

MANUAL

Flow

Liquid Turbine Flow Meter Model PWF-LTF





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When the flow meter is installed at explosion hazard field, DON'T remove the COVERPLATE when the meter is powered. Please make parameter settings at safe field prior to installation

Special Notices

Pictures & Description are for your information only, please refer to the actual product. Parameters are subjected to changes without notice



1. GENERAL INFORMATION

This manual will assist you in installing, using and maintaining Liquid Turbine Flowmeter. It is your responsibility to make sure that all operators have access to adequate instructions about safe operating and maintenance procedure.



For your safety, review the major warnings and cautions below before operating your equipment.

- Use only fluids that are compatible with the housing material and wetted components of your Liquid turbine flow meter.
- When handling hazardous liquids, always follow the liquid manufacturer's safety precautions.
- When measuring flammable liquids, observe precautions against fire or explosion.
- When working in hazardous environments, always exercise appropriate safety precautions.

- Handle the rotor carefully. Even small scratches or nicks can affect accuracy.
- For best results, calibrate the meter at least 1 time per year.
- > Do not blow the flow meter with compressed air.
- During flowmeter removal, liquid may spill. Follow liquid manufacturer's safety precautions for clean up of minor spills.

Product Description

PWF-LTF series turbine flow meter is a precision flow measuring instrument that measures the flow and total volume of impurity-free and non-corrosive liquids. It is widely used in the fields of petroleum, chemical industry, metallurgy, scientific research, etc.

Liquid flows through the turbine housing causing an internal rotor to spin. As the rotor spins, an electrical signal is generated in the pickup coil. This signal is converted into engineering units (liters, cubic meters, gallons etc.) on the local display where is applicable. Optional accessory modules can be used to export the signal to other equipment.

Product structure



Upon receipt, examine your meter for visible damage. The turbine is a precision measuring instrument and should be handled carefully. Remove the protective plugs and caps for a thorough inspection. If any items are damaged or missing, contact us.

Make sure the turbine flow model meets your specific needs. For your future reference, it might be useful to record this information on nameplate in the manual in case it becomes unreadable on the turbine. Refer to the nameplate for your customized product's specification.



2. SPECIFICATION

Parameters	Specificati	on									
Measuring Medium	No impuri	ties, low vis	cosity, no s	trong corros	sive liquid						
Pipe Size		200mm									
Accuracy	±1.0%F.S.(Typical); 0.5	5%F.S. optio	nal							
Repeatability	±0.2%										
Range Ratio	1:10, 1:15,	1:20									
	-20℃~+80℃ (Typical)										
Medium Temperature	-20°C~+12	.0℃ (By cu	stomized)								
	-20°C~+15	0°℃ (By cu	stomized)								
Working Pressure	Fluid press	ure should	be limited	according to	o the rating						
Operation Conditions	Medium T	emp.: -20℃	2 ~+80 ℃		Relative	Humidity: 5	% ~ 90%				
	Environmental Temp.: -20 °C ~+60 °C Atmospheric Pressure: 86KPa ~ 106 K										
Signal Output	Sensor: Pulse										
	Transmitter: 4-20mA										
Communication	RS485 Mo	RS485 Modbus RTU, HART									
Power Supply 24VDC, 220VAC, 3.6V lithium battery							1				
Matarial	Hou	sing	Ro	tor	Frontℜ	ar Guide	Flange/Chuc	k/Clamps			
	Standard	Optional	Standard	Optional	Standard	Optional	Standard	Optional			
Thread Connection	-						-	-			
Flange Connection	5115204	\$\$216	2Cr13	Duplex steel	SUS304	SS316	SUS304	SS316			
Wafer Connection	303504	33310					Carbon steel	304/316			
Clamp Connection							SUS304	-			
Other Materials	Transmitte Signal con Bearings a Retaining	r enclosure nector: SUS nd shaft: ca rings: 316 s	e: Die-cast a 304 arbon steel tainless stee	luminum al coated with el	loy 1 Tungsten c	arbide					
Connection Method	Flange cor Thread cor Wafer con Clamp con	nection: DI nnection: D nection: DN nection: DN	N15-DN200 N4-DN100 N4-DN200 N4-DN80	(Standard I (Female, ma	DIN, ANSI, J ale, NPT, spl	IS, GB/T911 herical, GB/	3-2000) T7307-2001)				
Protection Level	IP65										
Electrical Connection	Hirschmar M20*1.5 f	in connecto emale	or or three o	ore cable							
Explosion Proof	ExdIICT6 G	ib (Optiona	l)								



