

Technical Datasheet



Ultrasonic Transmitters

Liquid Level & Flow Measurement

Series : DMSP400 and DMSP500

Key Features

- Non-contact, continuous measurement Level, Contents or Open Channel Flow
- Local LCD display and menu for parameter display, configuration and diagnostics
- Two wire loop powered 4-20mA with HART® output
- Integral relay output
- Speed of sound temperature compensation
- Configure to ignore disturbing object false echo
- IP67/68 construction
- Plastic or painted aluminium enclosure

Series Overview

The Delta Mobrey DMSP400 and DMSP500 Series is a liquid level transmitter based on ultrasonic technology that is suitable for many liquid applications. Integral LCD display with push button controls and menu greatly simplify configuration and diagnostics.

Ultrasonic pulses are transmitted to and reflected from the liquid surface. The measured 'time-of-flight' determines the distance to the surface. By configuring the distance to the bottom of a vessel, the transmitter can 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 available on the 4–20 mA and HART output. May be used with the DMCU900 HART® controller for local display and complex pump control.

Other products

Other products we can offer :

- Compact Ultrasonic Level transmitters and Control Unit
- Submersible type level transmitters



Product applications

- Level or contents measurement in storage tanks
- Pump control for feeder tanks
- High or low level alarms in storage tanks
- Small or thin wall tanks
- Open channel flow
- Chemical or Hydrocarbon storage tanks

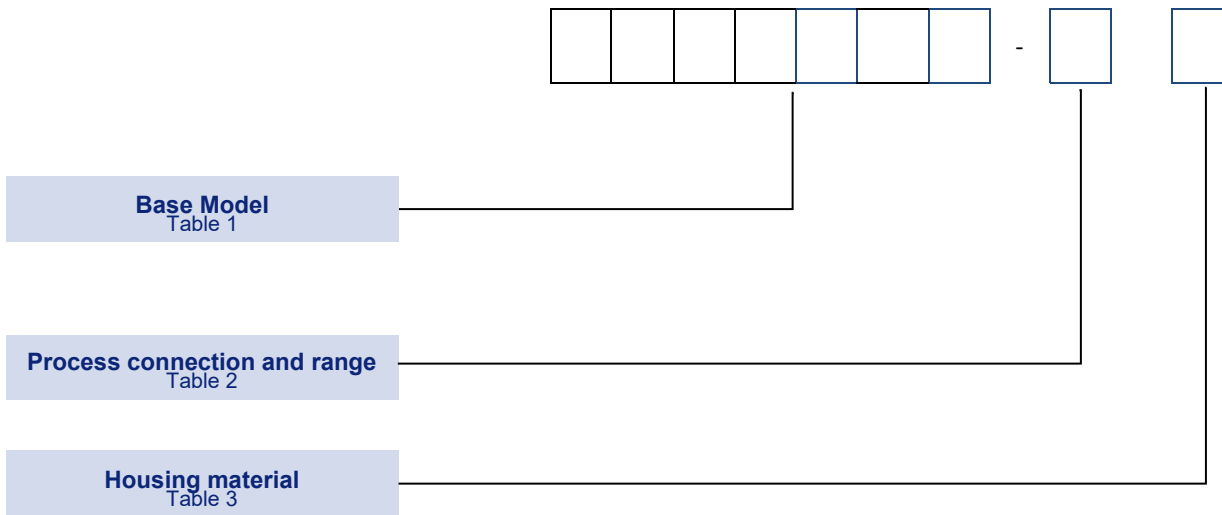
How can we help you?

