

Technical Datasheet



9700 Series Analogue Transmitter Submersible Hydrostatic Level Transmitters Model: 9720 - Clamped, cable suspended



Key Features

- Two-wire 24 Vdc loop-powered
- 4 to 20 mA
- Accuracy $\pm 0.1\%$ of calibrated span
- Ranges up to 200 m / 656 ft. H₂O, and 10:1 rangeability
- Ceramic capacitive sensor
- Low maintenance
- Fully submersible IP68 / NEMA 6P
- Reverse polarity protection
- Dedicated marine version



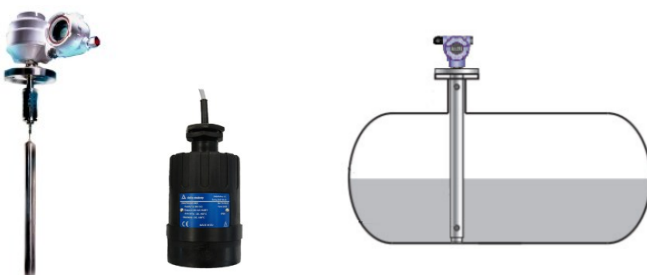
Series Overview

The 9700 Series range of tank level transmitters from Delta-Mobrey provide an accurate level measurement solution where in-tank problems such as foaming, vapor layers, and temperature gradients makes difficult the use of other instrumentation. Each transmitter within the range delivers high performance, has good long term stability, and is virtually maintenance free. Ceramic Capacitive Sensor (CCS) provides a “flush” diaphragm, avoiding the risks of sensor clogging. The sensor works like a capacitor with electrode surfaces on the inside comprising of one measuring and one reference capacitor. The surfaces of the capacitors are gold-plated and linked to ASIC electronics. These electronics generate a signal proportional to the applied pressure, which is sent to the 4–20 mA signal conditioner

Other products

Other products we can offer:

- MLT100 Smart Hart Displacer Level Transmitter
- DMSP900SH Hart Transmitters Ultrasonic Transmitters
- D45 SMART Level probe for pressurised tanks



Product applications

The 9720 Transmitter is suitable for a wide range of applications in:

- Water Treatment
- Power
- Marine Market

The choice of models available ensures that the Delta Mobrey Transmitter is suitable for use in:

- Corrosive atmospheres
- Resistant to chemical attack

How can we help you?