Nominal I	Diameter	Standard Flow Range	Extended Flow Range	Starting Flow	Max Pressure Loss
(mm)	(Inch)	(m³/h)	(m³/h)	(m³/h)	(KPa)
4	0.15	0.04~0.25	0.04~0.25 0.04~0.4		120
6	0.25	0.1~0.6	0.06~0.6	0.05	80
10	0.4	0.2~1.2	0.15~1.5	0.07	50
15	1/2	0.6~3.6	0.5~5	0.35	35
20	3/4	0.8~8	0.45~9	0.3	35
25	1	1~10 0.5~10		0.4	35
32	1-1/4	1.5~15	0.8~15	0.6	35
40	1-1/2	2~20 1~20		0.6	35
50	2	4~40	2~40	1	35
65	2-1/2	7~70	5~70	4	25
80	3	10~100	7~100	5	25
100	4	20~200	10~200	8	25
125	5	25~250	13~250	10	25
150	6	30~300	15~300	12	25
200	8	80~800	40~800	20	25
Accu	racy	0.5%F.S.	1.0%F.S.		

Measurable Flow Range Table

* Maximum pressure loss is the pressure loss when the flowmeter is operating at the maximum flow point, the medium is water and the temperature is normal.

* Accuracy 0.2%F.S. needs to be customized, the flow range is smaller than the standard range.

Pressure Rating Table

Nomina	Diameter		Connection Method and	Pressure Rating	
(mm)	(Inch)	Thread Connection	Flange Connection	Clamp Connection	Wafer Connection (By customize)
4 6 10	0.15 0.25 0.4	6.3MPa	/		
15 20 25	1/2 3/4 1	(Can customize for higher pressure)	2.5MPa	1.0MPa	≤42MPa
32 40	1-1/4 1-1/2	2.5MPa (Can customize for	higher pressure)		
50 65 80	2 2-1/2 3	higher pressure) 1.6MPa (Can customize for			≤26MPa
100 125 150	4 5 6	higher pressure) /	1.6МРа (Can customize for higher pressure)	/	≤15MPa
200	8				≤11MPa



3. Part Selection Table

	Model No.									
PWF-LTF										Definition
	4									DN4
	6									DN6
	10									DN10
	15									DN15
	20									DN20
	25									DN25
Nominal	32									DN32
Diameter	40									DN40
(mm)	50									DN50
	65									DN65
	80									DN80
	100									DN100
	125									DN125
	150									DN150
	200									DN200
	·	FL								Flanged
		TH								Threaded
Connection	ı	CL								Clamped
		WA								Wafer
			N	1						24VDC supply, no field display, pulse output
			Α							24VDC supply, field display, 4-20mA output
			G1	1						Battery powered, field display, no output
			CV	1						External power supply, field display, RS485/4-20mA/pulse
			GV.							output
Meter Type	2		E 1							(Explosion-proof type)Battery powered, field display, no
										output
			EV							(Explosion-proof typeExternal power supply, field display,
										RS485/4-20mA/pulse output
				S						Standard range
Flow Range	е Туре			W						Extended range
				Z						Special range
					05					0.5%F.S.
Accuracy					10					1.0%F.S.
					02					0.2%F.S.(By customized, longer lead time)
	atorial					S				SUS304
	ateriai					L				SS316L
luce allow NA	a ta ula l						S			2Cr13
mpeller M	aterial						L			Duplex steel
Fueldation		م ما د						Ν		None-explosion proof
Explosion-p	proof Gr	ade						Е	1	Exd II BT6 Gb
	_	_	_						N	Standard
Temperatu	ire and	Pressu	ure Re	sista	nt				H(x)	High Temperature and high pressure

Notes: DN20, DN32, DN65, DN125 are sizes by customization.