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

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




Models

TABLE 1 

Level, contents and flow. Range dependent on process connection

Description	Code
Standard model, 4-20mA output, 2 wire loop powered	DMSP422
Relay output, 4-20mA and HART comms, 2 wire loop powered (4 wires if using relay)	DMSP400
Ex certified 4-20mA and HART comms, 2 wire loop powered Ex II 1 G Ex ia IIB T6...T4 Ga	DMSP500 (replaces MSP900GH)


Process Connection and Range

TABLE 2 

Process connection and range		Code
1-1/2" BSP	Range: 0.20m to 4 m	A
1-1/2" NSP		C
2" BSP	Range: 0.25m to 6 m	B
2" NPT		N
2" BSP	Range: 0.35m to 8 m	D
2" NPT		E
DN80 PN16	Range: 0.35m to 10 m	F
3" ANSI 150		G
DN125 PN16	Range: 0.45m to 15 m	J
5" ANSI 150		K
DN150 PN16	Range: 0.45m to 15 m	L
6" ANSI 150		M
DN150 PN16	Range: 0.60m to 25 m	P
6" ANSI 150		Q

Housing Material

Sensor material : PVDF

TABLE 3 

Description	Code
PLASTIC (PBT)	8
ALUMINIUM PAINTED	9

Liquid Level & Flow Measurement
Model: DMSP400 and DMSP500

Technical Specification

DMSP400/500																													
DMSP400 / 500 ULTRASONIC LEVEL, CONTENTS AND FLOW TRANSMITTER	<p>Operating Pressure (absolute) 0.3 TO 3 bar (7.3 to 43.5 psia)</p> <p>Operating Temperature and Ambient (plastic housing) DMSP422 / DMSP400 -30°C to 90°C (-22 to 194°F) -25°C to 70°C (-13 to 158°F) Ambient (aluminium housing) DMSP500 -20°C to 80°C (-4°F to 176°F) T6 -20°C to 70°C (-4°F to 156°F) -25°C to 70°C (-13 to 158°F) Display 6 digit LCD display Ranges From 0.25m to 25m depending on model. Further ranges available on request. Transducer specifics</p> <table border="1"> <thead> <tr> <th>Range</th> <th>Process connection</th> <th>Beam angle</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>0.2m to 4m</td> <td>1-1/2" BSP/NPT</td> <td>6°</td> <td>80 kHz</td> </tr> <tr> <td>0.25m to 6m</td> <td>2" BSP/NPT</td> <td>5°</td> <td>80 kHz</td> </tr> <tr> <td>0.35m to 8m</td> <td>2" BSP/NPT</td> <td>7°</td> <td>60 kHz</td> </tr> <tr> <td>0.35m to 10m</td> <td>3" Flanged</td> <td>5°</td> <td>60 kHz</td> </tr> <tr> <td>0.45m to 15m</td> <td>5" Flanged</td> <td>5°</td> <td>40 kHz</td> </tr> <tr> <td>0.6m to 25m</td> <td>6" Flanged</td> <td>7°</td> <td>20 kHz</td> </tr> </tbody> </table>	Range	Process connection	Beam angle	Frequency	0.2m to 4m	1-1/2" BSP/NPT	6°	80 kHz	0.25m to 6m	2" BSP/NPT	5°	80 kHz	0.35m to 8m	2" BSP/NPT	7°	60 kHz	0.35m to 10m	3" Flanged	5°	60 kHz	0.45m to 15m	5" Flanged	5°	40 kHz	0.6m to 25m	6" Flanged	7°	20 kHz
	Range	Process connection	Beam angle	Frequency																									
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<p>Accuracy ± (0.2% of measured distance +0.05% of range) Resolution (acc. to range) <2 m: 1 mm 2...5 m: 2 mm 5...10 m: 5 mm >10 m : 10mm</p> <p>Wiring configuration 2 wires (or 4 wires when using relay output) Alarm switching function 1 SPDT, 30 V DC, 1 A DC connected in parallel (DMSP400 only) Analog + digital Output signal 4-20mA + HART® Power Supply 12 to 36 V DC 48mW—720mW DMSP500: 12—30 V DC 48mW—600 mW IP rating IP67/68 (housing/sensor) Ex marking (DMSP500 only) Ex II 1 G Ex ia IIB T6...T4 Ga Intrinsically safe data Ci ≤ 15 nF, Li ≤ 200 µH, Ui ≤ 30 V, li ≤ 140 mA, Pi ≤ 1 W Electric protection Class III with DC power supply; Electrical connection 2x M20x1.5 cable glands + internal thread for 2x ½" NPT cable protective pipe, Terminal board For wire cross section max 1.5 mm² (AWG15) Process connection See range and sensor size Weight (with 3m of Cable) 1.3 - 2.3 Kgs</p>																													