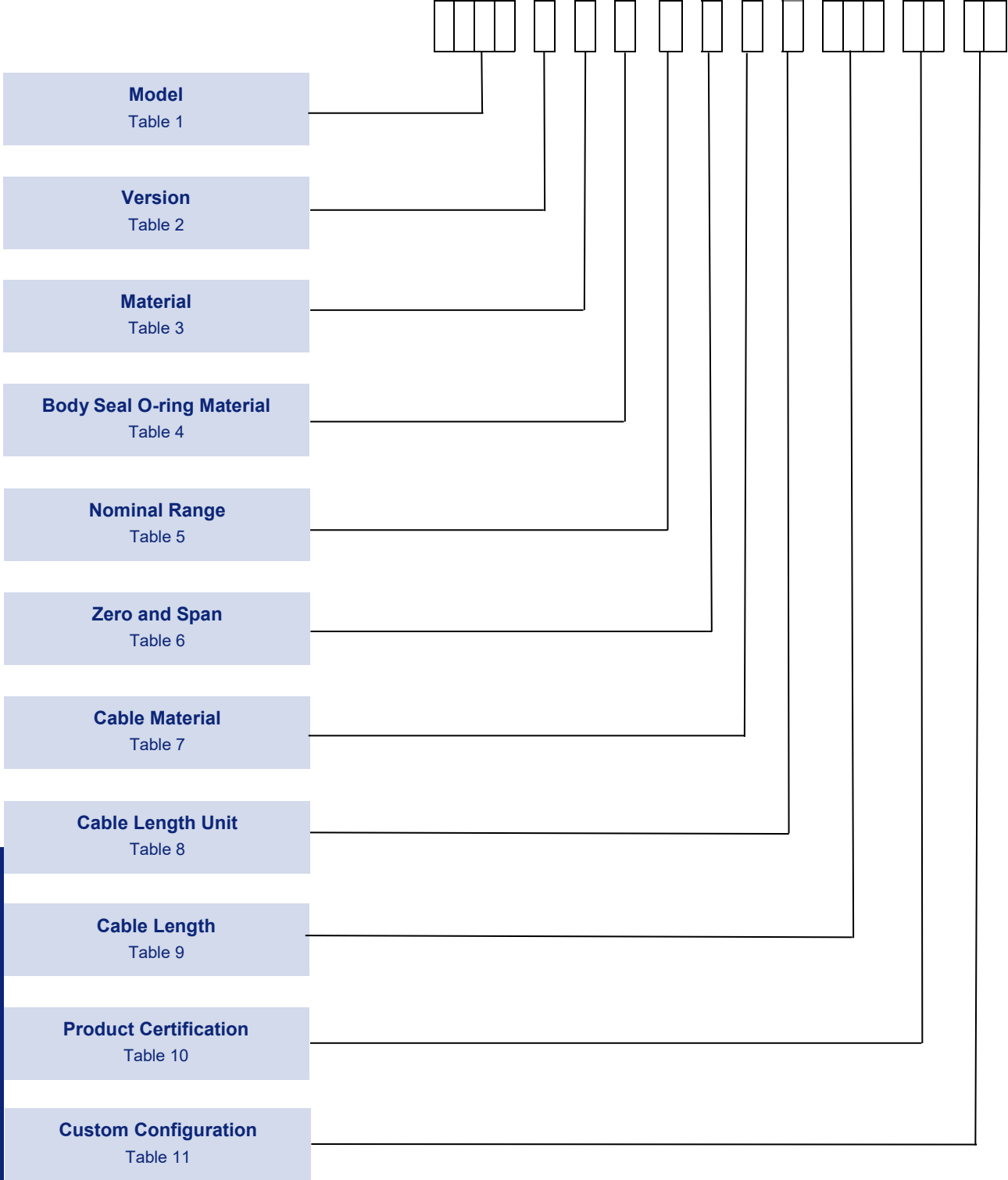
Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0) 1252 729140

9700-Series
Model: 9720

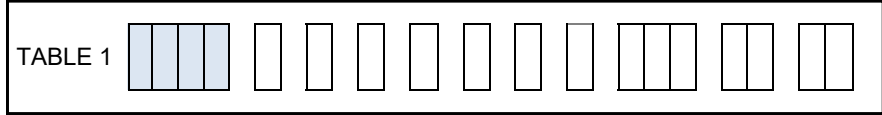
How to order

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.



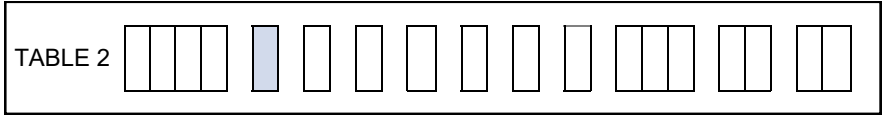
9710-Series
Model: 9720

Model



| | |
|---|-------------|
| | Code |
| Clamped Cable Suspended Submersible Hydrostatic Level Transmitter | 9720 |

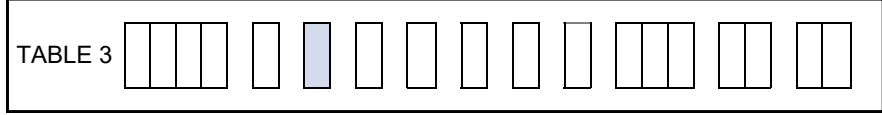
Version



| | |
|-----------------|-------------|
| | Code |
| Commercial | C |
| Marine Approval | M |

Material

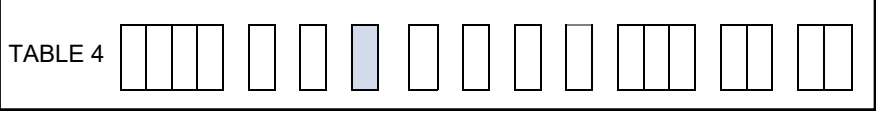
Note 1: purchaser's to verify the compatibility of material with process conditions (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.). Special construction to meet particular process conditions can be evaluated.



| | |
|---------------------|-------------|
| | Code |
| Stainless Steel 316 | S |
| Aluminum Bronze | A |

Note 2: The ceramic sensor is a “dry cell”, meaning that no isolating diaphragm and fill fluid is needed. The process fluid acts directly onto the rugged, corrosion resistant sensor.

