Technical **Datasheet**

delta-mobrey

9700 Series Analogue Transmitter
Submersible Hydrostatic Level Transmitters
Model: 9780 - Pole mounted

Key **Features**

- Two-wire 24 Vdc loop-powered
- 4 to 20 mA
- Accuracy ± 0.1% of calibrated span
- Ranges up to 200 m / 656 ft. H20, and 10:1 rangeability
- Ceramic capacitive sensor
- Low maintenance
- Fully submersible IP68 / NEMA 6P
- Reverse polarity protection
- Dedicated marine version

Product **applications**

The 9780 Transmitter is suitable for a wide range of applications in:

- Water Treatment
- Power
- Marine Market

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

- Corrosive atmospheres
- Resistant to chemical attack

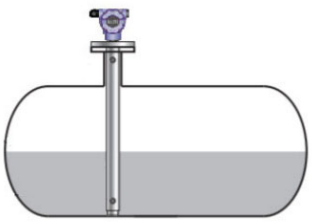
Series Overview

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 version gives a 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 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



How can we **help you?**

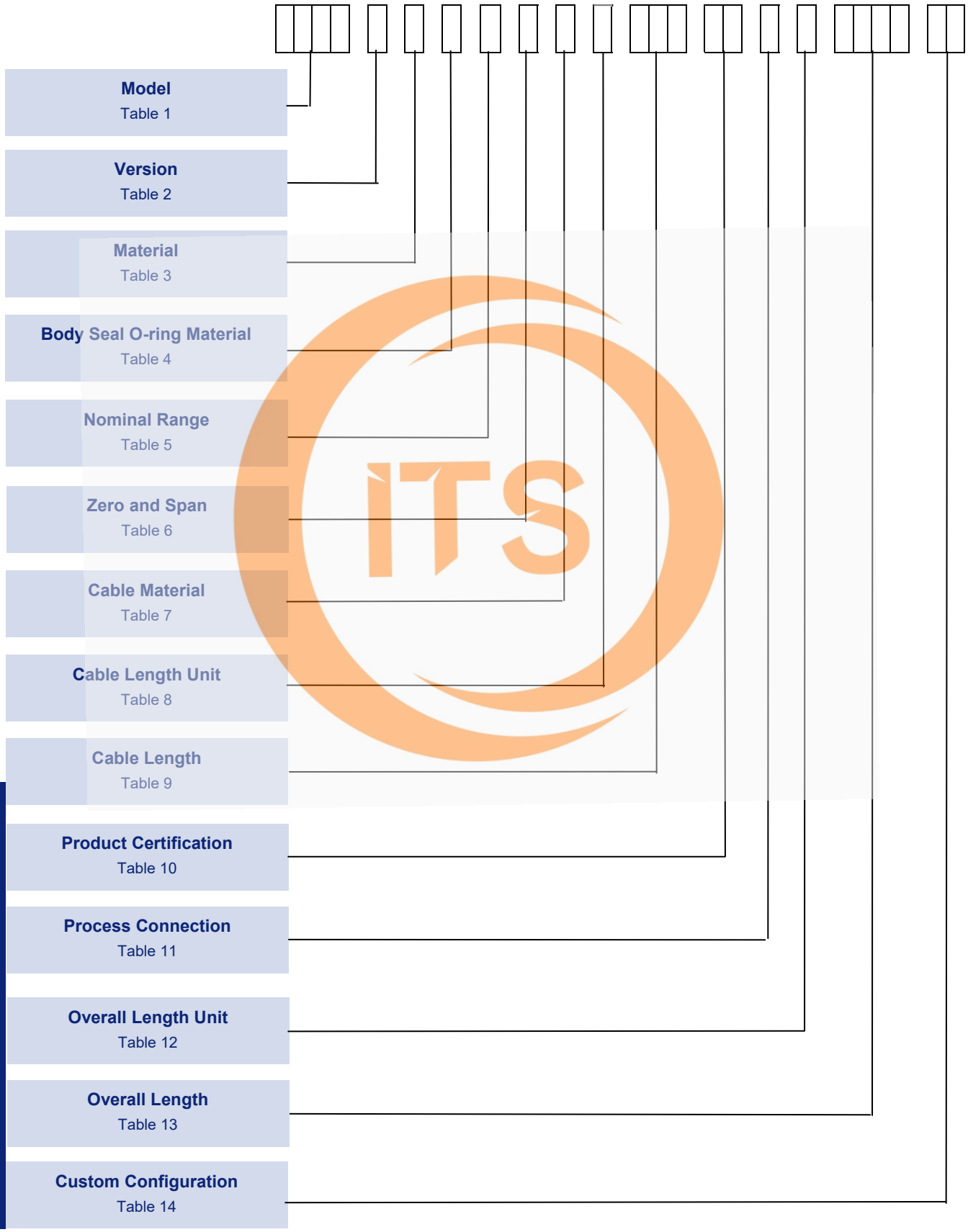
Delta Mobrey's offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0) 1252 729140

