

A Higher Level of Performance



Data Sheet

HAWK Magnetic Level Gauge



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Product overview

The HAWK Magnetic Level Gauge (MLG) is widely applied in the monitoring and process control of liquid level and interface for many industries; such as petroleum, chemical, power, paper, metallurgy, water treatment etc.

The SPI and TBI are the standard and special magnetic level gauges of HAWK. The products are suitable for real time, precise, safe and reliable continuous measurement of process level. The design adopts a 360° magnetic ring which is hermetically sealed and incompressible. The indicator uses hermetical sealed glass tube technology to clearly indicate the level, which eliminates the common problems of glass gauges, such as vapour, condensation and liquid leakage etc.

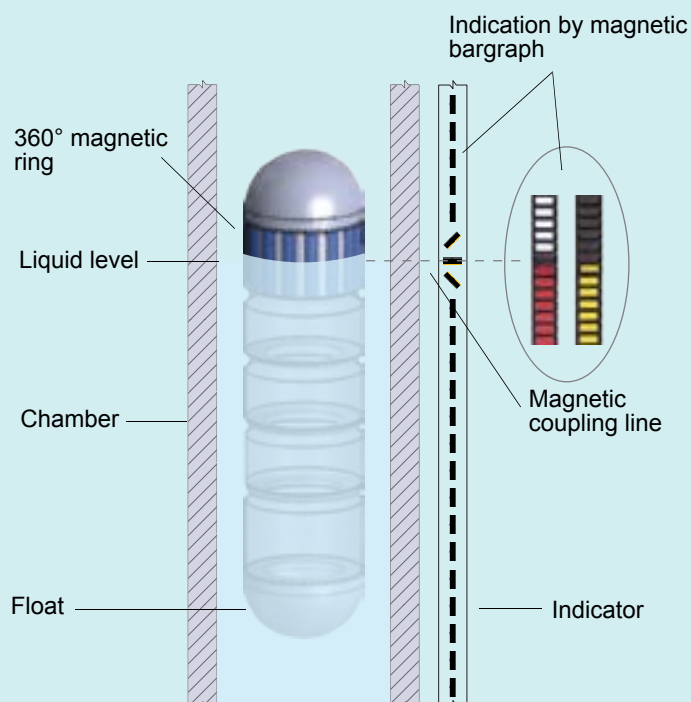
Why Choose HAWK?

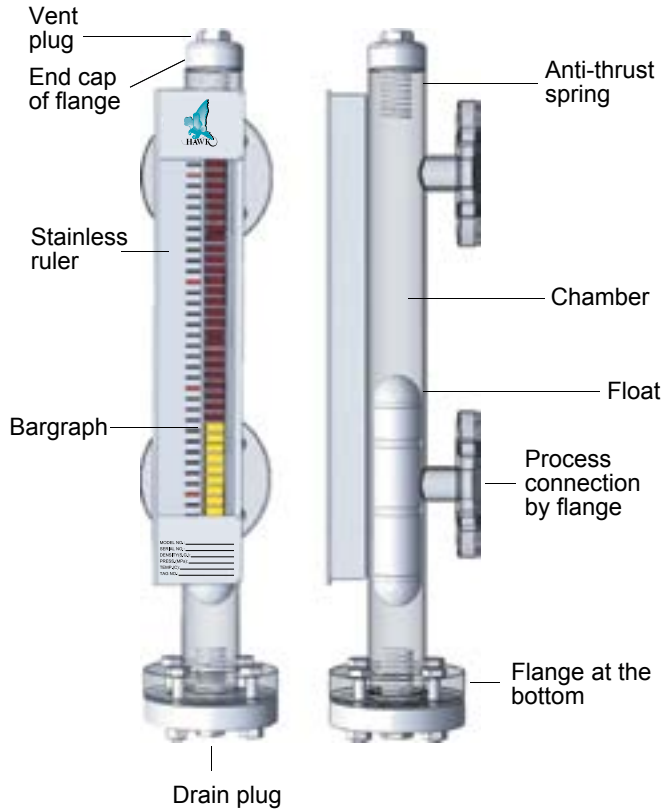
- Global support and service
- Fast quotations and deliveries
- Innovative solutions for oil & gas applications
- Support of all major communication protocols
- Commissioning services - Remotely and on-site

Principle

Based on the principle of magnetic coupling and buoyancy, the magnetic level gauge provides real-time measurement for level and interface.

HAWK's Magnetic Level Gauge (MLG) is connected to a process vessel. Within the chamber is a float containing a 360° magnetic ring. Outside of the chamber is an indicator equipped with a vacuum glass tube, which contains a bicoloured two-face magnetic bargraph. In response to the level movement, the float moves accordingly, forcing the magnetic bargraph to turn and change color. True liquid level is indicated or "read" from the corresponding point on the measuring scale.





Product structure and features

HAWK magnetic level has a simple modular design, composed a main chamber and a float.

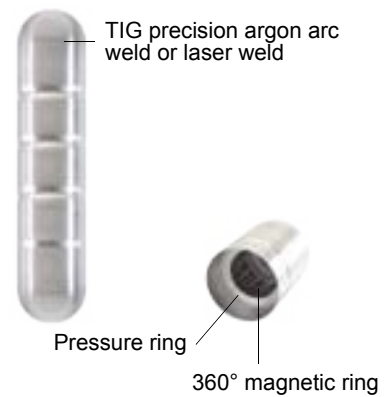
Main Chamber

- ANSI standard design or special manufacture
- Multi-forms installation and process connection
- Chamber Material: 304/304LSS, 316/316LSS, 317SS, 321SS, 347SS, Ti2, Hastelloy C-276, Zr-702, Nickel-6, 304+PTFE, CPVC and PP.

Float

The float is the key component of the level gauge, which magnetically couples to the outside indicator, liquid level switch and transmitter.

- Hermetically sealed incompressible
- 360° magnetic ring
- 316LSS, Hastelloy C-276, Zr-702, Nickel 6, Ti2, 304SS+PFA, grade V aviation titanium alloy and other materials
- Special structure and precision manufacturing technology of pulse TIG and laser weld
- Range of temperature: -320 to 1000°F (-196 to 538°C)
- Range of pressure: vacuum to 600 psig (vacuum to 42MPa)
- Suitable for harsh working conditions, such as HTHP, cryogenics and strong corrosion.