Warning:

Precaution for direct sunshine and rain

when the meter is installed outside.



4.CAUTIONS FOR INSTALLATION

Mounting Positions

Turbine flowmeter should be installed at the place in compliance with the requirements as below, otherwise flow rate indications may be affected and measurement errors maybe caused.

 \star Pipes must be fully filled with liquids at all times.



★ Avoid Air Bubbles in the measurement pipe.



- ★ Avoid all pipe locations where the flow is pulsating, such as in the outlet side of piston or diaphragm pumps.
- ★ Avoid locations near equipment producing electrical interference such as electric motors, transformers, variable frequency, etc.
- ★ Install the meter with enough room for future access for maintenance purposes.

Required Lengths of Straight Pipe

Flow altering device such as elbows, valves and reducers can affect accuracy. See diagram below for typical flow meter





The recommended guidelines are given to enhance accuracy and maximize performance. Distance given here are minimum requirements; Double them for desired straight pipe lengths.

★ Upstream: Allow a minimum straight pipe length at least 10 times the internal diameter of the pipe. For example, with the 50mm pipe, there should be 500mm of straight pipe for upstream. Desired upstream straight pipe length is 1000mm.

★ Downstream: Allow a minimum straight pipe length at least 5 times the internal diameter of the pipe. For example, with the 50mm pipe, there should be 250mm of straight pipe for downstream. Desired downstream straight pipe length is 500mm.

Anti-Cavitation

Cavitation can be caused by entrained air. An amount higher than about 100 mg/l of entrained air or gas can produce error. In addition, cavitation can be caused by too little back pressure on the flow meter. For our turbine flow meters, you should provide a back pressure(downstream pressure) of at least 1.25 times the vapor pressure, plus 2 times the pressure drop through the flow meter. See formula 1.

Formula 1:Pb≥1.25×Pv+2×(Pin-Pout)

In formula 1:(Pb: Back pressure; Pv: Vapor Pressure; Pin: Inlet Pressure; Pout: Outlet Pressure)

Create back pressure by installing a control value on the downstream side of the meter at the proper distance detailed above.

Special Notice

★ External material in the liquid being measured can clog the meter's rotor and adversely affect accuracy. If this problem is anticipated or experienced, install screens to filter impurities from incoming liquids.

★ To ensure accurate measurement, drain all air from the system before use.

 \star When the meter contains removable coverplates. Leave the coverplate installed unless accessory modules specify removal. Don't remove the coverplates when the meter is powered, or electrical shock and explosion hazard can be caused.

5.CONNECTION AND DIMENSIONS

Thread Connection

1. To protect against leakage, seal all threads with an appropriate sealing compound. Make the sealing compound does not intrude into the flow path.

- 2. Make the arrow on the outlet is pointed in the direction of the flow.
- 3. Tighten the turbine onto the fittings. Use a wrench only on wrench flats.

Flange Connections

For standard product, the flange follows GB/T 9119-2000 (1S0 7005-1) RF (Raised Face).

Note: flange can be customized following other standards.

Use a gasket between the meter flange and mating flange. Determine the material of the gasket based on the operating conditions and type of fluid.

Note: Do not over tighten the flange bolts. This may cause the gasket to be compressed into the flow stream and may decrease the accuracy of the meter.



DIMENSIONS

Liquid Turb	ine Flow Meter		
Reference Pictures	N1(Pulse)	G(Intelligent)	
	N2(Pulse+4-20mA) /A(4-20mA)	E(Explosion-proof)	

Male Thread Connection Dimension Table







DN4-DN10 male threaded connection (Straight pipe section is included)

DN15-DN100 male thread connection (Straight pipe section is excluded but optional)

	MALE THREAD												
			H(mm)		Gmala	h							
DN(mm)	L(mm)	N1(Dulco)	N2((Pulse+4-20mA)	G(Intelligent)/	throad	(mm)							
		NI(Puise)	/A(4-20mA)	E(Explosion-proof)	uneau	(11111)							
4	267	145	151	218	G 1/2	13							
6	267	145	151	218	G 1/2	13							
10	387	147	153	220	G 1/2	13							
15	75	150	156	223	G1	15							
20	85	155	161	228	G1	13							
25	100	159	165	232	G1-1/4	15							
32	140	166	172	239	G2	20							
40	140	176	182	249	G2	20							
50	150	190	196	263	G2-1/2	30							
65	170	202	208	275	G3	35							
80	200	216	222	289	G4	40							



