high-accuracy
measurement
instruments

FICHA TÉCNICA DE PRODUTO

PRODUCT DATASHEET

HMI – Automação e Instrumentação, Lda.

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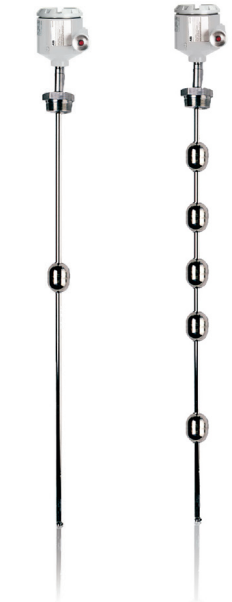
Data Sheet DS/MS50-EN Rev. X

MS50
Buoyancy level switch

K-TEK products
Measurement made easy



Single Float Multi-Float

Features

- Up To Six SPDT Switches Per Unit (NO & NC Contacts)
- Interface & Total Level Capability
- Trip Point Adjustable Without Removing Vessel From Service
- Vibration Resistant
- Suitable for High Temperature Applications
- 316L Stainless Steel Wetted Parts Standard
- Field Adjustable and Replaceable Switches
- 316/316L Standard, Exotic Alloys & Thermoplastic Available
- Terminal Block(s) Included

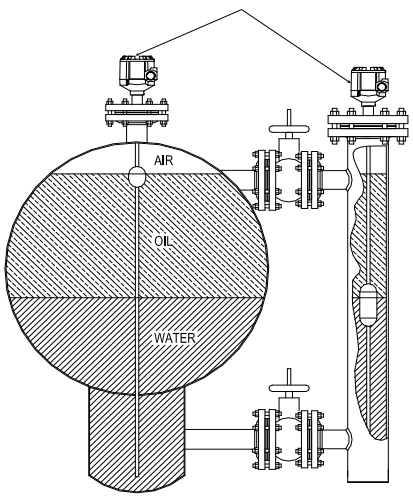
Typical applications

- Butane
- Propane
- Oil
- Chlorine
- Acids
- Water
- Interfaces

MS50
Buoyancy Level Switch

Specifications

Mechanical	
Housing Type	Explosion Proof Powder Coated Aluminum Compartment IP 67
Materials of Construction	316L Stainless Steel Standard, Exotic Alloys, Thermoplastic optional
Maximum Pressure	Metallic Units: 800 psig @ 300 ºF / 55 bar @ 149 ºC Thermoplastic: 50 psig / 3.5 bar at maximum temperature listed
Sensor	$^{5}/_{8}$ in. OD / 16 mm
Length	Metallic Units: 8 in. to 20 ft. / 0.2 to 6 meters. Thermoplastic: 8 in. to 10 ft. / 0.2 to 3 meters.
Electrical	
Switch Type	Magnetically actuated, hermetically sealed, reed switch each contact, single pole double throw (Form C) terminals in housing
Switch Action	Break before make. Position of magnetic float will accuate reed switch
Contact Material	Rhodium
Maximum Deadband	Approximately ± 0.75 in. / 1.9 cm 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
Ambient Operating Temperature Range	-58 ºF / -55 ºC to 150 ºF / 66 ºC
Minimum Operating Process Temperature	Metallic Units: -50 ºF / -45 ºC Thermoplastic Units: 40 ºF / 4.5 ºC
Maximum Operating Process Temperature	Metallic Units: 200 ºF / 93 ºC (optional 302 ºF / 149 ºC) Thermoplastic Units: PVC: 140 ºF / 60 ºC; CPVC: 210 ºF / 99 ºC; PVDF: 280 ºF / 138 ºC (see /HT option)
Hazardous Area Ratings	FM Approved and CSA Certified XP / I / 1 / ABCD; NEMA 4X IS / I / 1 / ABCDEFG (simple apparatus, if installed per MS50-0923/NC) NI / I / 2 / ABCD; DIP / II,III / 1 / EFG; NEMA 4X IEC ATEX: II 2G Ex d IIC T6 Gb [-40C ≤ Tamb ≤ 66C] II 1D Ex ta IIIC T80C Da [-40C ≤ Tamb ≤ 66C]
Accessories	IR10: 10 Amp Relay Output Module and PP10 Pump-Pak controller. See appropriate sales literature for details and hazardous area rating limitations.
Connections	MS50/X: ½ in. MNPT conduit and AWG 26 wiring harness (no housing). MS50/A1: ¾ in. FNPT conduit with terminal block (AWG 30 to AWG 12).