Product structure and features

Indicator

The indicator is composed of:

- 316SS or aluminium ruler
- Hermetically sealed glass tube with no contact with medium
- Magnetic bargraph is made from special high and low temperature - resistant materials
- Magnetic bargraph is mechanically interlocked to avoid random rotating
- Selectable engineering units
- Immune to oxidation, corrosion and the effects of dust

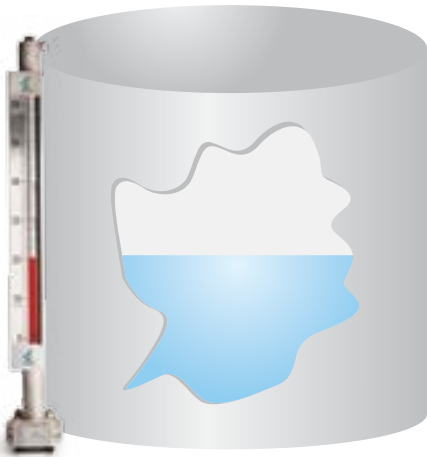


Applications

- Boiler: Steam drum liquid level
- Power generation: Auxiliary machinery liquid level (HP reheater, LP reheater, deaerator, condenser and heating network heater etc), chemical water
- Coal Chemical: Methanol, dimethyl ether, synthesis ammonia/urea, MTO, CTL, SNG
- Silicon industry: Organic silicon, polycrystalline silicon
- Petroleum and petrochemical: Oil and gas, ethylene, trimerization and etc.
- Fine Chemicals: Methane oxide, epoxy ethane, aniline, PTMEG, BDO, carbon fiber, POM, acetic acid, styrene, rubber, crude benzol refining
- Others: Metallurgy, paper-making, water treatment, biological, pharmaceutical, food and beverage etc.



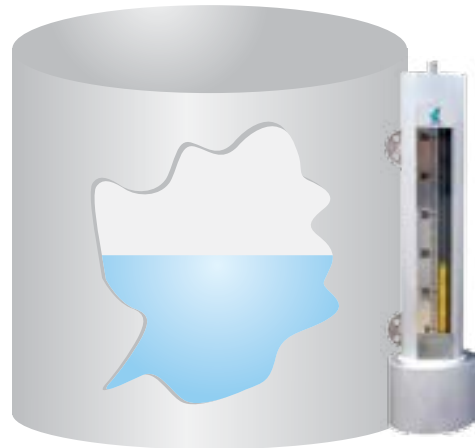
Product Application



Application I:

High Temperature and High Pressure (HTHP) Application

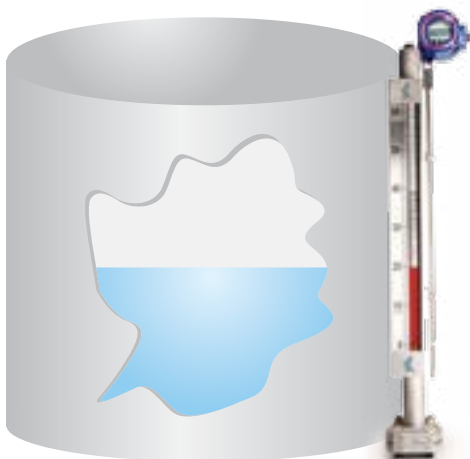
- Designed for HTHP, all components are incompressible
- Maximum process temperature: 1000°F or 538°C
- Maximum process pressure: 6000 psig or 42MPa
- Suitable for boiler steam drums, power plant auxiliary machinery, hydrogenation and other HTHP working conditions



Application II:

Low temperature / Ultra-low temperature application

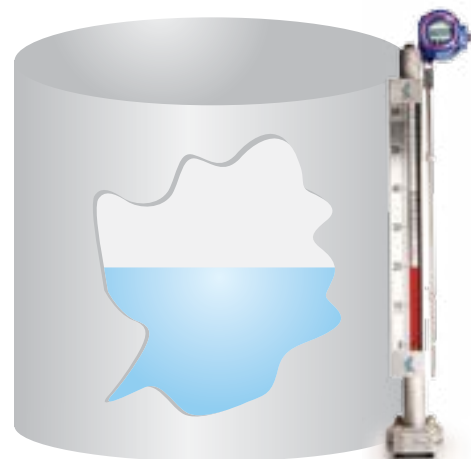
- Designed for low temperature and frost prevention, all components hard and anti-compression
- Minimum process temperature: -320°F (-196°C)
- Absolutely avoids condensation, frost, freezing and etc.
- Suitable for ethylene, Rectisol and other low temperature/ ultra-low temperature working conditions



Application III:

Special Materials

- 304SS+PTFE, Hastelloy C-276, Zr 702, Ni-6 and etc.
- Wide range of temperature, pressure and corrosion resistance
- Acetic acid, acetic anhydride, chlor-alkali suitable for chemical industry and other corrosive working conditions



Application IV:

Integrated Application

- Integrated application with level transmitters/switches
- Local indication and remote signal simultaneously
- Measure multiple process interfaces
- Reduced costs of product and maintenance



Product Application



HLG - Magnetic Level Gauge

- Single-chamber
- Multiple special materials available
- Chamber size: ANSI 2"/ 2.5"/ 3"
- Maximum pressure rating: ANSI 2500LB
- Multiple options for installation and process connection

Magnetic Level Gauge Technical Specifications

Measuring Accuracy:	±0.1" or ±2.54 mm
Chamber Materials:	304/304LSS, 316/316LSS, 317LSS, 321LSS, 347LSS, 904SS, Ti2, Hastelloy C-276, Zr 702, Ni-6, 304/ 316SS lined PTFE, CPVC and PP.
Float Materials:	316/316LSS, Ti2, titanium lined PFA, titanium alloy, Hastelloy C- 276, Zr 702 and etc.
Pressure Resistance Rating:	ANSI 150~2500LB, DIN PN16~PN420
Process Connection Configuration:	Side-Mounting 1/2"~3" DN15~DN80 Top-mounting 3"~10" DN80~DN250
Process Connection Type:	Flange/Thread/Nipple
Measuring Range:	1~20ft. (0.3~6.1m), 40ft. (12m) at maximum
Temperature Range:	-320~1000°F (-196~538°C)
Pressure Range:	0~6000PSIG (Full Vacuum~42MPa)
Minimum Density:	0.3S.G./level; 0.05 S.G./interface
Indicator:	Bargraph
Protection Grade:	IP68
Indication Ruler:	Stainless or aluminium ruler, multi engineering units optional