Female Thread Connection Dimension Table





			FEN	IALE THREAD			
			H(Cfamala			
DN(mm)	L(mm)	N1(Pulse)	N2((Pulse+4-20mA) /A(4-20mA)	G(Intelligent)	E(Explosion -proof)	thread	D(mm)
4	75	149	155	197	222	G 3/8	42
6	75	149	155	197	222	G 3/8	42
10	75	151	157	199	224	G 1/2	42
15	100	155	161	203	228	G 1/2	44
20	120	157	163	205	230	G 3/4	43
25	120	163	169	211	236	G1	49
32	120	170	176	218	243	G1-1/4	56
40	120	176	182	224	249	G1-1/2	60
50	120	187	193	235	260	G2	72



Flange Connection Dimension Table



L

0

					FLANGE CONNEG	CTION			
DN	L	D	к		H(m	im)	I	d	n
(mm)	(mm)	(mm)	(mm)	N1	N2((Pulse+4-20m)	G(Intelligent)	E(Explosion	(mm)	(aty of holes)
()	()	()	()	(Pulse)	/A(4-20mA)	-(-proof)	()	(40)
4	296	90	65	168	152	230	230	14	4
6	296	90	65	168	152	230	230	14	4
10	413	90	65	178	152	230	230	14	4
15	75	94	65	180	186	253	253	14	4
20	85	104	75	188	194	260.5	260.5	14	4
25	100	114	85	195	201	268	268	14	4
32	140	139	100	211	217	284	284	18	4
40	140	149	110	220	226	293	293	18	4
50	150	164	125	234	240	305.5	305.5	18	4
65	170	184	145	250	256	323	323	18	8
80	200	198	160	265	271	337.5	337.5	18	8
100	220	218	180	285	291	357.5	357.5	18	8
125	250	248	210	312	318	385	385	18	8
150	300	283	240	342	348	415	415	22	8
200	350	337	295	395	401	467	467	22	12
250	400	402	355	451	457	524.5	524.5	26	12
300	350	457	410	504	510	577	577	26	12



Wafer Connection Dimension Table



	WAFER CONNECTION												
DN		D		H(m	m)								
	L (mama)	(mm)	N1 N2((Pulse+4-20m)		G(Intelligent)	E(Explosion							
(11111)	(11111)	(11111)	(Pulse)	/A(4-20mA)	G(intelligent)	-proof)							
4	50	38	-	-	-	-							
6	50	38	-	-	-	-							
10	50	38	-	-	-	-							
15	55	47	161	167	209	234							
20	60	53	163	169	211	236							
25	60	58	168	174	216	241							
32	70	66	176	182	224	249							
40	70	72	183	189	231	256							
50	70	92	198	204	246	271							
65	80	100	209	215	257	282							
80	90	112	223	229	271	296							
100	100	137	245	251	293	318							
125	120	165	272	278	320	345							
150	150	190	297	303	345	370							
200	150	242	348	354	396	421							



Clamp Connection Dimension Table



		5	•	D	h	b H(mm)			
(mm)	L (mm)	(mm)	A (mm)	в (mm)	0 (mm)	N1 (Pulse)	N2((Pulse+4-20m) /A(4-20mA)	G(Intelligent)	E(Explosion
4					4	153	159	201	226
6	50				6	153	159	201	226
10					10	155	161	203	228
15		50.5	46	40.5	15	159	165	207	232
20	100				20	162	168	210	235
25					25	165	171	213	238
32	120				32	169	175	217	242
40	140	64	59	53.5	40	179	185	227	252
50	150	78	73.5	68	50	190	196	238	263
65	170	91	86	80.5	65	204	210	252	277
80	200	106	100.5	94	80	219	225	267	292
100	220	119	113	106	100	240	246	288	313

Note: 1. The product is subject to the actual supply.