Special Engineering

Liquid Level & Flow Measurement
Model: DMSP400 and DMSP500

Many other options already designed and configured, for example:

- Stainless Steel sensor
- Special construction

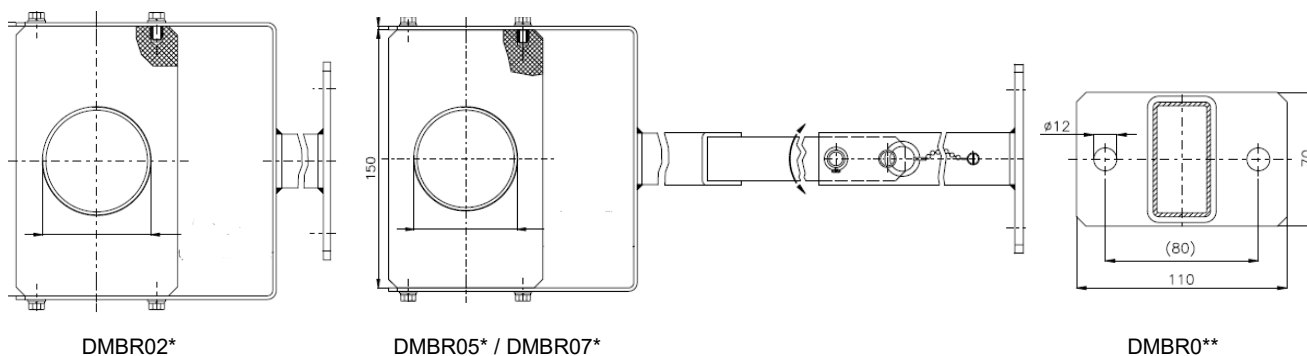
Other options can also be designed to meet specific requirements of an application. Please contact us for further information.

Installation Accessories

Installation Brackets for horizontal mounting off a tank wall or supporting structure.

Available with 1 1/2" or 2" threads to fit DMSP400 and DMSP500 transmitters with threaded connections.

Connection	Model option	200mm length	500mm length	700mm length
1 1/2" BSP	A	DMBR022	DMBR052	DMBR072
1 1/2" NPT	C	DMBR023	DMBR053	DMBR073
2" BSP	B, D	DMBR024	DMBR054	DMBR074
2" NPT	N, E	DMBR025	DMBR055	DMBR075



A range of flange adaptors are also available on request

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 DMSP500, see Table 1)



II 1 G Ex ia IIB T6...T4 Ga
With plastic housing (-20°C ≤ Ta ≤ +70°C)
With metal housing (-30°C ≤ Ta ≤ +70°C)
With display (-25°C ≤ Ta ≤ +70°C)

Dimensions

Sensor dimensions		
<p>1-1/2" Process connection. 4m Range Sensor diam. 42mm</p>	<p>2" Process connection. 6m Range. Sensor diam. 54mm</p>	<p>2" Process connection. 8m Range. Sensor diam. 54mm</p>
<p>3" / DN80 flanged connection: 10m Range Sensor diam. 74mm</p>	<p>5" / DN125 flanged connection: 15m Range Sensor diam. 122mm</p>	<p>6" / DN150 flanged connection. 25m Range Sensor diam. 148mm</p>

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In the interest of development and improvement Delta Mobrey Ltd, reserves the right to amend, without notice, details contained in this publication. No legal liability will be accepted by Delta Mobrey Ltd for any errors, omissions or amendments.

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ISO9001

FM00720