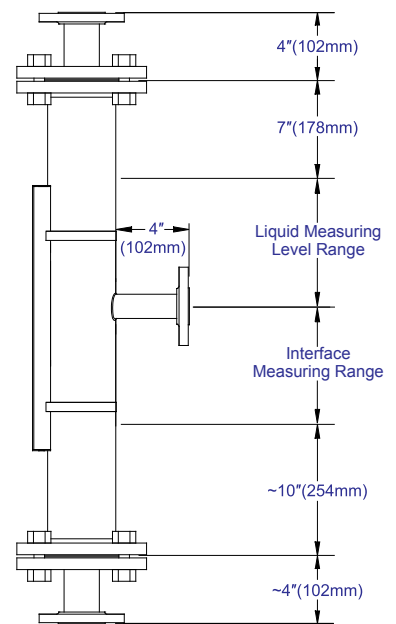
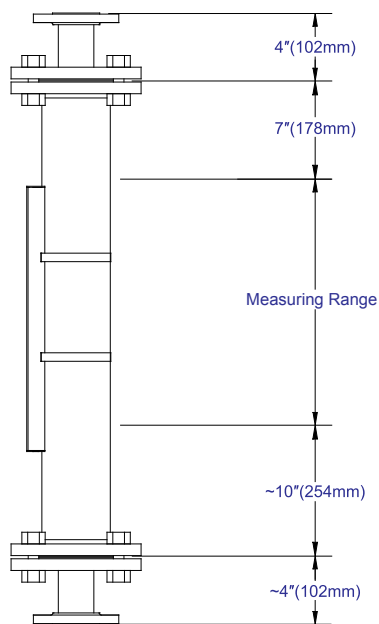
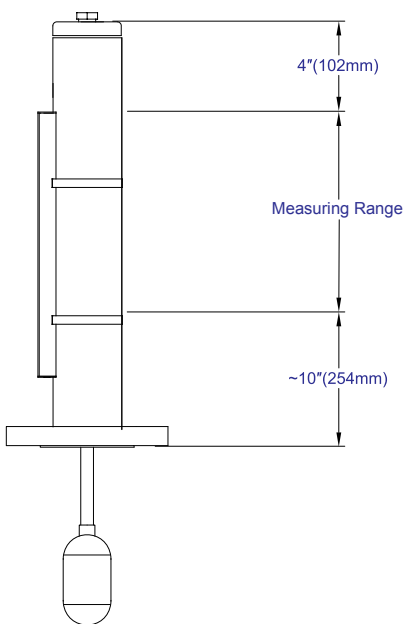
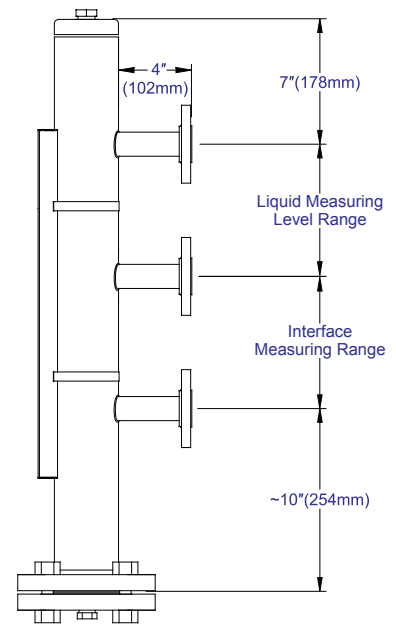
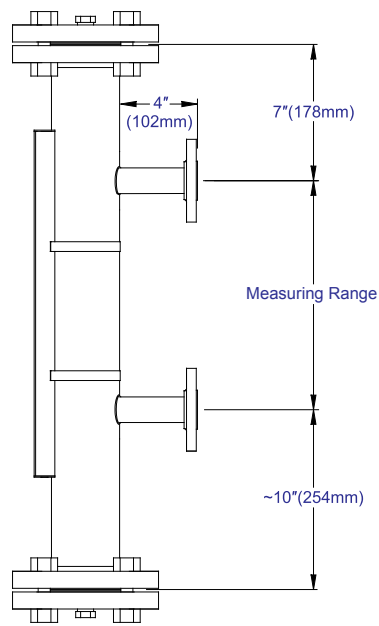
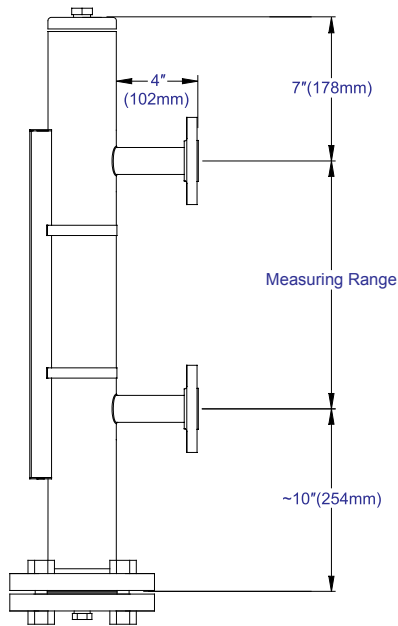
1. The pressure resistance grade of TBI is ANSI 600LB at maximum
2. The temperature resistance of magnetic bargraph type is 400°C at maximum, and magnetic shuttle 538°C

Optional

Transmitter:	Magnetostrictive (see transmitter selection)
For High Temperature:	High temperature insulation pad; high temperature insulation blanket
For Low Temperature:	Insulation level with special frost prevention extension device, frost prevention indicator
Heat Tracing:	Electric heat tracing, steam tracing tubing, steam jacket
For Valve:	Vent valve/Drain valve