2. Above diemensions are standard pressure-resistant dimensions.

6.ELECTRICAL WIRING

Warning: Electrical Harzard. Disconnect power before the beginning of installation **Turbine FLow Sensor/Transmitter**

≻ 1.	N1 T	ype(Pulse	Туре	without	Explosion	Proof)
------	------	-----------	------	---------	-----------	--------

Cable Color	Terminal Symbols	Description
Red Wire	24V+	Power supply "24V+"
Black Wire	24V-	Power supply "24V-"
Blue Wire	Pulse	Pulse output



> 2. N2 Type(Pulse with explosion proof)



Notice: (1) High level amplitude ${>}22V$

- (2) Low level amplitude <0.8V
- (3) Load capacity >1100 Ω
- (4) Pulse frequency <3000Hz
- > 3. 4-20mA Output with Explosion proof type



Notice: Current load resistor is ${<}500\Omega$

4.1 Intelligent transmitter -24VDC Power Supply





24VDC Power Supply G Type transmitter Terminals						
Terminal No.	Terminal Symbols	Description	Remarks			
1	GND	24V- power supply	/			
2	24V	24V+ power supply	/			
3	lout-	Current output	2/3 wires 4-20mA output and 3-wire 0-20mA function,			
4	lout+	Current output	please refer to wiring definition			
5	GND	24V- power supply	/			
c	FOUT	Dulco output	Pulse or scaled pulse output is related to the status of the			
0	FOOT	Puise output	dip switch. For details, see "Dip Switch Description"			
7	485A	RS485A	/			
8	485B	RS485B	/			

4.1.1 Pulse/Scaled pulse output- 24VDC



Notice: (1) High level amplitude >22V

- (2) Low level amplitude <0.8V
- (3) Load capacity >1100 Ω
- (3) Pulse frequency <3000Hz

4.1.2 (2-wire) 4-20mA output- 24VDC



Notice: Current load resistor $\leq 500\Omega$

4.1.3 (3-wire) 4-20mA output- 24VDC



Notice: Current load resistor≤500Ω

4.1.4 (3-wire) 0-20mA output- 24VDC





Notice: Current load resistor≤500Ω

4.1.5 RS485 Communication- 24VDC



Notice: Communication protocol is RS485 Modbus RTU

> 4.2 G Type(Intelligent transmitter) -220VAC Power Supply

24VDC Power Supply G Type transmitter Terminals						
Terminal No.	Terminal Symbols	Description	Remarks			
1	L	24V+ power supply	/			
2	Ν	24V- power supply	/			
3	lout-	Current output	4-wire 4-20mA output and 4-wire 0-20mA function,			
4	lout+	Current output	please refer to wiring definition			
		Ground of				
5	GND	Current/pulse	/			
		output				
6	FOUT	Pulso output	Pulse or scaled pulse output is related to the status of the			
0	FOOT	Puise output	DIP switch. For details, see "Jumper Cap Description"			
7	485A	RS485A	/			
8	485B	RS485B	/			

Jumper Cap Description

"1-ON; 2-OFF; 3-OFF": Pulse output
"1-OFF; 2-ON; 3-OFF": Scaled Pulse output
"1-OFF; 2-OFF; 3-ON": Reserve
Jumper Cap corresponds to the pulse output interface FOUT.

4.2.1 Pulse/Scaled Pulse output-220VAC





Notice: (1) High level amplitude >22V (2) Low level amplitude <0.8V (3) Load capacity >1100Ω (4) Pulse frequency ≤3000Hz

4.2.2 (4-wire) 4-20mA output-220VAC



Notice: Current load resistor≤500Ω

4.2.3 (4-wire) 0-20mA output-220VAC



Notice: Current load resistor≤500Ω

4.2.4 RS485 Output-220VAC



Notice: Communication protocol is RS485 Modbus RTU

> 4.3.1 Explosion-proof transmitter -24VDC Power Supply





Explosion-proof transmitter Terminal -24VDC Power Supply						
Terminal No.	Terminal Symbols	Description	Remarks			
1	СОМ	24VDC-	/			
2	DC24+	24VDC+	Loop Power+			
3	lout	Current output	Loop Power-			
4	Fout	Calibration pulse output	Only for calibration use			
r.	Fourt C	Pulse or Scaled Pulse output	Parameter function code P7 screen			
5	Fout_C		select output mode			
6	AL	Instantaneous flow lower limit alarm	/			
7	AH	Instantaneous flow upper limit alarm	1			
8	C_KEY	External button terminal +	/			
9	485A	RS485A	To be used with GND			
10	485B	RS485B	/			
11	GND	External button terminal -	To be used with C_KEY			