9700-Series
Model: 9780

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: 9780

Model

TABLE 1

	Code
Pole Mounted Submersible Hydrostatic Level Transmitter	9780

Version

TABLE 2

	Code
Commercial	C
Marine Approval	M

Material

TABLE 3

	Code
Stainless Steal 316	S
Aluminum Bronze	A

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.

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 Material

TABLE 4

	Code
Fluorocarbon (FPM/FKM)	1
Nitrile	2

Nominal Range

TABLE 5

	Code
0 to 6.5 ft. (0 to 2 m) H20 depth	A
0 to 16.4 ft. (0 to 5 m) H20 depth	B
0 to 32.8 ft. (0 to 10 m) H20 depth	C
0 to 65.6 ft. (0 to 20 m) H20 depth	D
0 to 164 ft. (0 to 50 m) H20 depth	E
0 to 328 ft. (0 to 100 m) H20 depth	F
0 to 3.3 ft. (0 to 1 m) H20 depth	G
0 to 11.5 ft. (0 to 3.5 m) H20 depth	H

Zero and Span

TABLE 6

	Code
Integral (fixed)	1

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

Cable Material

TABLE 7

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

Note: The glanding 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)

Cable Length Unit

TABLE 8

	Code
English	E
Metric	M

Cable Length

TABLE 9

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

Product Certifications

TABLE 10

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

Process Connection

TABLE 11

	Code
Fixed flange, DN40 PN40 (DIN 2635)	B
Fixed flange, DN50 PN40 (DIN 2635)	C
Fixed flange, DN80 PN40 (DIN 2635)	D
Fixed flange, 2-in. ASME B16.5 Class 150	F
Fixed flange, 3-in. ASME B16.5 Class 150	G

Overall Length Units

TABLE 12

	Code
English	**E**
Metric	**M**

Overall Length

TABLE 13

	Code
mm or inches, depending on overall length units	**xxxx**

Custom Configuration

TABLE 14

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

Approvals

NORTH AMERICA CERTICATION

Hazardous area certification (CSA Nr.176418)

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

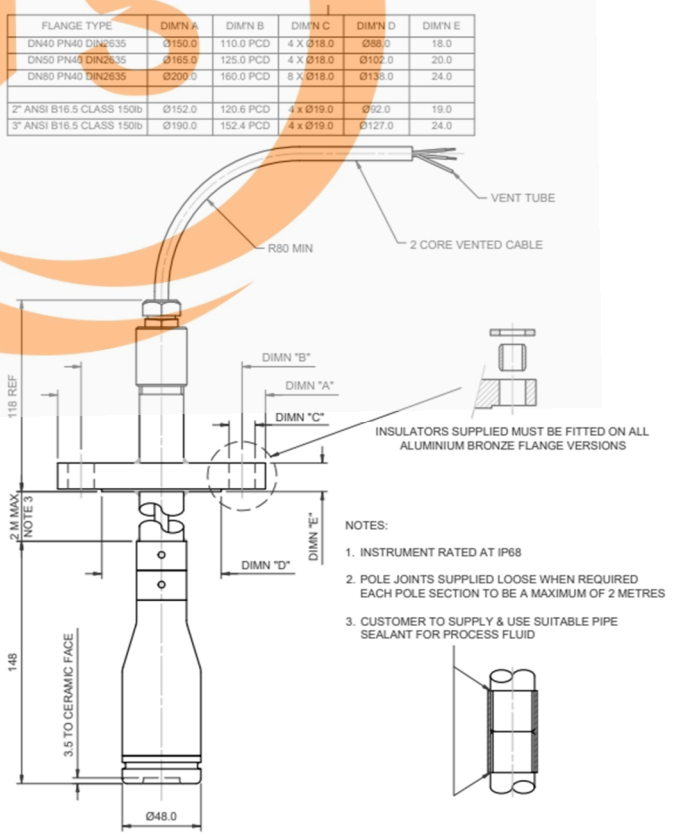
Lloyds Register	Certificate Nr. 98/00014
BV	Certificate Nr. 07173/E0 BV
DNV	Certificate Nr. TAA000002H