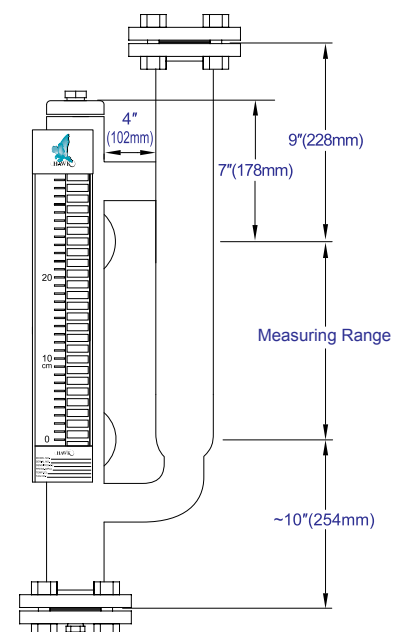
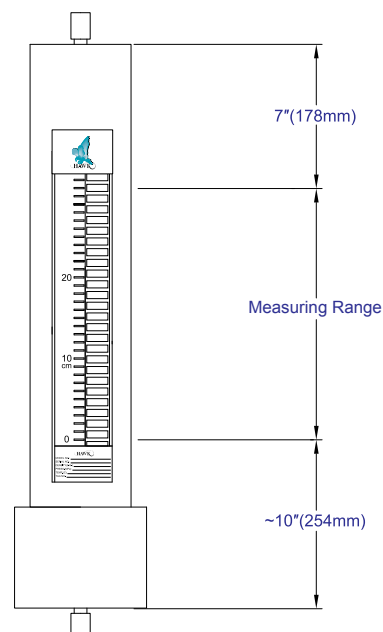
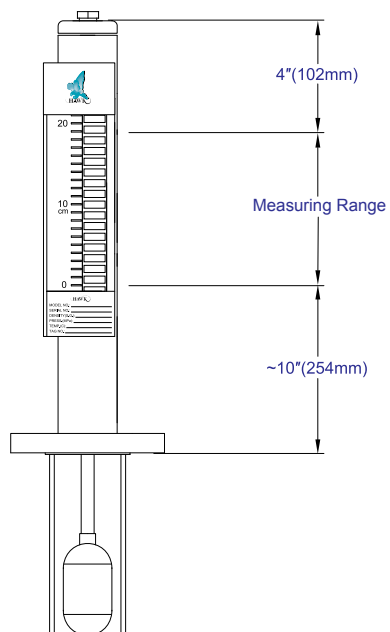
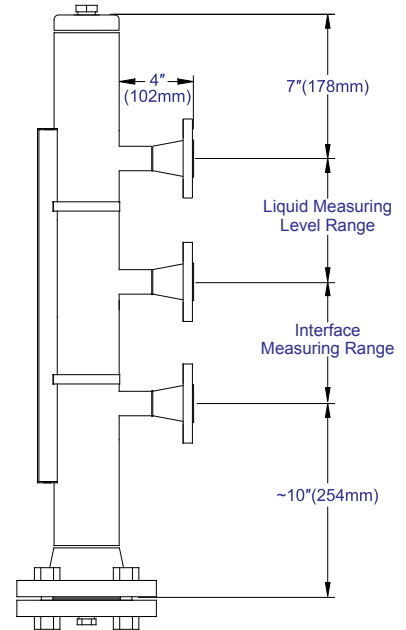
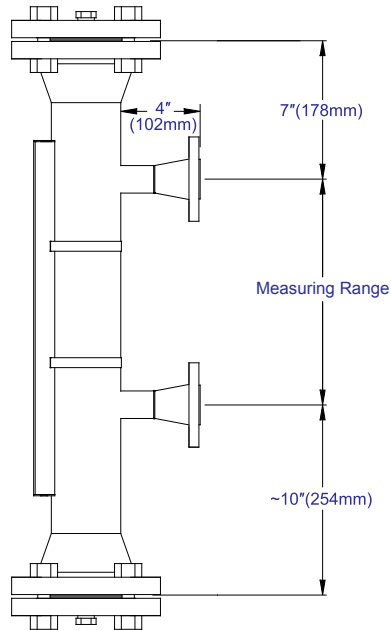
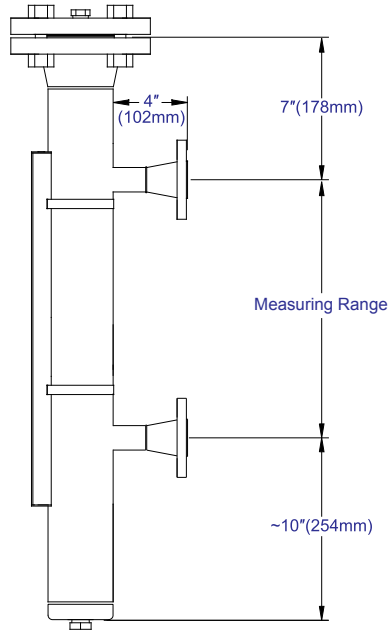