MS50
Buoyancy level switch

Ordering Information

MS50.a.b.c.d.e.f.g

a	**Housing**	
	X	Wiring Harness Only with No Housing (General Purpose Only)
	A1	Explosion Proof Housing, Aluminum optional housing provides the MS50 with a hazardous area rating of XP / I / 1 / ABCD
b	**Probe Material**	
	SS6	Type 316L Stainless Steel
	A20	Alloy 20**
	HSC	C-276 Hastelloy**
	PVC	PVC*
	CPV	CPVC*
	PVD	KYNAR®
	Z9	Special

*PVC and CPVC units available standard with 3" MNPT, 3" 150# Flange and 4" 150# Flange. KYNAR® units available with 3" 150# flange or 3" MNPT only.
Carbon steel process connections are available on stainless steel units for economy.
Contact factory for other requirements.
** This material will be provided with KYNAR® float stop collars with Hastelloy set screws.
***Flanged process connection only
KYNAR® is the registered trademark of Arkema polyvinylidene fluoride (PVDF) resin.

c	**Approvals**	
	X	None
	N3	FM and CSA Explosion Proof or Intrinsically Safe
	E1	ATEX Intrinsically Safe
	E2	ATEX IEC Flame Proof

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Buoyancy Level Switch

d	Process connection	
	P7	3/4 in. // ANSI / ASME Class 3000 // NPT-m Hex Plug MNPT
	P1	1.0 in. // ANSI / ASME Class 3000 // NPT-m Hex Plug MNPT
	P15	1.5 in. // ANSI / ASME Class 3000 // NPT-m Hex Plug MNPT
	P2	2.0 in. // ANSI / ASME Class 3000 // NPT-m Hex Plug MNPT
	P3	3.0 in. // ANSI / ASME Class 3000 // NPT-m Hex Plug MNPT
	P4	4.0 in. // ANSI / ASME Class 3000 // NPT-m Hex Plug MNPT
	P7A	3/4 in. // ANSI / ASME Class 3000 // NPT-m Hex Plug MNPT with compression fitting for adjustable length "L"
	SR11	1.0 in. // ANSI / ASME Class 150 // Raised Face Blind Flange
	SR13	1.0 in. // ANSI / ASME Class 300 // Raised Face Blind Flange
	SR151	1.5 in. // ANSI / ASME Class 150 // Raised Face Blind Flange
	SR153	1.5 in. // ANSI / ASME Class 300 // Raised Face Blind Flange
	SR21	2.0 in. // ANSI / ASME Class 150 // Raised Face Blind Flange
	SR23	2.0 in. // ANSI / ASME Class 300 // Raised Face Blind Flange
	SR31	3.0 in. // ANSI / ASME Class 150 // Raised Face Blind Flange
	SR33	3.0 in. // ANSI / ASME Class 300 // Raised Face Blind Flange
	SR41	4.0 in. // ANSI / ASME Class 150 // Raised Face Blind Flange
	SR43	4.0 in. // ANSI / ASME Class 300 // Raised Face Blind Flange
	SR61	6.0 in. // ANSI / ASME Class 150 // Raised Face Blind Flange
	SR63	6.0 in. // ANSI / ASME Class 300 // Raised Face Blind Flange
	RCC	DN25 / PN16 // Raised Face Type B1 Flange
	RCD	DN25 / PN25 // Raised Face Type B1 Flange
	REC	DN40 / PN16 // Raised Face Type B1 Flange
	RED	DN40 / PN25 // Raised Face Type B1 Flange
	RFC	DN50 / PN16 // Raised Face Type B1 Flange
	RFD	DN50 / PN25 // Raised Face Type B1 Flange
	RHC	DN80 / PN16 // Raised Face Type B1 Flange
	RHD	DN80 / PN25 // Raised Face Type B1 Flange
	RJC	DN100 / PN16 // Raised Face Type B1 Flange
	RJD	DN100 / PN25 // Raised Face Type B1 Flange
	RMC	DN150 / PN16 // Raised Face Type B1 Flange
	RMD	DN150 / PN25 // Raised Face Type B1 Flange
	Z9	Special