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	0.7 kg
Vented Cable in air (water)	71 (16) kg/km

Total weight varies with different cable length



Delta Mobrey Limited

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 glanding 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 x (supply voltage -10V) Ω

$R\ [\Omega] \leq \frac{U_{sup}\ [V] - 10V}{0.0225A}$

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
5 x range up to a max 600 m / 1968 ft. H20

Span adjustment
+10 to +100% of Upper Range Limit (URL

Materials

Wetted parts Sensor Ceramic

Sensor housing 316 Stainless steel, Aluminium bronze

Seal rings Fluorocarbon (FPM/FKM), Nitrile

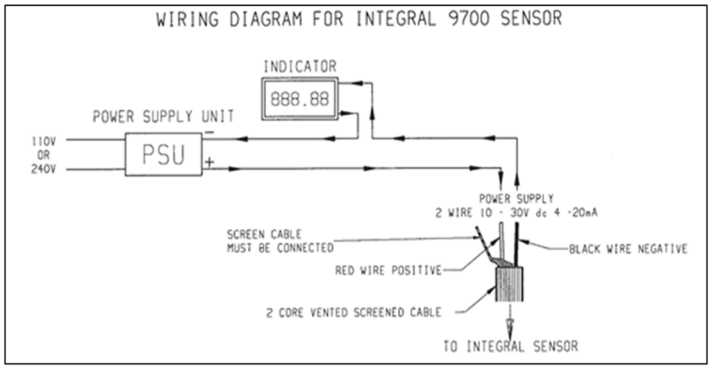
Cable Polyurethane Fluorinated Ethylyene Polypropylene (FEP)

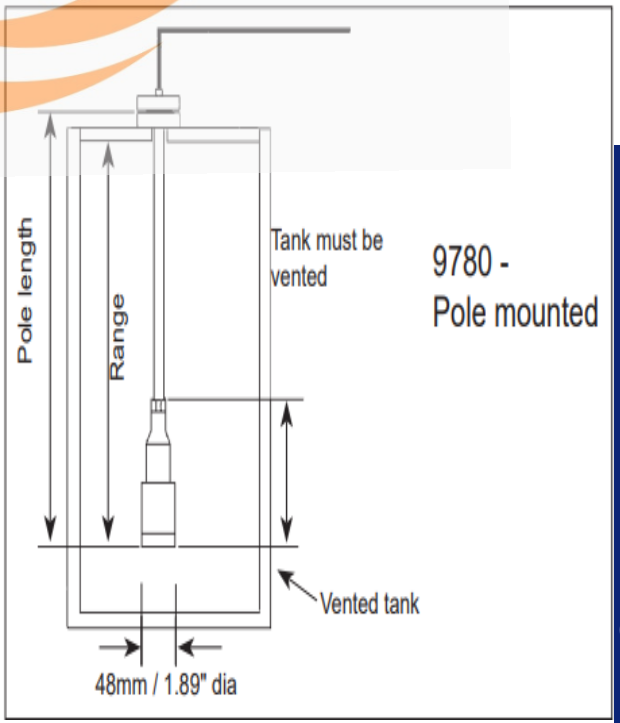
Pole 316 Stainless Steel pole supplied with 316 Stainless Steel Housing option Copper Nickel pole supplied Aluminium Bronze Housing option

Ingress protection IP68 / NEMA 6P (200 m / 656 ft. H20)

Mounting Option

Electrical diagrams





9700-Series
Model: 9780

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