

MS10

Buoyancy Level Switch

Horizontal electric float level switch K-TEK Products



Introduction

The MS10 is a single-pole, double-throw electric switch capable of sensing the liquid level inside a process vessel. The unit is typically mounted via the integral 1-1/2 in. MNPT connection. Several standard adapters are available for use when a 1-1/2 in. FNPT is not available on the vessel. The MS10 requires no preventative maintenance as it is totally sealed. The MS10 provides either a normally open or normally closed dry contact to activate external devices such as alarms or solenoids. Variations in process fluid specific gravity have minimal effect on the level measured because of the small size of the integral float.

Features

- Electrical Contacts are Magnetically Isolated from Process
- Mounting Via 1-1/2 in. NPT Process Connection
- Optional Flange Mounting Adapters Available
- Hermetically Sealed SPDT Switch (NO / NC Contact)
- Vibration Resistant
- Switch is Totally Enclosed within Stainless Steel Housing
- Hex Shaped Housing & SPDT Contacts Allow for Easy Installation
- FM, CSA, and ATEX

SPECIFICATIONS

Switch type Magnetically actuated, hermetically sealed, bi-stable switch.
 Contact Material Rhodium alloy
 Switch Action Break before make
 Max Deadband Approx. +/- 0.50 in. of float travel
 Contact Ratings AC rating (max): 250 V or 1 amp resistive or 100 VA
 DC rating (max): 125 V or 0.5 amp resistive or 100 W
 Lamp Load Rating: 1/3 A @ 125 VAC
 See IR10 for higher Switch Contact Ratings

Process Temp. -40 to 450 °F / -40 to 232 °C
 Contact factory regarding use in colder applications

Contact Temp. -40 to 302 °F / -40 to 150 °C

Maximum Pressure 1500 psig / 103 bar standard
 5000 psig / 345 bar with HP option

Customer Connections 1-1/2 in. MNPT Process, 1/2 in. FNPT conduit and AWG 20 wiring harness (18 in.). MS-10 housing is 2 in. Hex for tightening into process connection

Insertion Length 4 in. (101mm) Standard;
 Optional 5 in. (127mm),
 6 in. (152mm),
 6-1/2 in. (165mm)
 Up to 14 in. (356mm)
 Insertion Length

Materials 316/L Stainless Steel

Specific Gravity 0.4 Minimum (Clean Fluids)

Consult Factory for Special Application Requirements

APPROVALS

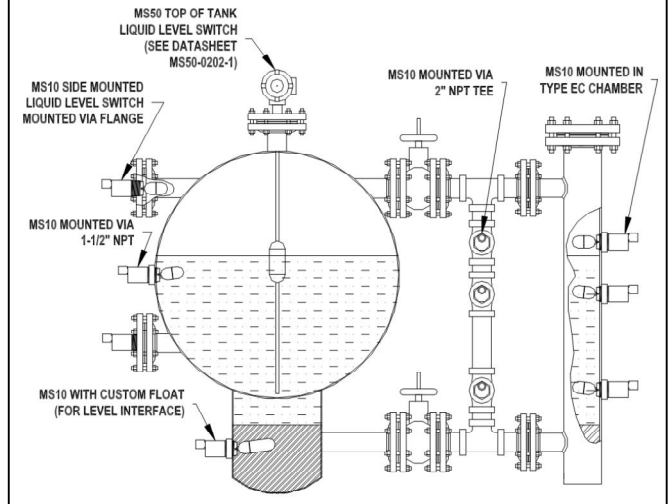
Factory Mutual Research Corp and CSA Canadian Standards Associations Hazardous Locations:

FM XP CL I, Div 1& 2, GP A,B,C,D T6@Ta=176°F (80°C)
 DIP CL II, Div 1& 2, GP E,F,G CL III
 I /1 / AEx d IIC T6@Ta=176°F(80°C)
 IS I /1 / A,B,C,D T6@Ta=176°F(80°C)
 I /0/ AEx ia IIC T6@Ta=176°F(80°C)

ATEX II 1 G Ex ia IIC T6
 (-40°C < Tamb < +80°C)
 (-40°F < Tamb < +176°F)



Sample Application Using K-TEK Level Switches



ORDERING INFORMATION

- Omit items that are standard or not required

MS10.a.b.c.d.e.f.g

a. Process Connection

CAUTION: Requires minimum 2 1/2" nozzle ID.

15 1 1/2 MNPT (Standard 316/L Stainless Steel)

20 2" MNPT (Standard 316/L Stainless Steel)

WP Welded Flange

FL Loose Flange

Mounting Adapter Material

T2 2 in. NPT, 3000# Modified Tee Includes 1 1/2 x 2 in. reducer bushing

S2 2 in. Socket Weld, 3000# Modified Tee Includes 1 1/2 x 2 in. reducer bushing

b. Flange Process Connection Material

X None

316 316L Stainless Steel

CST Carbon Steel

c. Process Connection Size / Rating / Type

xxx Specify type, material & rating from
SLG-0001-1 Flange Designation Chart

d. Tag with Customer Specified Information

X None

NT 316 Stainless Steel

e. Insertion Length

EXT1 4 in. / 101 mm Insertion Length (Standard)

EXT2 5 in. / 127 mm Insertion Length

EXT3 6 1/2 in. / 165 mm Insertion Length

EXT4 6 in. / 152 mm Insertion Length (HP Option Only)

EXTN Custom Insertion Length (6% to 14 in / 168 to 356 mm)

f. Other Options

X None

HP Up to 5000 psig / 345 bar

1. 3900 psig max with CRN approval.
2. Flanged process connection required
3. Only available with EXT4 insertion length.
4. Contact factory regarding materials of construction.
5. Requires a 3 1/2" minimum nozzle ID.

g. Approvals

X None

N3 Factory Mutual / CSA

E1 ATEX / IECEx Exia or Ex nA



Application Note: Inductive and Capacitive loads require special considerations. Contact factory for technical literature and/or applications assistance.

