

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?

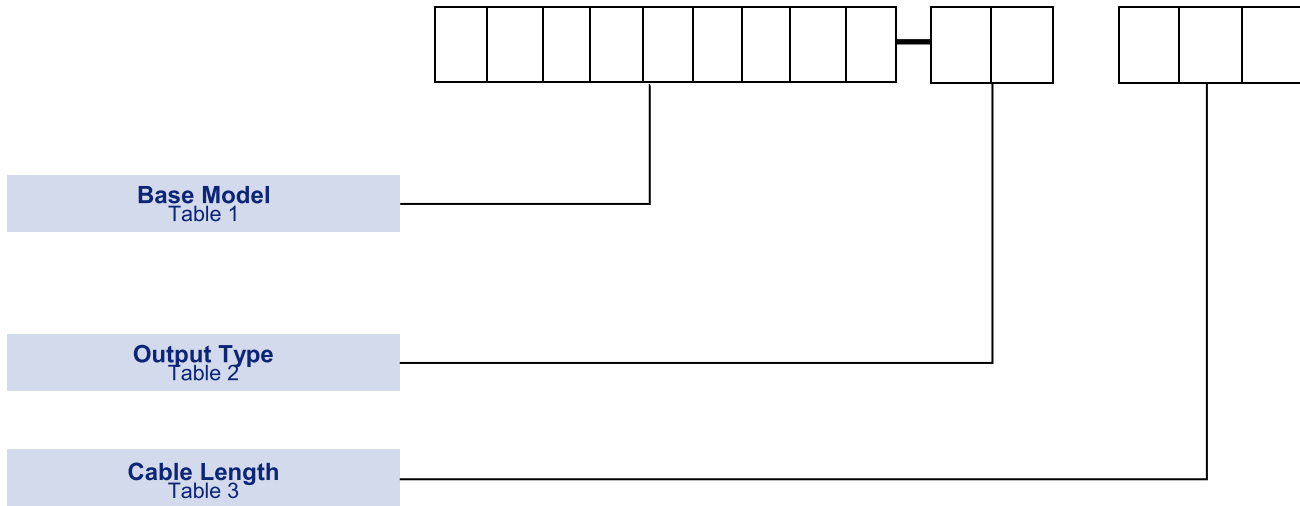
Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our web site at www.delta-mobrey.com to find your local support centre or call us on:

+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

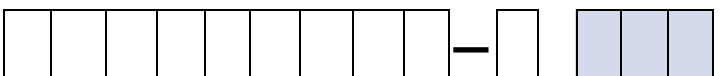
Large sensor.
Range up to 15m

TABLE 1 	
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

TABLE 2 	
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

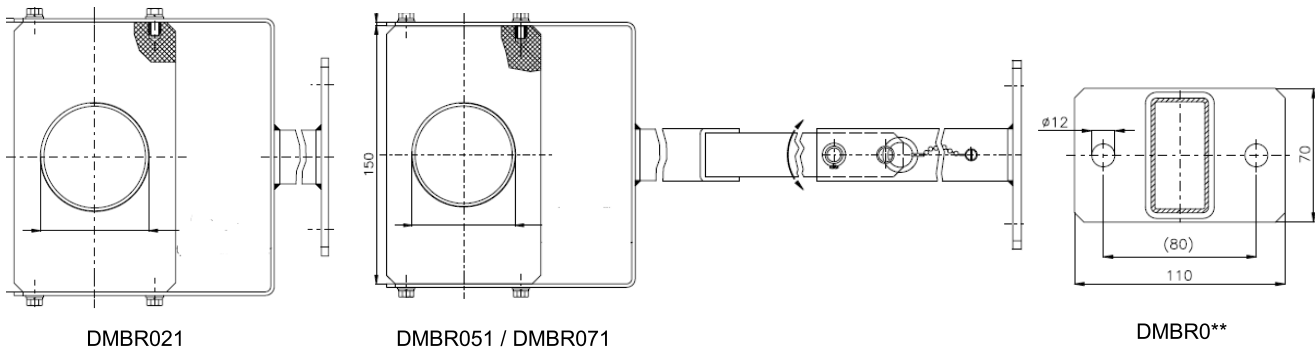
Cable Length

TABLE 3 	
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

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

DMSP90xSH			
ULTRASONIC LEVEL TRANSMITTERS	Materials	PVDF transducer and housing	Power Supply For Ex models
	Ambient temperature For Ex models	-30 to 80°C (-22 to 176°F) -20 to 70°C (-4 to 158°F)	13.4 to 36 V DC – 48 to 720 mW 12V to 30V DC
	Process temperature For Ex models	-30 to 90°C (-22 to 194°F) -20 to 80°C (-4 to 176°F)	LED indication
	Operating Pressure (absolute)	0.5 to 3 Bar (7.3 to 43.5 psia)	Red/Green on connector
	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°	IP rating
	Accuracy	+/- (0.2% of distance + 0.05% of range)	IP68
	Resolution (acc. to range)	<2 m: 1 mm, 2 to 5 m: 2 mm 5 to 10 m: 5 mm, >10m: 10mm	Electric protection
	Ex marking DMSP9***-A only Intrinsically Safe Data	Ex II 1 G Ex ia IIB T6...T5 Ga Ui ≤ 30V; li ≤ 140mA; Pi ≤ 1W; Ci ≤ 28nF; Li ≤ 200µH	Class III
			Cable
			2 -core
		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	
		Programming	
		HART protocol	
		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.