Standard Drawing



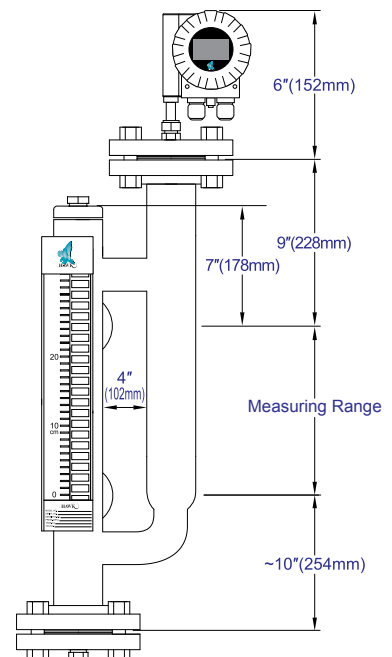
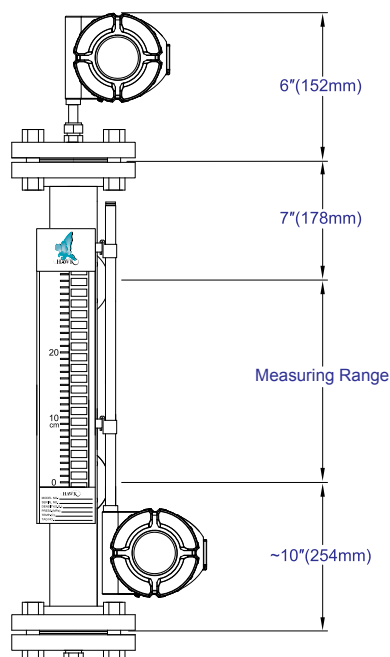
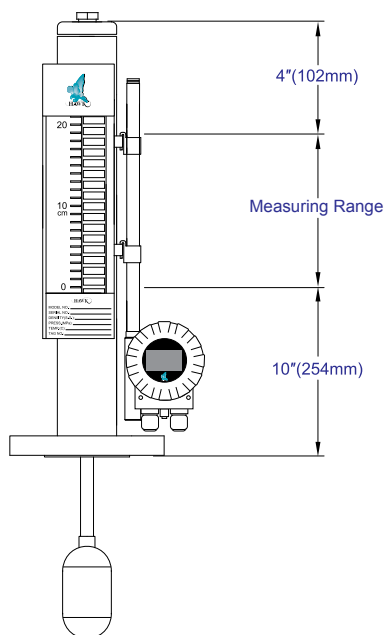
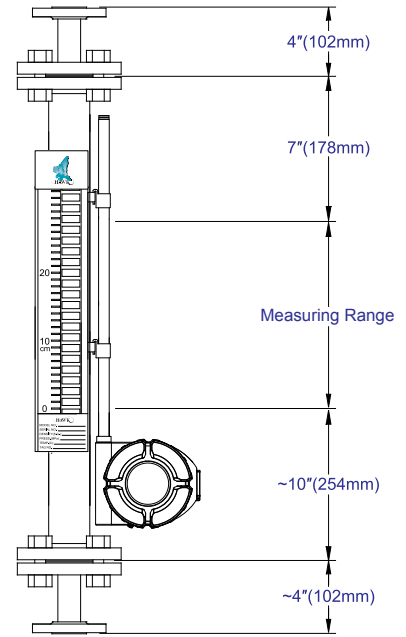
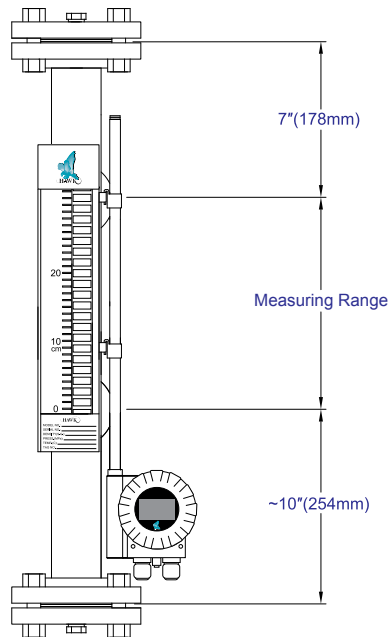
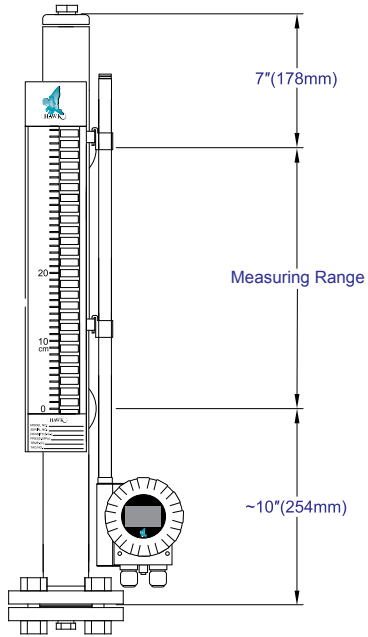


Standard Drawing



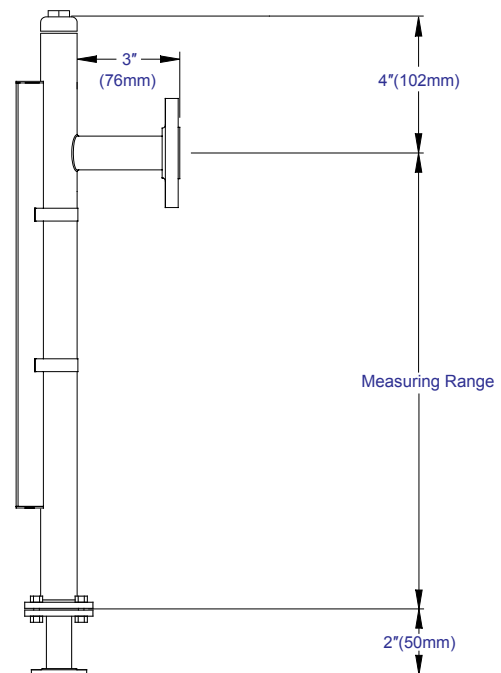
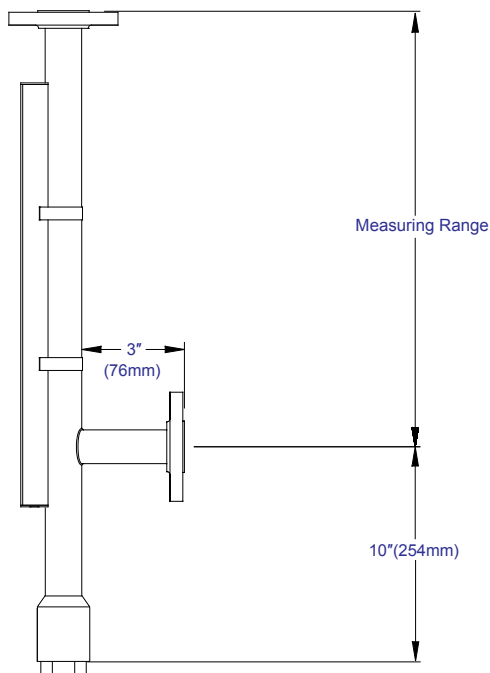
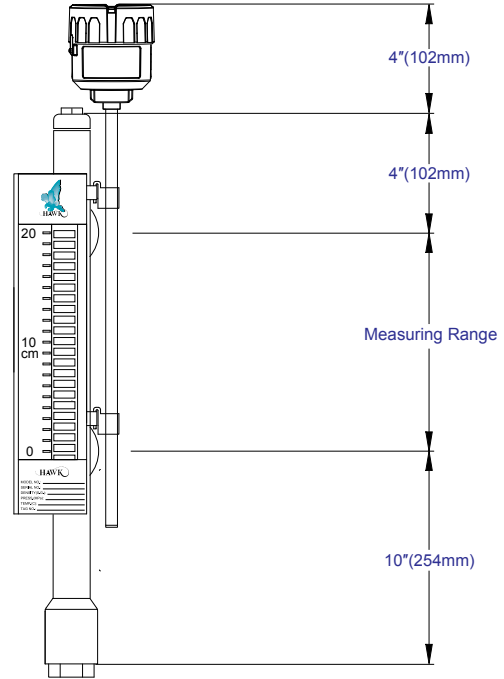
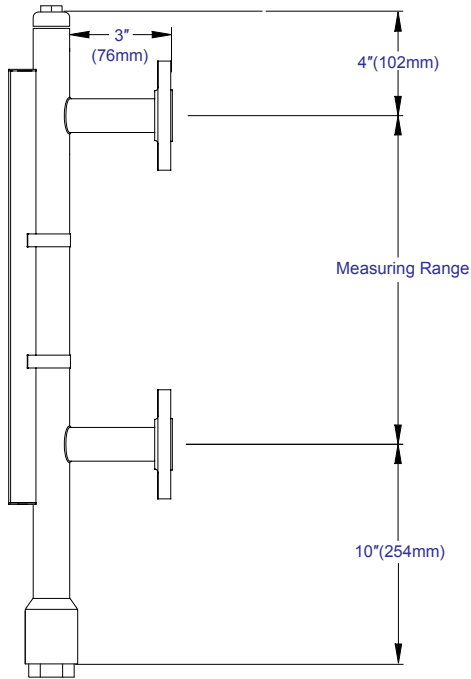


