TECHNICAL GUIDANCE

HIGH ACCURACY AND HIGH RELIABILITY Advanced technology at affordable price level !

LT-321

MAGNETOSTRICTIVE LEVEL TRANSMITTER

OUTLINE

LT-321 is a MAGNETOSTRICTIVE Level transmitter.

Level of various types of liquid is detected and converted into DC4~20mA current signal.

Compared to existing reed switch type sensors, high accuracy and high resolution can be obtained theoretically.

Internal portion of tank/ vessels and electronics are completely isolated by stainless steel guide pipe. Thus, **LT-321** is suitable for liquid level measurement in tough conditions of flammable, corrosive liquids, and also for pressurized and vacuum tanks/ vessels.

LT-321 has achieved very competitive and affordable price level thanks to its compact design.

FEATURES

- □ HIGH ACCURACY AND HIGH RESOLUTION
- □ COMPETITIVE AND AFFORDABLE PRICE LEVEL
- □ COMPACT DESIGN
- ANTI-CORROSIVE MATERIAL of PVC and TEFLON in addition to standard stainless steel is available for corrosive liquid applications.

APPLICATIONS

- Level measurement at drain pits, underground pits
- Level measurement and control of small size vessels

OPERATION PRINCIPLE

In **LT-321**, the position of float is detected by the vibration of electric pulse wave which transfers in solid body at stable sonic velocity. A low current interrogation pulse is created in the electronics and transmitted down to this wave guide which creates a magnetic field along the length of wave guide.

Then, the magnetic field which is generated by the float magnet twists the magnetic field on wave guide and generates torsional strain pulse which returns to electronics. The duration for returning such strain pulse corresponds to distance between the electronics and the position of float. By this way, the position of float (Liquid level) is detected.

In electronics, such duration of return pulse is converted into analog current and output.



Flame proof version



TOKYO KEISO CO., LTD.

TG-LD388-4E TG-LD388-7E

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STANDARD SPE	CIFICATION	 Output accuracy 	: Measuring range upto 2000mm			
Type of detectionMeasuring object	: Magnetostrictive : All types of liquids (Max. viscosity 600mPa⋅s and to be free from sticking)		(± ⊼ Measu ±0.	100 Measuring range (mm) % F.S.) ring range 2001mm to 7500mm 05% F.S.		
 Measuring range 	: 25 to 3700 mm Special : 7500 mm Guide pipe length; Max 3900 mm for flameproof construction.	ResolutionTemp. effect	: 0.00159 larger. float de : ±0.02%	% F.S. or 0.5 mm, whechever is This value indicates the resolution of atection F.S./10°C		
 Lower dead band 	: Std. 100mm	 Process connection 	: Std. Tar	nk top flange connection		
 Pressure class 	: Max. 2MPa	 Material 	:			
	Subject to connection flange rating and material	 Guide pipe, flange SUS304, SUS316 	e , SUS316L	_, PVC, PFA tube		
 Liquid temp 	: -40 to + 125 °C (SUS) 0 to + 60 °C (PVC) 0 to + 100 °C (PFA)	 Float SUS316, SUS316 Electronics housin 	L, PVC, Pl Ig Aluminu	FA tubed um casting		
 Construction 	: Weather proof (IP65 equ.) Flame proof TIIS Exd IIB+H ₂ T6	 Electrical connection Water tight version 	n:			
	(No. TC14704)	①Lead wire direct cor	nnection	od 6mm, 4-core cable,		
 Power supply 	: DC24V, (+20%, -15%) 4-wire system	0.1		Max. length 30m		
Transmission schem	e: Four-wire system (Power supply two-wire, Signal two-wire)	2 Optional terminal bo	XC	od 6mm cable, Max. length 30m		
• Power consumption	: Approx. 2.4W	Flameproof version				
 Output 	: DC4 to 20mA Max. load 500 Ω	G ¹ / ₂ with cable entr	y connectio	on		

