NBLB TARGET FLOW METER

Summary

NBLB target flowmeter adopts a new force - torque tube – rotation angle conversion mechanism. The rotation angle transferred by the torque tube, and then measured through the high-precision Hall sensor, to output the voltage signal corresponding to the flow rate change and standard 4mA~20mA square (linear) current analog signal. The instrument working chambers are isolated. It's security and reliable by using the non-contact angle measurement technology to avoid the strain sensor's force deformation .

Operating Principle

After the target 2 is subjected to force, the torque tube 7 is torsional through the target rod 1, and the corrugated tube 5 connected with the drive spindle 3 is driven to rotate. The rotation of the corrugated tube 5 drives the rotation of the magnetic steel components 6.The sensor part detects the change of the rotation angle of the magnetic steel components 6, and the signal processing conversion circuit calculates the corresponding flow value and converts it into the 4~20mA standard signal output according to the inputted angular scalar and the calibrated flow value.Finally, it realizes the flow measurement process (see Fig.1, Fig. 2).


1.Target rod	5. Corrugated tube
2. Target plate	6. Magnetic steel components
3. Drive spindle	7. Torque tube
4. Mechanical seal	8. Fulcrum bearing
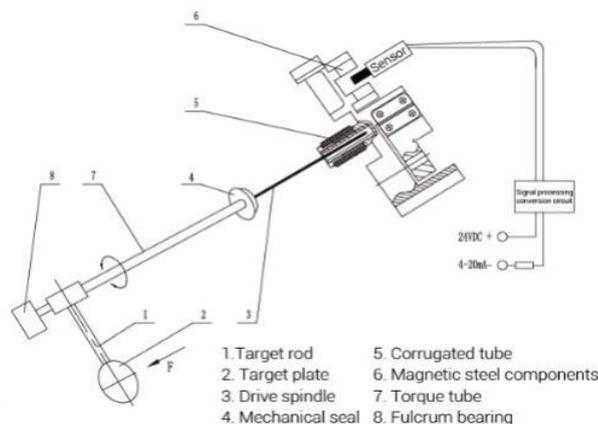
Fig.1: NBLB target flowmeter principle diagram
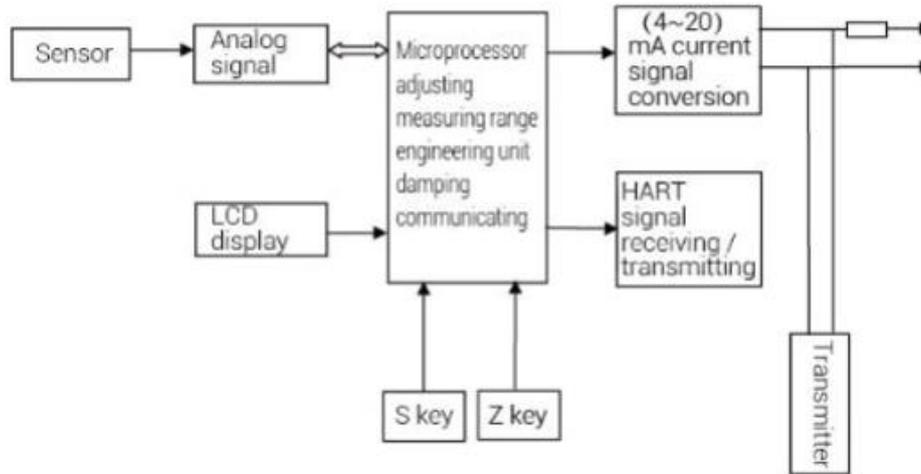
Fig.2: Electrical principle diagram

Technical Parameters

- LCD display： Information about variables is displayed on site

- Output signal： Two wires, 4 ~ 20mA + HART

- Power supply： 12V ~ 30VDC

- On-site and remote configuration function： Through the field magnetic switch, remote handheld or PC plus debug software to read and write and configure various process parameters, variables. Then it out put two wire 4 ~ 20 mA current and load the HART protocol communication parameters and variable value

- The diagnostic information function： Exceed range alarm and fault diagnosis
  You can specify the upper and lower limits of the alarm and set the alarm current to 3.8mA or 22mA

- Zero and full calibration function

- With shockproof, anti-electromagnetic interference and other characteristics

- Flange standard： HG/T20592-2009； HG/T20615-2009 ; (or on request)

- Nominal pressure： ≤11MPa

- Accuracy： ±0.5%、±1.0%;

- Ambient temperature： -40℃ ~ 80℃ （when ≤-20℃, LCD no display）

- Medium temperature： -196℃≤T < +100℃（No radiating fin），100℃≤T≤400℃（with radiating fin）

- Damping time selection: 0s~32s

- Explosion-proof： intrinsically safe Ex ia II CT5 Ga/ Explosion isolation Ex d II CT5/T6 Gb

- IP Rating: IP66

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- Range ratio: 5：1

- Range: minimum measurable 3m3/h (20℃ water)