4.3.2 Battery powered transmitter



Battery Powered Transmitter Terminals						
Terminal No.	Terminal Symbols	Description	Remarks			
1	DC24+	24VDC+	/			
2	СОМ	24VDC-	Only for calibration use			
3	FOUT	Calibration pulse output	/			
4	C_KEY	External button terminal +	Connect external button, short press to display the software version no. and communication parameters, long press (>5s) to clear the cumulative amount			
5	GND	External button terminal -	To be used with C_KEY			
6	IC	/	Reserve			
7	ICAL	/	Reserve			
8	ICAH	/	Reserve			
9	BAT	/	Reserve			
10	GND	External button terminal -	To be used with C_KEY			



7. PARAMETERS SETTING



7.1 There are 4 keys: "Enter", " \rightarrow ", " \uparrow ", "Esc"

KEYS	Description
Enter 🕘	Save the value and advance to next menu
\rightarrow	For numerical values, move cursor position
\uparrow	Main value increase/Turn to previous page
Esc 🔄	Exit(Don't reserve the changes)

Note: To hold Esc for 5 seconds to turn off the back-light if the back-light is on and vice-versa.

7.2 Password and function

Туре	Password	Note
User password	1234	To modify the P1-P14 parameters; After entering the correct password, press "Enter" button to the parameter setting
Engineer password	1010	To modify the P16-P26 parameters; After entering the correct password, press "Enter" button to the parameter setting
Cumulative flow reset	5555	After entering the correct password, press "Enter" button for Reset Prompt Screen and then press "Enter" button back to measuring interface
Cumulative flow setting	9999	After entering the correct password, press "Enter" button to the Cumulative flow interface

Note: It will display "0000" before entering password. If the password is incorrect, it will go to P1-P26 menu automatically under un-settable status.

7.3 Description of menu



Menu	Parameter	Setting Method	Grade		Description		
				Value	Instantaneous Flow Unit	Cumulative Flow Unit	
			0	m3/h	m3		
				1	L/h	L	
				2	L/min	L	
				3	US Gal/min	US Gal	
P-1	Unit	Select	User	4	UK Gal/min	UK Gal	
		parameter		5	US Gal/h	US Gal	
				6	UK Gal/h	UK Gal	
				7	Kg/h	kg	
				8	t/h	t	
				9	ft3/h	ft3	
				10	US bPd	US bPd(won't display on the main screen)	
P-2	Damping time	Input value	User	Value: 0~9	9s; Unit: Second		
P-3	Max flow rate	Input value	User	Full scale v	value for 20mA; Ui	nit is same as P-1	
	Min flow cut-off			When the	flow rate lower th	nan min flow rate, the flow rate will display 0;	
P-4	function	Input value	User	Unit is sam	ne as P-1		
	Max input			When the	frequency value	exceeds the upper limit, it is equal to the	
P-5	frequency	Input value	User	upper limi	t frequency value;	Unit is same as P-1	
DC	Donsity	Inputivalua	llsor	When nee	ed to display mass	unit, it needs to input the density of liquid;	
P-0	Density	input value	User	Unit of de	nsity is g/cm3		
	Pulse output	Select		0: Close pu	ulse output		
P-7	mode	parameter	User	1: Output	corrected pulse		
		P		2: Output	scaled pulse(Fout	_C)	
				0.001: eve	ry 0.001 unit volu	me/ pulse	
				0.01: every	y 0.01 unit volume	e/ pulse	
	Scaled pulse	Select		0.1: every 0.1 unit volume/ pulse			
P-8	(Unit is same as	parameter	User	1: every 1 unit volume/ pulse			
	P-1)	P		10: every 10 unit volume/ pulse			
				100: every 100 unit volume/ pulse			
				1000: ever	y 1000 unit volum	ne/ pulse	
P-9	Scaled pluse width	Input value	User	The scaled	pulse width shou	ld between 1~200, unit is ms	
P-10	Communication	Select	User	0: RS485 N	Aodbus		
1 10		parameter	0.501	1: HART			
					Address: 1-255		
					Baud rate: 1200,	2400,4800,9600,19200	
					Parity check:		
P-11	Communication	Select	User	RS485	n: No parity		
	Parameters	parameter	5501		o: Odd check		
					E: Even check		
					Data length: 7, 8		
				Stop bit length:	1, 2		