**Body Seal
O-ring Materiale**

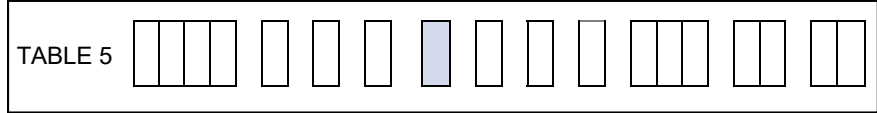


| | |
|------------------------|-------------|
| | Code |
| Fluorocarbon (FPM/FKM) | 1 |
| Nitrile | 2 |

9700 - Series
Model: 9720

Nominal Range

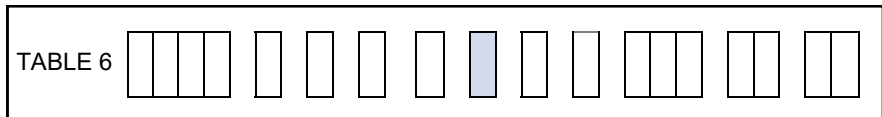
Note: Pmax values are shown in PSI according to Intrinsically Safe CSA approved documentation. In brackets are shown the correspondent limit in ftH2O and mH2O.



| | Code | Pmax in psi (ft H2O / mH2O) |
|--------------------------------------|----------|--------------------------------|
| 0 to 6.5 ft. (0 to 2 m) H2O depth | A | 14.2 (32 / 10) |
| 0 to 16.4 ft. (0 to 5 m) H2O depth | B | 35.6 (82 / 25) |
| 0 to 32.8 ft. (0 to 10 m) H2O depth | C | 71.1 (164 / 50) |
| 0 to 65.6 ft. (0 to 20 m) H2O depth | D | 142.3 (328 / 100) |
| 0 to 164 ft. (0 to 50 m) H2O depth | E | 142.3 (328 / 100) |
| 0 to 328 ft. (0 to 100 m) H2O depth | F | 142.3 (328 / 100) |
| 0 to 3.3 ft. (0 to 1 m) H2O depth | G | 7.1 (16.4 / 5) |
| 0 to 11.5 ft. (0 to 3.5 m) H2O depth | H | 24.9 (57.4 / 17.5) |

Zero and Span

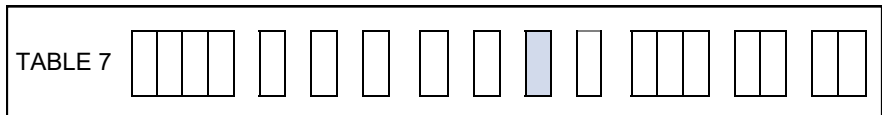
Note: the instrument is fixed range type. Any calibration within the measuring range to be specified at ordering stage.



| | Code |
|------------------|----------|
| Integral (fixed) | 1 |

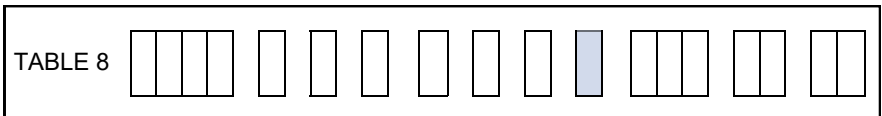
Cable Material

Note: The gland system used ensures absolute integrity of the IP68 / NEMA 6P rating. All cable used include venting capillary. For humid environments or sea water applications, bellows must be used (contact Delta Mobrey for details)



| | Code |
|---|----------|
| Polyurethane | P |
| Fluorinated ethylene-propylene (F.E.P) | F |