- Power supply inlet：2 *M20×1.5(female thread) or on request

Model Selection Table

Model	Code					Contents	
NBLB-						NBLB TARGET FLOW METER	
	3					PN16(1.6MPa)	
	4					PN20(Class150)	
	5					PN25(2.5Mpa)	
	6					PN40(4.0MPa)	
	7					PN50(Class300)	
	8					PN63(6.3Mpa)	
	9					PN100(10.0Mpa)	
	10					PN110(Class600)	
		B				Straight pipe type	
		C				Plug-in type	
			4	13		DN25	1″
			6	15		DN40	1-1/2″
			7	16		DN50	2″
			9	18		DN80	3″
			10	19		DN100	4″
			21	52		DN150	6"
			22	53		DN200	8"
			23	54		DN250	10"
			……	……		Other nominal diameters are filled in according to the actual code of Sage X3 system	
					/		
					i	Intrinsically safe type	
					d	Explosion isolation type	
					1	Measuring chamber material:20	
					2	Measuring chamber material:304	
					3	Measuring chamber material:316	
					4	Measuring chamber material:316L	
					……	Other materials are filled in according to the actual code of Sage X3 system	
					D	Ambient temperature：-196℃≤T＜+100℃	
					G	Ambient temperature：+100℃≤T≤+400℃	

NBLB-	☐	☐	☐	/	☐	☐	☐	

Example:

NBLB-3B7/i2D is Torsional target flow meter, nominal pressure is 1.6MPa, straight pipe type, nominal diameter is DN50, intrinsically safe type, measuring chamber material is 304, medium temperature -196℃≤T＜100℃.

Outline Drawing and Installation

The sizes in parentheses in the drawings are products with heat insulation sleeve (unit: mm)
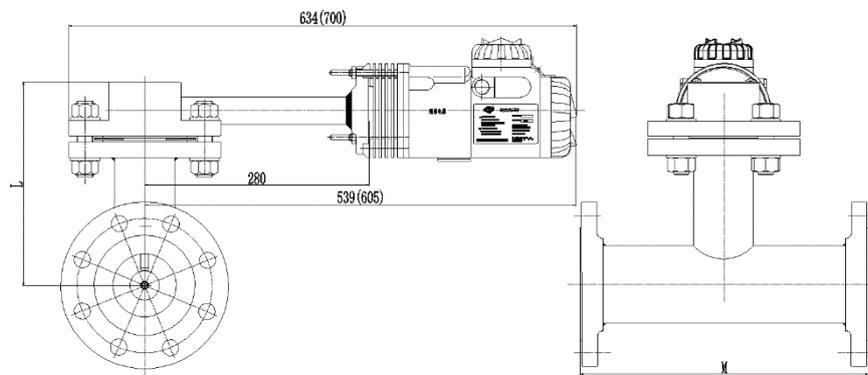
Drawing. 3:Double clip type

Nominal diameter	L(mm)	M(mm)
DN25	213.5	250
DN40	198.5	280
DN50	204.5	300
DN80	219	350
DN100	228.5	400
DN150	234	500
DN200	244	600
DN250	271	600
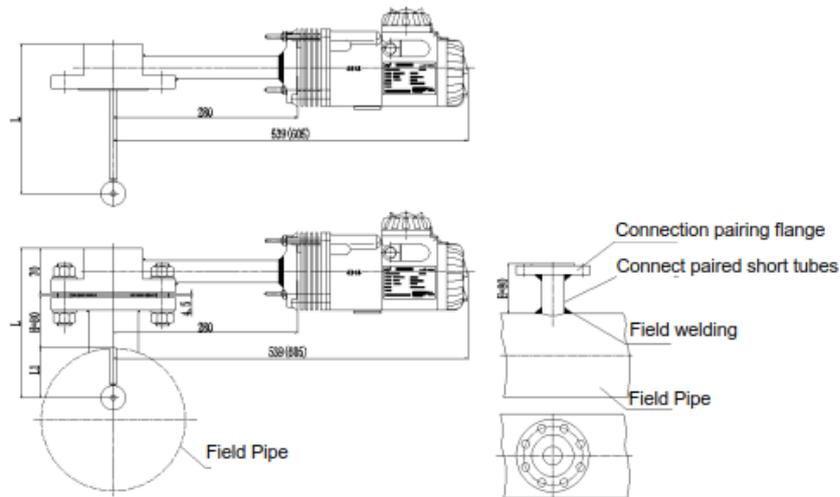
Drawing.4:Straight pipe type

Pipe nominal diameter	L1(mm)	L(mm)	Note
≤DN200	Pipe radius	154.5+ Pipe radius	H=80mm when PN≤6.3MPa. When PN>6.3 MPa, H is specified by design.
>DN200	100	254.5	

Note: According to the pressure class and the flange standard implemented, the user matches the connection matching flange. If there are special installation requirements, please specify in advance.

※The straight pipe section upstream of the instrument should be not less than 10 times the nominal diameter and the downstream not less than 5 times the nominal diameter. The instrument should not be installed in an environment with severe vibration. Bypass pipes should be installed at both ends of the instrument.

Safety barrier recommendation table

Safety barrier recommendation table	
Shanghai I.S. Instruments & System Co.,Ltd	LS4041-Ex
Germany P+FCompany	KFD2-STC3-Ex1
Shanghai Automation Instrument Institute	GS8041-Ex GS8045-Ex
Dandong Top Electronics Instrument Co.,Ltd	TP5041-Ex TP5045-Ex
Longfei Group Corporation in China	LF1045
England	MTL3046B MTL5042 MTL706^{+}

Ordering Information

Please Fill In The Blank When Ordering.

Model			Tag No			Qty	
Operation Condition	Medium			Max Flow		kg/h	
	Oper. Temp.		℃			m³/h or Nm³/h	
	Oper. Press		Mpa	Normal Flow		kg/h	
	Medium Density	kg/m³Or kg/Nm³				m³/h or Nm³/h	
	Dynamic Vis.	Mpa.s or mm²/s		Min. Flow		kg/h	
						m³/h or Nm³/h	
	Flange Standard			Pipe State	☐ Horizontal Pipe ☐ Vertical Pipe		
Note							