				HART	Can set communication address
D 12		Select	llcor	Yes/No: Ope	en/Close this function
P-12	nigher Alarm	parameter	User	1%-100%: Percentage setting relative to the traffic limit	
P-13	Lower Alarm	Select parameter	User	Same as "Higher alarm settings"	
P-14	Backlight	Select parameter	User	 0: Backlight 1: When b turns on w seconds with always off; w 2: When b powered, th 	is normally closed at any power supply method attery-powered, the backlight automatically turns on; only hen a key is pressed, and automatically turns off after 20 thout a key pressed; when 2-wire powered, the backlight is when 3-wire powered, it is always on. pattery-powered, the backlight is always on; when2-wire he backlight is always off; when 3-wire powered, it is always on
P-15	Cumulative Flow	Select parameter	User	It could be r	nodified with correct password
P-16 F-1	1st point of meter factor compensation	Input value	Factory only	First Row: 1 Second Row	st point Corrected frequency without decimal, F1 1 st point Coefficient error with 4 decimals, K1
P-17 F-2	2nd point of meter factor compensation	Input value	Factory only	First Row: 2 Second Row	nd point Corrected frequency without decimal, F2 7: 2 nd point Coefficient error with 4 decimals, K2
P-18 F-3	3rd point of meter factor compensation	Input value	Factory only	First Row: 3 Second Row	rd point Corrected frequency without decimal, F3 r: 3 rd point Coefficient error with 4 decimals, K3
P-19 F-4	4th point of meter factor compensation	Input value	Factory only	First Row: 4 Second Row	th point Corrected frequency without decimal, F4 r: 1 st point Coefficient error with 4 decimals, K4
P-20 F-5	5th point of meter factor compensation	Input value	Factory only	First Row: 5 Second Row	th point Corrected frequency without decimal, F5 7: 5 th point Coefficient error with 4 decimals, K5
P-21 F-6	6th point of meter factor compensation	Input value	Factory only	First Row: 6 Second Row	th point Corrected frequency without decimal, F6 /: 6 th point Coefficient error with 4 decimals, K6
P-22 F-7	7th point of meter factor compensation	Input value	Factory only	First Row: 7 Second Row	th point Corrected frequency without decimal, F7 7: 7 th point Coefficient error with 4 decimals, K7
P-23 F-8	8th point of meter factor compensation	Input value	Factory only	First Row: 8 Second Row	th point Corrected frequency without decimal, F8 7: 8 th point Coefficient error with 4 decimals, K8
P-24 F	K- Factor	Input value	Factory only	First Row: D Second Row	isplay Corrected frequency, can't be revised /: Display Coefficient; Unit can refer to P-26
P-25	Parameters Setting Screen	Input value	Factory only	This screen	is reserved
P-26	K-Factor unit	Select parameter	User	0:P/L; 1:P,	/m³

Note: To turn on/off the back light by longer pressing on "Esc" button for 5 seconds.



