5 Ga | A |
| FM/CSA Intrinsically Safe certification (for future use): | U |

Cable Length



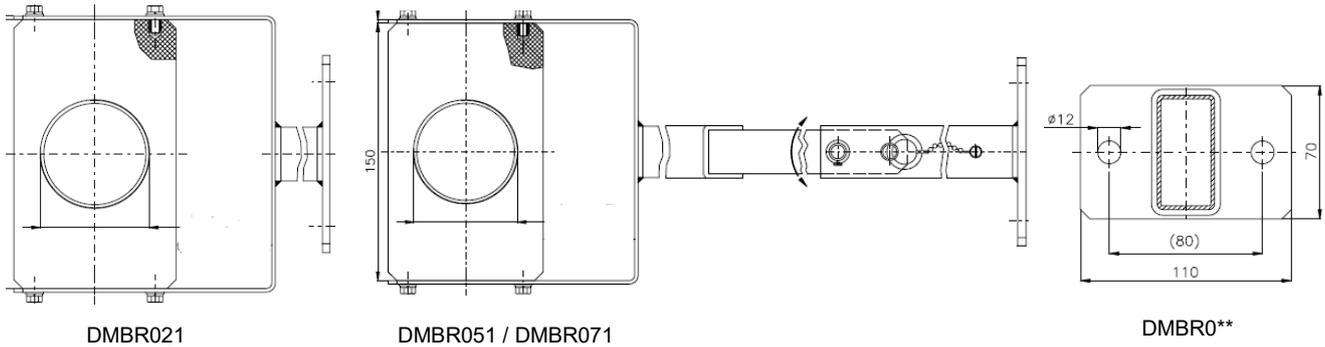
| Description | Code |
|---|------------|
| 2 x 0.5 mm ² shielded cable, Ø7.5 mm: standard length 5m | /5 |
| 2 x 0.5 mm ² shielded cable, Ø7.5 mm: 10m | /10 |
| 2 x 0.5 mm ² shielded cable, Ø7.5 mm: 20m | /20 |
| 2 x 0.5 mm ² shielded cable, Ø7.5 mm: 30m | /30 |

Liquid Level & Flow Measurement
Model: DMSP900

Installation

Installation Brackets: 1" BSP thread to fit all DMSP900 transmitters, for horizontal mounting off a supporting structure

| Length: fixing point to transmitter | Model |
|-------------------------------------|---------|
| 200mm | DMBR021 |
| 500mm | DMBR051 |
| 700mm | DMBR071 |



A range of flange adaptors are also available on request

Technical Specification

Liquid Level & Flow Measurement
Model: DMSP900

| ULTRASONIC LEVEL TRANSMITTERS | | DMSP90xSH | |
|---|--|--|---|
| Materials | PVDF transducer and housing | Power Supply For Ex models | 13.4 to 36 V DC – 48 to 720 mW 12V to 30V DC |
| Ambient temperature For Ex models | -30 to 80°C (-22 to 176°F) -20 to 70°C (-4 to 158°F) | LED indication | Red/Green on connector |
| Process temperature For Ex models | -30 to 90°C (-22 to 194°F) -20 to 80°C (-4 to 176°F) | IP rating | IP68 |
| Operating Pressure (absolute) | 0.5 to 3 Bar (7.3 to 43.5 psia) | Electric protection | Class III |
| RANGES | DMSP900SH = 0.25 to 6m (80kHz) DMSP901SH = 0.25 to 6m (80kHz) DMSP902SH = 0.35 to 10m (60kHz) DMSP903SH = 0.45 to 15m (40kHz) Total beam angle: 5° | Cable | 2 -core |
| Accuracy | +/- (0.2% of distance + 0.05% of range) | Process connections (refer dimensional drawings on page 6) | Range 6m: Upper: 1" BSP Lower: 2" BSP or NPT Range 10m: Upper 1" BSP Range 15m: Upper 1" BSP |
| Resolution (acc. to range) | <2 m: 1 mm, 2 to 5 m: 2 mm 5 to 10 m: 5 mm, >10m: 10mm | Programming | HART protocol |
| Ex marking DMSP9****A only Intrinsically Safe Data | Ex II 1 G Ex ia IIB T6...T5 Ga U _i ≤ 30V; I _i ≤ 140mA; P _i ≤ 1W; C _i ≤ 28nF; L _i ≤ 200µH | Weight (with 3m of Cable) | 1.2 Kgs (with 3m cable) |

Approvals

EUROPEAN DIRECTIVES



Electromagnetic Compatibility Directive (EMC) 2014/30/EU

Compliant to EMC directive

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

This product is outside the scope of the PED directive



ATEX Directive 2014/34/EU

Intrinsically Safe

Certificate No. BK120ATEX0019 X

EN 60079-0, EN 60079-11

For Zone 0 models (Code A, see Table 2)



II 1 G

Ex ia IIB T6...T5 Ga (-20°C ≤ Ta ≤ +70°C)

Dimensions

| GENERAL DIMENSIONS | | |
|---|------------------------------|------------------------------|
| DSMP900SH & DMSP901SH Range up to 6m | DMSP902SH Range up to 10m | DMSP903SH Range up to 15m |
| | | |

Special Engineering

For these instruments, we have many other options already designed and configured, for example:

- PP body
- Alternative cables, including low smoke or halogen free.

Other options can also be designed to meet specific requirements of an application. Please contact us for further information.

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ISO9001
FM00720