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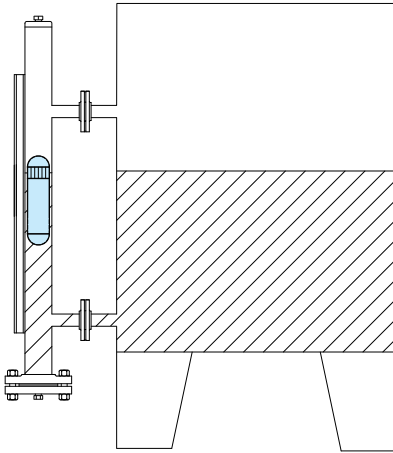


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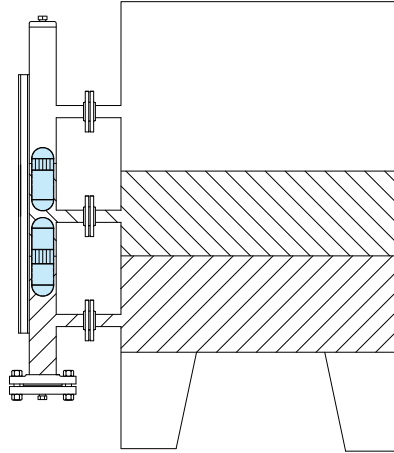