8. ERR ANALYSIS

Display	Description	Solutions	
ErrO	Data storage in error	A new PC board need to be replaced	
Err1	Low battery	Change new Batteries	
Err2	Data stored in error and low battery	Change new batteries, if the error is still existing, need to be replaced.	the new PC board

9. TROUBLESHOOTING

Common faults and solutions

Faults	Possible Cause	Solution
There is flow passing,	1. Internal parameters of the instrument have been modified	Please check whether the instrument parameters are normal according to the calibration certificate. If the parameters are wrong, please enter the correct parameters.
	2. The signal acquisition coil is damaged	Use a magnetic screwdriver to slide the outer wall of the signal collection coil. If there is still no flow display, the signal collection coil needs to be replaced.
flow of turbine flowmeter is zero	3. The impeller is stuck	Remove the flowmeter and blow the impeller with mouth. If the impeller cannot rotate normally, then take off the impeller and clean it. It is recommended to install a filter on the pipeline and clean it regularly.
4. The impeller so damaged	4. The impeller shaft is damaged	After cleaning the impeller, if it still cannot rotate normally then can consider the impeller shaft is damaged and needs to be returned to the factory for repair
	1. The stop valve of the pipeline is not completely closed	Check the valve
These is a flam.	2.There is violent vibration of pipeline	To reduce the vibration
There is no flow through the meter, but the meter displays instantaneous flow	3.The meter is not well grounded	Check the grounding
	4.There is strong electromagnetic interference on site, too close to high-power equipment such as inverters, motors, solenoid valves, etc.	By judging whether the instantaneous flow value is the value of electromagnetic interference, it can be judged whether the instrument is affected by power frequency interference. If so, it is recommended to change the installation location
The meter is measuring normally, but the measured value is inaccurate	1. There is some problem for internal parameters of meter	Please check whether the instrument parameters are normal according to the calibration certificate. If the parameters are wrong, please enter the correct parameters.
	2. The rotor is damaged	Remove the flowmeter and blow the impeller with mouth. If the impeller cannot rotate normally, it needs to be returned to the factory for repair



	1. The wiring connection is	If no current output, please check if the wiring connection is
	wrong	correct.
The meter is measuring		If there is current output, but the current value is incorrect,
normally, display is		check whether the upper limit value in the instrument
normal, but the current	2. Range setting of meter is	parameters is the same as the upper limit of the range
output is incorrect.	wrong	marked on the instrument nameplate. If they are different,
		change the parameter to the upper limit of the range
		marked on the nameplate.

10. METER CONSTRUCTION



Clamp Connection Meter

Wafer Connection Meter



Limited Warranty Policy

Hereby provides a limited warranty against defects in materials and workmanship. This product includes a one-year warranty. The warranty period shall begin on the date of the original new equipment purchase. Warrantor's obligation hereunder shall be limited to repairing defective workmanship or replacing or repairing any defective parts.

In the event Purchaser believes the product is defective, the product must be returned to, transportation prepaid by Purchaser, within the appropriate warranty period relative to the product. If the inspection determines the workmanship or materials are defective and the required maintenance has been performed and has been properly installed and operated, the product will be either repaired or replaced, at the sole determination, free of additional charge, and the goods will be returned, transportation paid by, using a transportation method selected by Supplier.

Prior to returning the product to, Purchaser must obtain a Returned Material Authorization(RMA) Number from Customer Service Department within 30 days after discovery of a purported breach of warranty, but not later than the warranty period; otherwise, such claims shall be deemed waived.

If the inspection reveals the product to be free of defects in material and workmanship or such inspection reveals the goods were improperly used, improperly installed, and/or improperly selected for service intended, will notify the purchaser in writing and will deliver the goods back to Purchaser upon receipt of Purchaser's written instructions and agreement to pay the cost of transportation. If Purchaser does not respond within thirty (30) days after notice from , the goods will be disposed of in discretion.

does not warrant the product to meet the requirements of any safety code or other jurisdiction, and Purchaser assumes all risk and liability whatsoever resulting from the use thereof, whether used singly or in combination with other machines or apparatus.

This warranty shall not apply to any product or parts thereof, which have been repaired outside 's factory or altered in any way,or have been subject to misuse, negligence, or accident, or have not been operated in accordance with the printed instructions or have been operated under conditions more severe than, or otherwise exceeding, those set in the specifications.

FOR NON- WARRANTY REPAIRS OR CALIBRATIONS, consult for current re pair/calibration charges. Have the following information available BEFORE contacting :

- 1. P.O.number to cover the COST of the repair/calibration
- 2. Model and serial number of the product,
- 3. Repair instructions and/or specific problems relative to the product.