

GL-7B



KONGSBERG



CAPACITIVE LEVEL SWITCH

09.06.2015

The Kongsberg GL-7B level switch is specially designed for high level and overflow alarm detection in cargo tanks on chemical, oil product and LPG carriers. With continuous monitoring and no moving parts, this is a robust sensor that meets the IMO requirement concerning "Cargo Tank Overflow Protection System".

Application

The GL-7B level switch can be used both with conducting and non-conducting liquids. The switch does not require any adjustment due to different types of cargo (liquid). Both single switch (one sensor-rod), and dual switch (two sensor-rods) are available. The sensor can be used in processes with temperatures down to -105°C , suitable for vessels carrying LPG and LEG.

The robust and smooth design with no moving parts is easy to maintain and clean, and can withstand powerful jetstreams from tank washing machines etc. inside tank.

Functional Description

The sensor uses a capacitive measuring principle for detecting level. The capacitance is measured between an inner and outer electrode. If a liquid enters the gap between the two electrodes, the capacitance is altered and this change in capacitance is used to detect liquid / no liquid. The sensor continuously monitor the capacitance, and therefore offers a self-monitoring feature.

This measuring principle have been used by Kongsberg since 1979 and is a well proven, and often preferred, method for level detection on-board ships.

Signal Interface

The GL-7B level switch provides a two-wire 4-20 mA signal that gives a steady 8mA under normal condition. When alarm the signal rises to 12 mA. The built-in self-diagnostics provide default signal in case of contamination (21 mA) and in case of fault (3.6 mA).

According to IMO requirements the sensor must be tested prior to loading. A functionality test of the switch and electronics is carried out by means of a small permanent magnet applied to the outside of the connection box.

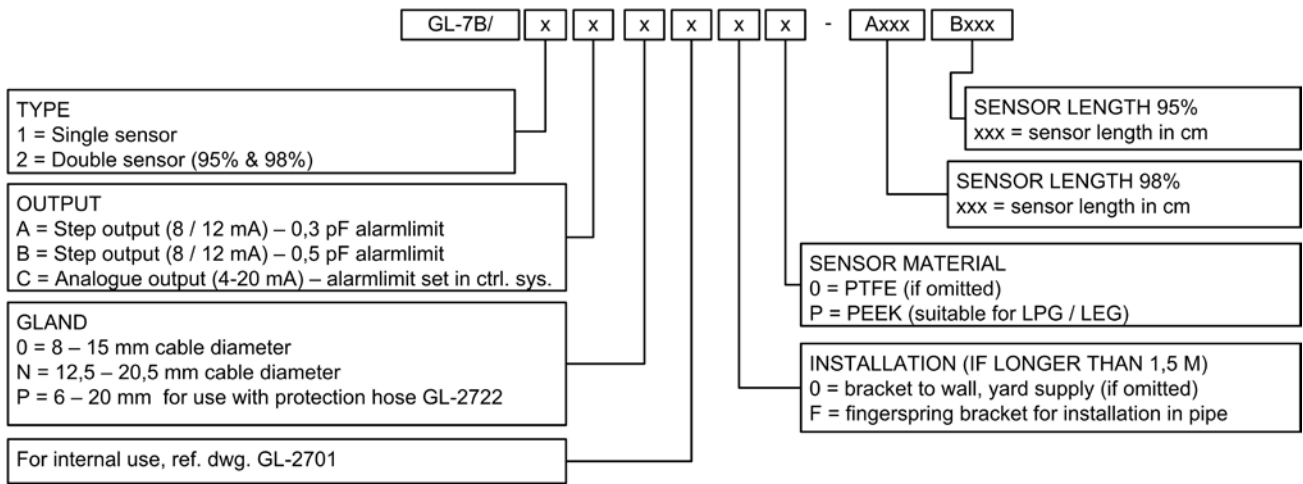
Installation

The sensor is installed on tank top. The length of the sensor rods are custom made, typically to the level representing 95 % and 98 % volume of tank.

The sensor connection box has a JIS B222 DN100 5K flange and is installed on adapter outside tank. If sensor rod exceeds 1.5 m, it is required to fasten the sensor rod in tank. This can either be done by a support to tank wall, or by finger-spring bracket inside an extended tank adapter. The latter must be specified before production of sensor.

GL-7B is ATEX and IECEx approved as intrinsically safe equipment, and when installed in explosive area must be connected to barrier in safe area.

ORDER CODE



TECHNICAL SPECIFICATIONS

General

Power supply: 24 VDC (10 to 28 V)
 Output signal: 4 to 20 mA with HART
 Normal = 8mA / Alarm > 12mA
 Weight: Depend on sensor length
 (i.e. 10 kg for 1 m double sensor)
 Material: Rod: Acid resistant steel AISI316L
 Sensor element: PTFE or PEEK
 Connection: 2-wire 2.5 mm² each sensor
 Cable: Ø6 - Ø20.5 mm²
 Flange: JIS B222 100 5K

Performance

Accuracy: +/- 1.0 cm

Environment

Operating ambient temp.: -45 to 85 °C (T4) / 70 °C (T5)
 Process temp.: -105 °C to 70 °C
 Protection grade: IP67 (housing) / IP68 (sensor)
 Vibration: IACS E10 (max. 0.7 g)
 EMC: IACS E10

Approvals

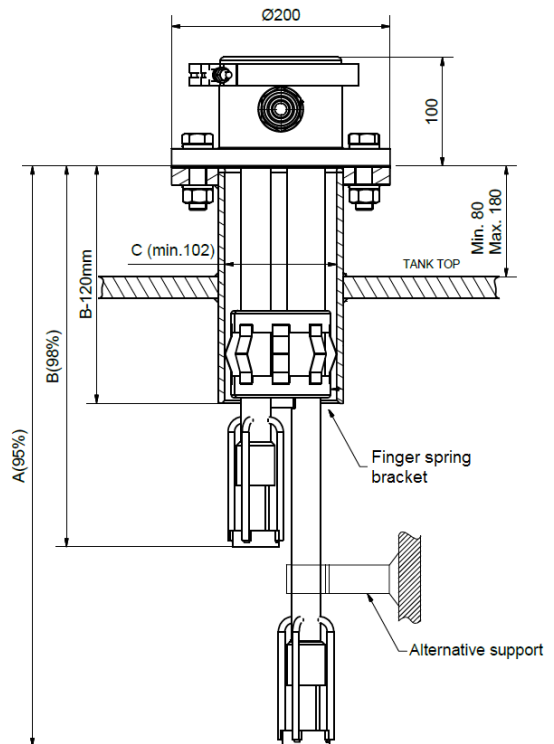
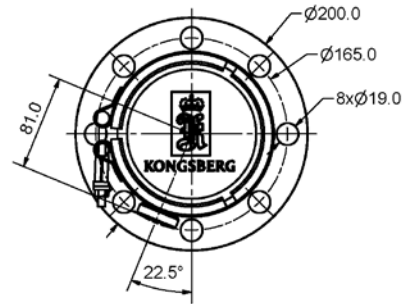
Type approvals: DNV, ABS, BV, LR

Intrinsic safety data

ATEX certificate: TÜV 13 ATEX 124272X
 IECEx certificate: IECEx TUN 13.0030X
 EX classification: Ex II 1 G Ex ia IIC T5...T4 Ga

Safety data

Max. input voltage: U_i = 28 V
 Max. input power: P_i = 0,85 W
 Max. input current: I_i = 150 mA
 Max. internal capacitance: C_i = 21.2 nF
 Max. internal inductance: L_i = negligible



Specifications subject to change without any further notice.

GL-7B/CE/C

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