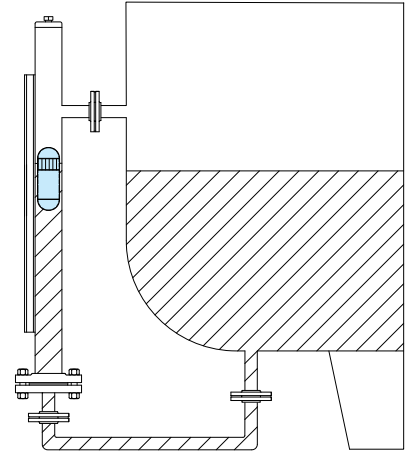
Installation Mode



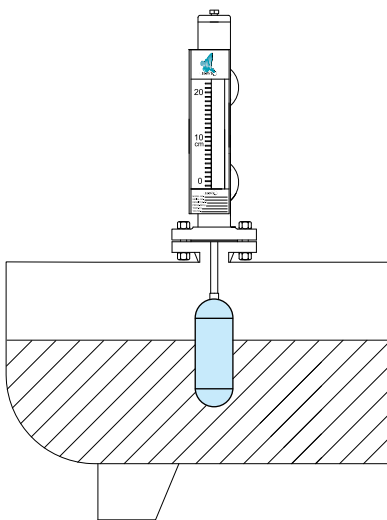
Side - Side Mount



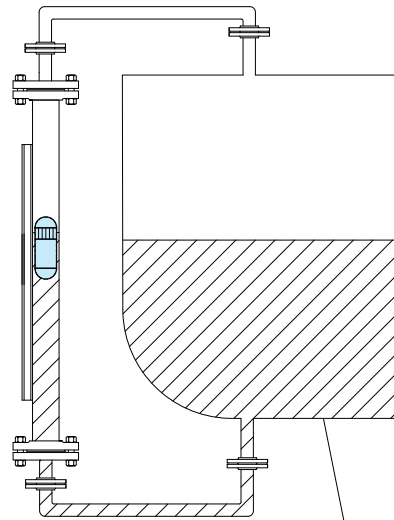
Side - Side - Side Mount



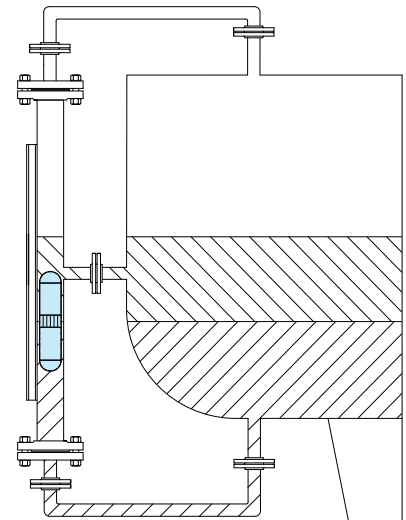
Side - Bottom Mount



Top Mount



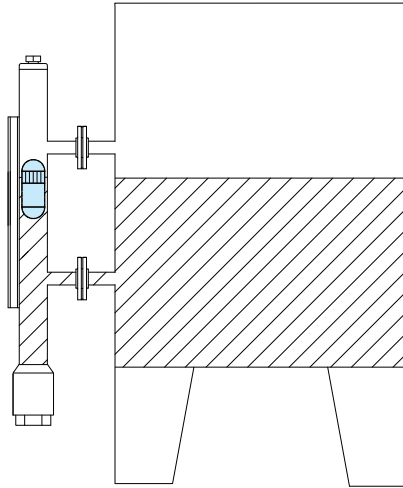
Top - Bottom Mount



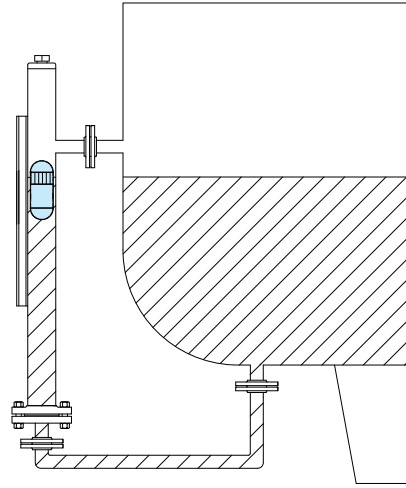
Top - Side - Bottom Mount



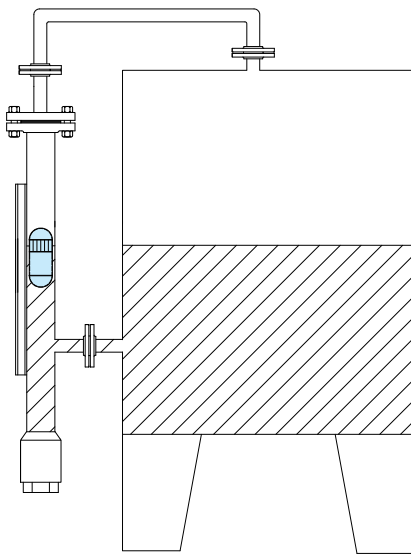
Installation Mode



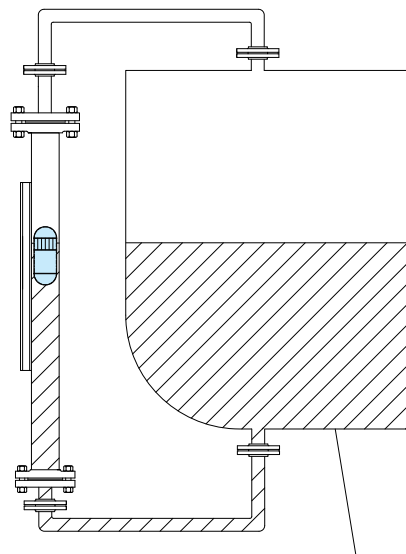
Side - Side Mount



Side - Bottom Mount



Top - Side - Side Mount



Top - Side - Bottom Mount



Appendix

Type Code

Code

1		Basic type					
HLG	Magnetic Level Indicator						
2		Process connections					
		1st Key		2nd Key		3rd Key	
		Nom. size		Nom. pressure		Flange face	
.../.../...	EN...	EN 1092 DN 10 - DN 100		...	PN6 - PN400		...
	...	DIN DN 10 - DN 100			PN6 - PN400		
	...	ANSI 1/2" - 4"			Class 150 - Class 400		
	JIS...	JIS DN 10 - DN 100			5 K - 63 K		
	GN...	Thread male DIN					
	GM...	Thread female DIN					
	NPTN...	Thread male NPT					
	NPTM...	Thread female NPT					
	S...	Welding stubs					
3		Option: Level Sensor					
...	MG	Basic type without optional code					
4		Distance centre-to-centre					
...	M...	Distance between flange centres in mm					
5		Material and chamber dimensions					
		1st Key		2nd Key			
		Material		Chamber dimensions			
.../...x...	V	Stainless steel 1.4571		HC	Hastelloy C		...x... Chamber OD x Wall thickness in mm
	L	Stainless steel 1.4404		MO	SS 1.4529 (6Mo)		
	VE	Stainless steel electro-polished		M	Monel		
	VTF	Stainless steel PTFE-lined		PP	Polypropylene		
	VET	Stainless steel E-TFE-coated		PF	PVDF		
	VEC	Stainless steel E-CTFE-coated					
6		Magnetic Roller Display					
		1st Key		2nd Key			
		Design		Scale			
.../.../...	MRA	Aluminium case with plastic rollers		SK.	with scale (plastic), graduation in cm (printed)		
	MRK	Aluminium case with ceramic rollers		SA.	Aluminium scale graved		
	MNAV	Stainless steel case with plastic rollers		SV.	Stainless steel graved		
	MNKV	Stainless steel with ceramic rollers		P.	with sight glass extender (for insulations))		
	MRAV	Stainless steel case with T-slot and plastic rollers					
	MRFV	Stainless steel case with T-slot and stainless steel flaps					
7		Option Magnetic Switches 1st Key = Quantity					
		2nd Key		3rd Key		4th Key	
		Design		Cable length		Options	
.../.../.../...	M.	BGU	MVE.	BGU-V-E	1	1 m	R22
	ME.	BGU-E	MVD.	BGU-V-Exd	2	2 m	N
	MS12	BGU-M12	MHT	BGU-AHT	3	3 m	
	MES12	BGU-E-M12	MVHT	BGU-VHT	
	MA	BGU-A	MIL/H	BGU-AIL/H			
	MEA	BGU-A-E	MAR	BGU-AR			
	MD.	BGU-Exd	MAD	BGU-AD			
	MV.	BGU-V	MAM	BGU-AM			
8		Float (cylindrical) 2nd Key = Diameter/Length in mm					
		1st Key		3rd Key		4th Key	
		Material		Pressure class		Magnetic system	
Z..S..	.V...	Stainless steel 1.4571		.G...	Borosilicate glass	PN16	PN16
	.T...	Titanium 3.7035		.VEC...	Stainless steel 1.4571	PN25	PN25
	.HC...	Hastelloy C			E-CTFE-coated
	.CF...	CF340		.TEC...	Titanium 3.7035		
	.PP...	Polypropylene			E-CTFE-coated		
	.PF...	PVDF					
						R48H	R48H
						K92	K92
						K74	K74
						A90	A90
						A110	A110
						A125	A125
9		Approvals					
...	Ex	Ex-Design					



Appendix

Ordering Example

	Basic Type	Connection Size	Option Level Sensor	Distance Centre to Centre	Material Chamber Dimensions	Magnetic Roller Display	Option Magnetic Switch	Float Design	Certificates
Code	1	2	3	4	5	6	7	8	9
	HLG	EN25/16/B1	MG	M1500	V60x2	MRA / SK	3 / M / 2	ZVSS185...	