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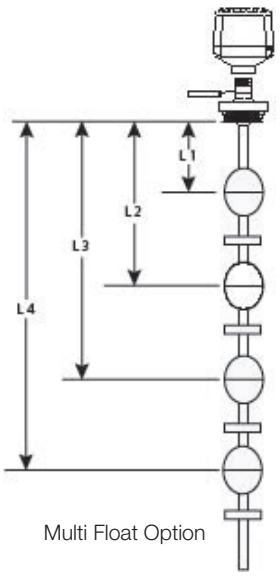
e	**Float**	
	FXX	Float Refer to Float Selection Guide SLG-0003-1 for standard available floats. **NOTES:** 1. Smaller floats have a tendency to stick to the MS50 probe when used in thick or dirty liquids. To insure the highest reliability it is always advisable to use as large a float as possible. 2. Float selection is not limited to those listed on SLG-0003-1. Custom floats are available. 3. Interface level floats require custom weighting and generally require a float with a larger volume for proper operation. Consult factory for application assistance. 4. PVC, CPVC, and KYNAR® units must use PVC, CPVC, or KYNAR® floats only due to dimensional differences in the thermoplastic and stainless steel floats.
f	**Switch**	
	HT	The high temperature option is standard. For process temperatures up to 300 ºF / 149 ºC.
g	**Multi-float option**	
	SF1	Single Float (Leave blank if model code E1 or E2 (ATEX) is selected. With this option non-latching reed switches are used. Each switch has a float and a stop collar that stops the float magnets at the switch to accomplish the latching. **Note:** Dimension starts from the process connection.
	MF2	2 Multi Level Floats (Each set point will have a float and an upper & lower stop collar.) Example: MF3 will have three floats and required stop collars.
	MF3	3 Multi Level Floats
	MF4	4 Multi Level Floats
	MF5	5 Multi Level Floats
	MF6	6 Multi Level Floats

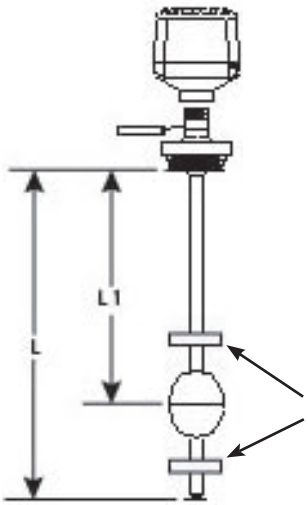
Notes: Select the appropiate MS50 dimensions from the diagram on the right. L1 thought L6 are the actuation points of the limit switches. All dimensions should be specified in inches. At least 3.5 inches are required between limit swittfhes and dimension "L". Allow 3.5 inches below lower limit. Note that dimension "L" should allow enough clearance for the float to drop to the lower limit and for the future readjustement.
Important: The mult-float (MF) option may require additional spacing, depending on float size. Please consult factory for details.

Note: Set Point Dimensions L1.L2.L3.L4.L5.L6.L there may be no more than 3 switches per 0.6 mm (24 in.).

Note: When using Floats on a MS50 in EC Chambers or Stilling Wells, there must be a minimum of 1 in. Clearance between the Float and the ID of the Chamber / Stilling Well being used.



Multi Float Option



Single Float Standard

MS50
Buoyancy Level Switch

Additional ordering codes

Additional ordering codes will follow the dash in model number with a period.

Engineering Documents	
GD1	Drawings for Approval - NOTE: Lead time will start after receipt of customer approved drawings
GD2	Drawings for Record
GD3	Certified as Built Drawings - NOTE: Lead time will start after receipt of Purchase Order
Liquid Dye Penetrant	
CNA	Liquid Dye Penetrant Examination on all Pressure containing Welds (Final Pass Only) (Per Tag)
CNC	Liquid Dye Penetrant Examination on 10% of all Pressure containing Welds (Final Pass Only) (Per Tag)
Positive Material Identification	
CHC	Positive Material Identification with Carbon Content
CHD	Positive Material Identification without Carbon Content
Hydrostatic Examination	
CP1	Hydrostatic Examination - (10 Minutes)
CP2	Hydrostatic Examination with Chart Recording - (30 Minutes)
Material Monitoring	
C2	Material Monitoring with Inspection Certificate 3.1 acc. EN 10204
Additional Services	
CU3	Certificate of Functionality
Origin Documents	
GS1	Certificate of Origin
GS2	Certificate of Origin Notarized by Local Chamber of Commerce
GS3	Certificate of Origin Legalized by Specific Country Chamber of Commerce - Lead Time may be extended depending on Country
GS4	Korean Foreign Trade certificate
GS5	NAFTA Certificate
GS6	EX-IM BANK Certificate (One per Tag)
Certifications	
CK	Certificate of compliance for ANSI / ASME*†
CRN	Canadian Registration Number*†
CL	General Certificate of Compliance
NACE	
CN1	NACE (MR 0103) Hardness Certificate*

*Requires C2 or C3 in Additional Services
†Requires CP1 or CP2 in Hydrostatic Examination

MS50
Buoyancy level switch

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