MODEL CODE

LT-321		_			-			-		-			-			-	DESCRIPTION		
Ormaturation	W																Water tight		
Construction	E																Flameproof		
			2														2" (50mm)		
			3														21/2" (65mm)		
Connection	n		4														3" (80mm)		
flange size			5														4" (100mm)		
			6														5" (125mm)		
			Ζ														Others		
				Α													ANSI Class 150		
				В													ANSI Class 300		
				С													JPI Class 150		
Connectio	n flan	ine ra	atina	D													JPI Class 300		
Connootion	in noin	igo it	ung	E													JIS5K R.F		
				F													JIS10K R.F		
				G													JIS20K R.F		
				Z													Others		
						4											SUS304		
						6											SUS316		
Liquid com	to at m	notor	i a l			L											SUS316L		
	lactr	nater	iai			V											PVC		
						Т											PFA tube		
						Z											Others		
							1												
							2												
							3												
							4										Pleas refer to		
Float							5										FLOAT AVAILABILITY		
							6												
							7												
							8												
Z																			
						0								No terminal box provided (Flameproof version)					
Terminal box							1								Terminal box provided (G1/2 cable entry)				
					2								Terminal box provided (NPT 1/2"cable entry)						
Measuring	rang	je H	(Spe	cify i	n mm	n unit	t)										Min.25mm, Max.7500mm		
ℓ Length	(Spec	cify ir	n mm	unit))												Min.80mm		
Cable leng	gth ℓ	c (Sp	ecify	in m	n unit)											Max.30m ("0" in case of flame- proof construction)		

DIMENSION

LT-321W- $\Box\Box$ - $\Box\Box$ -1/₂ (Supplied with terminal box)



LT-321W- D-D-0 (Supplied without terminal box)



- *1: *1 dimension will be 107 for PVC version
- *2 : *2 is equal to normal standard flange thickness.
 - t= t+10mm for PFA version
- *3 : Diameter of guide pipe may differ depending on material and length of L.
- *4 : Bottom piece to avoid guide pipe swinging will be optionally provided. Consult factory for details.



FLOAT AVAILABILITY

Different types of float are ready to cover wide density, anticorrosivity and pressure range. The minimum connection flange size depends on the size of float. Refer to the following table for the availability of float and connection flange size.

In case the nozzle's internal diameter is smaller than float diameter (od), the float is to be removed from guide pipe and reinstalled in tank during installation.

Other products made fromtitanium are available. Contact us for further details.

Model code	Float material	Min. dia.	Inside diameter of float	Min. required flange size	Min. density (g/cm ³)	Max. Op. Press. (MPa)	
1 (S.D)	SUS316L	MAX. ∳ 47mm	φ17.7mm	50A	0.8	1.0	
2	0110010	<i>∳</i> 60mm	4 15m	65A	0.7	0.2	
3	505316	<i>ϕ</i> 70mm	φτοπ	80A	0.65	0.133	
4	SUS316L	<i>∳</i> 87mm	φ 14.9mm	100A	0.84	2.0	
5	PVC	<i>∳</i> 60mm	<i>∳</i> 20mm	65A	0.85	0.066	
6	—	_	_	_	—	_	
7	PFA tube (NBR)	<i>∳</i> 68.2mm	<i>ф</i> 19mm	80A	0.85	0.2	
8		_	_	_	_	_	
Z	Other	Contact us for further details					

WIRING

CAUTION: Wrong wiring may result in breakage of cuircuit boards.



* Usually not used. Be careful not to be short-circuited. Otherwise, it may cause abnormality.



LT-321W- D-1/2 (Supplied with terminal box) LT-321E (Flame proof)

Dimension of optional terminal box





ORDERING INFORMATION

Specify the following for order and/or inquiry:

1.Model code

2. Dimension	
Guide pipe length (L)	mm
4mA output point (H1)	mm
20mA output point (H2)	mm

Note: if H₂>H₁ is specified, output will be reversed.



NB: H₂ and H₁ are to include gasket thickness.

3. Other instructions if any

PRECAUTIONS FOR USE

- 1) When there is the flow in the liquid, there may be the malfunctions and damage caused by the stirring machine etc. Install an inner chamber.
- 2) It is not suitable to use under such operating conditions as the liquid freezes, congeals or sticks.

* Specification is subject to change without notice.

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