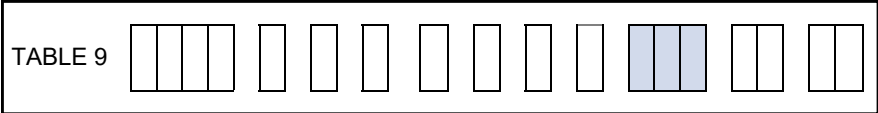
Cable Length Unit



| | Code |
|---------|----------|
| English | E |
| Metric | M |

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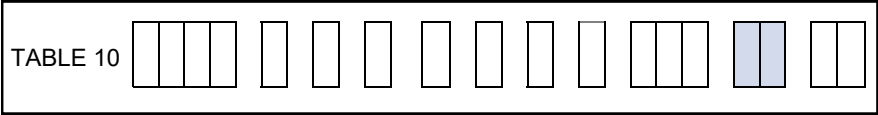
Cable Length



| Length | Code | Unit |
|-------------------|------|-------|
| 3 meters | 003 | M |
| 5 meters | 005 | M |
| 8 meters | 008 | M |
| 10 meters | 010 | M |
| 20 meters | 020 | M |
| 30 meters / feet | 030 | M / E |
| 40 meters | 040 | M |
| 50 meters | 050 | M |
| 60 meters | 060 | M |
| 75 meters | 075 | M |
| 100 meters | 100 | M |
| 125 meters | 125 | M |
| 150 meters / feet | 150 | M/E |
| 200 meters | 200 | M |
| 9 feet | 009 | E |
| 15 feet | 015 | E |
| 24 feet | 024 | E |
| 60 feet | 060 | E |
| 90 feet | 090 | E |
| 120 feet | 120 | E |
| 225 feet | 225 | E |
| 300 feet | 300 | E |
| 375 feet | 375 | E |
| 450 feet | 450 | E |
| 600 feet | 600 | E |

9700-Series
Model: 9720

Product Certifications



| | Code |
|---|-----------|
| Non-certified (non-hazardous area use only) | NA |
| Hazardous area — CSA (Canada and USA) | A6 |

Custom Configuration

TABLE 11

| | Code |
|---|------|
| Custom configuration of actual range (customer to specify with order) | C1 |

Installation

The 9700 is available in both submersible versions and externally mounted (floodable) versions. The housing contains the capacitive ceramic sensor and the electronics circuit board, all the components needed to produce an accurate and reliable measurement of the process. The glandng system used with the submersible versions ensures absolute integrity of the IP68 / NEMA 6P rating. IP68 / NEMA 6P units are generally factory fitted with the required length of vented cable fitted.

Technical Data

Metrological Parameters

| | |
|---------------------------|---|
| Accuracy | ±0.1% of calibrated span (includes effects of linearity, hysteresis and repeatability) |
| Stability | ± 0.1% Upper Range Limit (URL) per 6 months |
| Temperature Effect | ±0.015% Upper Range Limit (URL) per °C / °F (over ambient temp. range) |

Response time ~60mS (~10mS with link1 removed) or a 63% response to pressure change and 150mS for a 90% response to pressure change

Load resistance
 $R = 50 \times (\text{supply voltage} - 10V) \Omega$ $R [\Omega] \leq \frac{U_{sup} [V] - 10V}{0.0225A}$

Materials

- Wetted parts** Sensor Ceramic
- Sensor housing** 316 Stainless steel, Aluminium bronze
- Seal rings** Fluorocarbon (FPM/FKM), Nitrile
- Cable** Polyurethane Fluorinated Ethylene Polypropylene (FEP)
- Ingress protection** IP68 / NEMA 6P (200 m / 656 ft. H20)

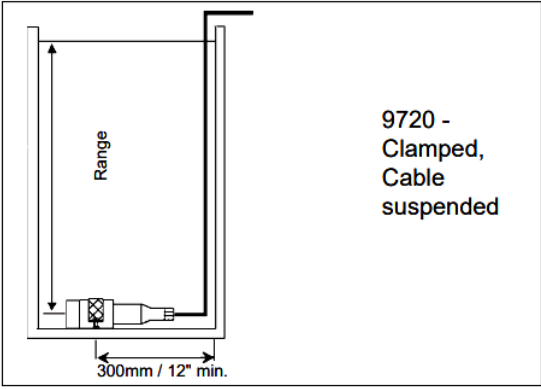
Electrical parameters

| | |
|----------------------|------------------|
| Power supply | 10-30V d.c. |
| Output signal | Two-wire, 4-20mA |