Scale Assembly Options

Replaced Type	Description
MRA	Aluminium case with T-slot, plastic rollers
MRK	Aluminium case with T-slot, ceramic rollers
MRF	Aluminium case with T-slot, stainless steel flaps (new)
MNAV	Aluminium case stainless steel-lined, plastic rollers
MNKV	Aluminium case stainless steel-lined, ceramic rollers
MRAV	Stainless steel case with T-slot, plastic rollers (new)
MRFV	Stainless steel case with T-slot, stainless steel flaps (new)
	Stainless steel case with T-slot, plastic rollers, hermetically sealed (new)
	Stainless steel case with T-slot, stainless steel flaps, hermetically sealed (new)
AVG2	Stainless steel rollers in glass tube, hermetically sealed (Phönix design)
AVG3	Aluminium case, stainless steel rollers (Phönix design)
AVV2	Aluminium case, stainless steel rollers (Vaihinger design)



Appendix

Float Selection Chart

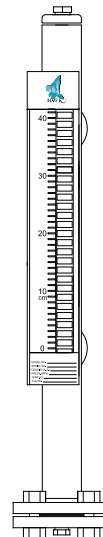
Type	PN	Density range [kg/m ³]	Diameter [mm]	Length [mm]	Material	Order no.
ZVS32/125/PN16/A990	16	1270 – 2000	32	125	Stainless steel (1.4571)	506369
ZVS32/150/PN16/A990	16	1090 – 1350	32	150	Stainless steel (1.4571)	030098
ZVS32/180/PN16/A990	16	940 – 1110	32	180	Stainless steel (1.4571)	029781
ZVS32/210/PN16/A990	16	850 – 980	32	210	Stainless steel (1.4571)	100430
ZVS32/245/PN16/A990	16	780 – 880	32	245	Stainless steel (1.4571)	110570
ZVS32/285/PN16/A990	16	730 – 800	32	285	Stainless steel (1.4571)	032023
ZVS32/125/PN40/A990	40	1360 - 2000	32	125	Stainless steel (1.4571)	506374
ZVS32/155/PN40/A990	40	1140 - 1400	32	155	Stainless steel (1.4571)	030108
ZVS32/185/PN40/A990	40	1010 - 1180	32	185	Stainless steel (1.4571)	029808
ZVS32/225/PN40/A990	40	900 - 1020	32	225	Stainless steel (1.4571)	030107
ZVS32/265/PN40/A990	40	820 - 910	32	265	Stainless steel (1.4571)	030106
ZVS32/315/PN40/A990	40	760 - 830	32	315	Stainless steel (1.4571)	029828
ZTS32/125/PN40/A990	40	1130 - 2000	32	125	Titanium (3.7035)	029834
ZTS32/160/PN40/A990	40	900 - 1100	32	160	Titanium (3.7035)	029835
ZTS32/200/PN40/A990	40	770 - 900	32	200	Titanium (3.7035)	030104
ZTS32/240/PN40/A990	40	670 - 770	32	240	Titanium (3.7035)	030293
ZTS32/290/PN40/A990	40	610 - 680	32	290	Titanium (3.7035)	030090
ZTS32/350/PN40/A990	40	560 - 620	32	350	Titanium (3.7035)	030743
ZTS32/420/PN40/A990	40	530 - 570	32	420	Titanium (3.7035)	030101
ZTS32/510/PN40/A990	40	490 - 530	32	510	Titanium (3.7035)	031537
ZVSS150/PN25/R48H	25	990 - 2000	50	150	Stainless steel (1.4571)	029044
ZVSS185/PN25/R48H	25	830 - 1000	50	185	Stainless steel (1.4571)	029045
ZVSS225/PN25/R48H	25	730 - 840	50	225	Stainless steel (1.4571)	029046
ZVSS275/PN25/R48H	25	640 - 730	50	275	Stainless steel (1.4571)	029047
ZVSS335/PN25/R48H	25	590 - 650	50	335	Stainless steel (1.4571)	029048
ZVSS400/PN25/R48H	25	550 - 600	50	400	Stainless steel (1.4571)	031229
ZVSS470/PN25/R48H	25	520 - 560	50	470	Stainless steel (1.4571)	031230
ZVSS555/PN25/R48H	25	490 - 530	50	555	Stainless steel (1.4571)	031231
ZVSS650/PN25/R48H	25	470 - 500	50	650	Stainless steel (1.4571)	031232
ZTSS150/PN25/R48H	25	820 - 2000	50,8	150	Titanium (3.7035)	031235
ZTSS180/PN25/R48H	25	710 - 850	50,8	180	Titanium (3.7035)	030683
ZTSS215/PN25/R48H	25	600 - 710	50,8	215	Titanium (3.7035)	030684
ZTSS250/PN25/R48H	25	540 - 610	50,8	250	Titanium (3.7035)	029034
ZTSS300/PN25/R48H	25	480 - 540	50,8	300	Titanium (3.7035)	029035
ZTSS355/PN25/R48H	25	430 - 490	50,8	355	Titanium (3.7035)	029036
ZTSS410/PN25/R48H	25	400 - 440	50,8	410	Titanium (3.7035)	029037
ZTSS465/PN25/R48H	25	380 - 410	50,8	465	Titanium (3.7035)	029038
ZTSS525/PN25/R48H	25	370 - 390	50,8	525	Titanium (3.7035)	029039
ZTSS595/PN25/R48H	25	360 - 380	50,8	595	Titanium (3.7035)	029040
ZTSS680/PN25/R48H	25	340 - 370	50,8	680	Titanium (3.7035)	029041



Magnetic Level Gauge Data Sheet

Customer Information

Company: _____
 Address: _____
 State: _____ Country: _____
 Contact: _____
 Tel: _____
 Fax: _____
 E-mail: _____

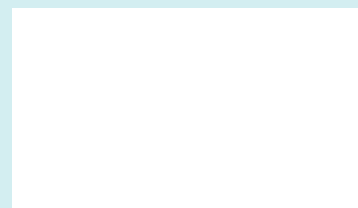


Magnetostrictive Level Transmitter Yes No Top mount Bottom mount
 Left mount Right mount
 Left mount Bottom Right mount Bottom
 Medium: _____
 Density: _____ liquid Level liquid Level/Interface
 Viscosity: _____
 Maximum Operation Pressure: _____
 Maximum Operation Temperature: _____
 Turbulence or fluctuation on liquid surface Yes No
 Flow or stir of liquid Yes No
 Vibration Environment Yes No
 Process Connection: _____
 Installation Mode: _____
 Chamber Materials: _____
 Measuring Range: _____
 Indicator Types: _____
 Accessories: _____

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 info@hawkmeasure.com

Represented by:



For more information and global representatives: www.hawkmeasure.com

Additional product warranty and application guarantees upon request.

Technical data subject to change without notice.