Services will follow the model code with - and will not be included on the tag

Certifications

CK Certificate of Compliance for ANSI / ASME*†

CU3 Certificate of Functionality (Mechanical Function Test)

CRN Canadian Registration Number*†

Material Monitoring

C2 Material Monitoring with Inspection Certificate 3.1 acc. EN 10204 (MTR)

Engineering Documents

GD3 Certified as Built Drawings

Hydrostatic Examination

CP1 Hydrostatic Examination (10 minutes)

CP2 Hydrostatic Examination with Chart Recording (30 minutes)

CP3 Hydrostatic Examination with Chart Recording (60 minutes)

CP4 Hydrostatic Examination with Chart Recording (120 minutes)

NACE

CN1 NACE (MR 0103) Hardness Certificate*

Radiographic Services—Per Tag

CRA Radiographic Examination on all Pressure containing Butt Welds / and all other pressure containing welds are Liquid Dye Penetrant tested (Final Pass Only)

Liquid Dye Penetrant—Per Tag

CNA Liquid Dye Penetrant Examination on all Pressure containing Welds (Final Pass Only)

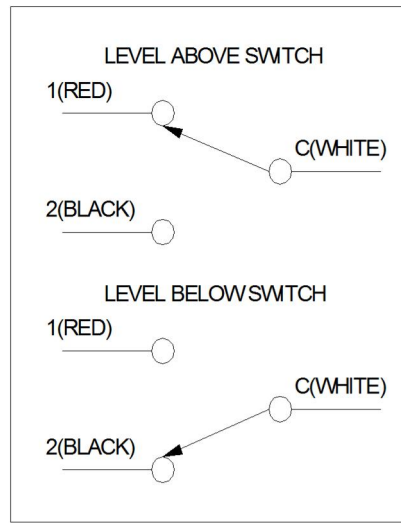
Positive Material Identification

CHC Positive Material Identification with Carbon Content

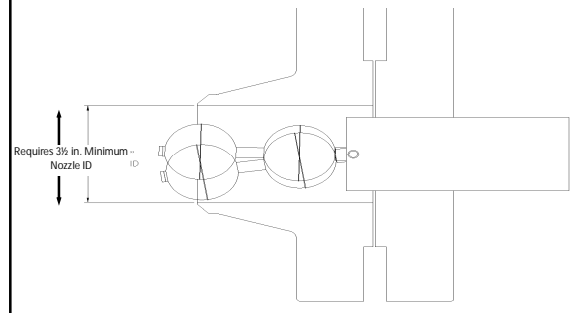
CHD Positive Material Identification without Carbon Content

*Requires C2 in Material Monitoring † Requires CP1, CP2, CP3 or CP4 in Hydrostatic Examination

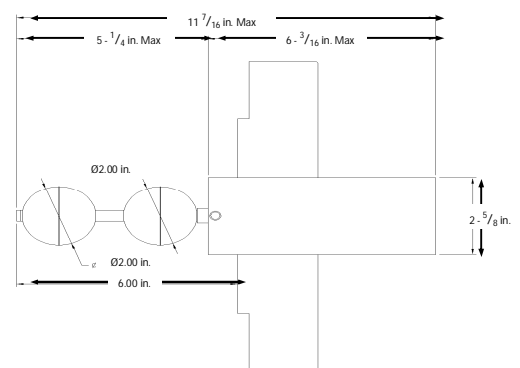
Figure 1—Operation of Electrical Contacts



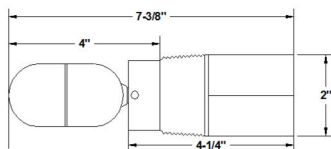
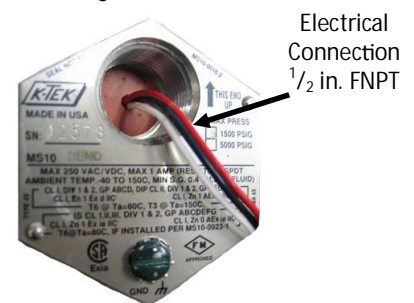
HP Option Through Nozzle Installation



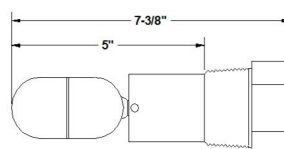
High Pressure (HP) / EXT 4 Option



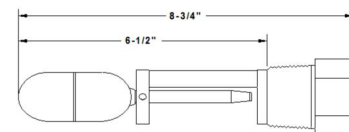
Wiring Connection



EXT1 option (standard)



EXT2 option



EXT3 option

Contact us

ABB Inc.
17100 Manchac Park Lane (Suite B)
Baton Rouge, LA 70817 USA
Phone: +1 225 408 0800
Service: +1 225 677 5836
Fax: +1 225 673 2525
E-mail: quotes.ktek@us.abb.com
Service e-mail: ktek-service@us.abb.com

www.abb.com/level

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DS/MS10-EN Rev. R 10.2016

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