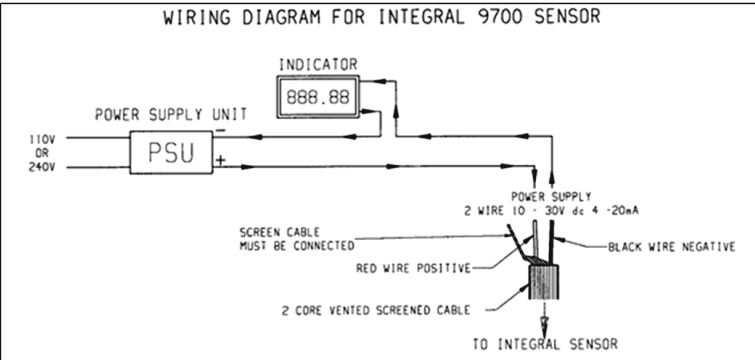
Operating conditions

- Operating temperature range (ambient temp.)**
-20 to + 90°C (-20 to +80°C Ex ia)
- Process medium temperature range**
-20 to + 60 °C / -4 to +140 °F
- Measuring range**
Up to 200 m / 656 ft. H20
- Overrange limit**
See table 5
- Span adjustment**
+10 to +100% of Upper Range Limit (URL)

Mounting Option



Electrical diagrams



9700-Series
Model: 9720

Approvals

NORTH AMERICA CERTIFICATION



Hazardous area certification (CSA Nr.80238981)

CSA (Canada and USA) CL I, Div 1, Groups C and D

CL II, Div 1, Groups E, F and G

CL III

Ex ia IIB T4

AEx ia IIB T4

EUROPEAN DIRECTIVE



EMC Directive 2014/30/EU

Conformity assessment procedure: module A

The following standards were applied: EN 61326-1:2013; EN61326-2-3:2013

Marine approvals

Lloyds Register Certificate Nr. 98/00014

BV Certificate Nr. 07173/E0 BV

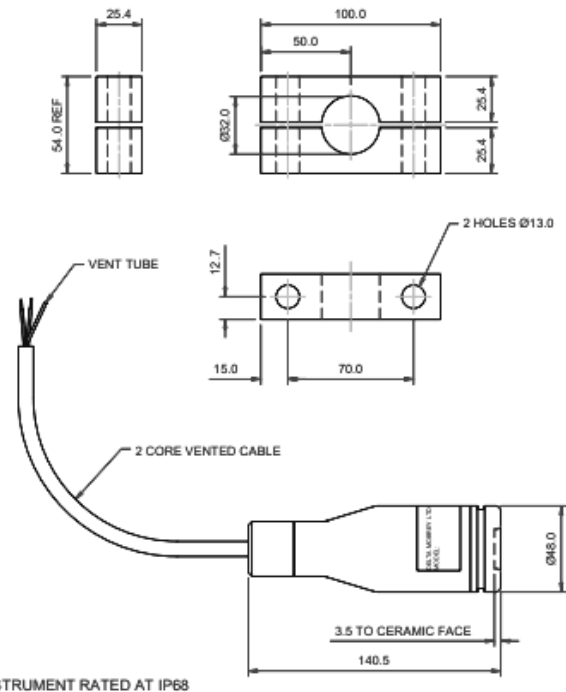
DNV Certificate Nr. TAA000002H

Dimensions

WEIGHT

| Model | Weight |
|--|-------------------|
| 9710 (sensor only) | 0.7 kg / 1.54 lbs |
| Bellows Enclosure Polyester (p/n 71411/773) IP67 Grey (RAL 7001) | 1.2 kg |
| Enclosure Polyester (p/n 9710/077/01) Grey (RAL 7001) | 0.7 kg |
| Vented Cable in air (water) | 71 (16) kg/km |

Total weight varies with different cable length



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9700-Series
Model: 9710