pFlow

LOSS FREE METER F148

F148 is an antacid and erosion-resistant flowmeter. The all in one design makes F148 works fabulously in chemical industrial environment , it has no wear-and-tear parts once been install can permanent online.

LOSS FREE

Antacid/Erosion-resistant
No wear-and-tear parts

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F148 is an antacid and erosion-resistant flowmeter.

The all in one design makes F148 works fabulously in chemical industrial environment , it has no wear-and-tear parts once been install can permanent online.

Performance Specifications

- Accuracy:
  ±1.5 % FS;
- Repeatability:
  0.3 %;
- Measuring Medium:
  Water;
- Pipe Material:
  PVC pipe;
- Protection Rate:
  IP54.

Functional Specifications

- Power Supply:
  10~36VDC, @500mAMax;
- Temperature:
  Transmitter: 0 ~ 50 ℃, Transducer: 0 ~ 50 ℃;
- Humidity:
  Up to 99% RH; Non-condensing.

Standards and Certifications

- Immunity and Radiation:
  EN61326;
- Quality Management System Certification:
  ISO9001 approved.
- Through the CE certification.

The F148 is an really convenient ultrasonic flow metering solution for measuring flow rate – with a RS485 output and optional 4-20mA flow rate signal, which can be used as a standalone meter.

Simple To Install – Connected to the pipe, connected power without any adjustments, no specialist skills or tools required!
A cost effective alternative to traditional in-line meter installation, plus dry servicing, providing minimum downtime and maximum availability!
Compact, rugged and reliable, the F148 has been designed to provide sustained performancein industrial environments.

Nowadays, Ultrasonic flowmeter are more and more widely used to help users and operators to improve flow measurement accuracy and repeatability. It has the repeatability and reliability that the orifice flowmeter and volumetric flowmeter do not have.

From technology-driven concept to market-driven concept, from the pursuit of sophisticated niche market to volume sales market, F148 achieves this revolutionary transformation and it focus on fluid applications .

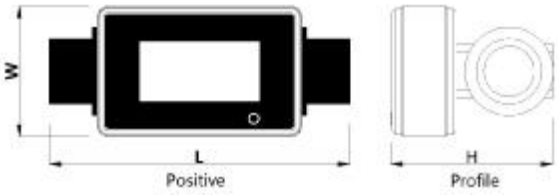
Physical Specifications

- Transmitter:
  POM;
- Power Supply Cable:
  3.0 m (standard);
- Display:
  LCD Display;
- Weight:
  0.5 kg.

Warning
- Wire with power off.

Contents

1. Technical Specifications



Model	L	W	H	Flow Range m³/h
DN15	**160**	**65**	**68**	**0.06~3.8**
DN20	**165**	**65**	**75**	**0.11~6.8**
DN25	**170**	**65**	**82**	**0.18~10.6**
DN32	**175**	**65**	**90**	**0.29~17.4**
DN40	**180**	**65**	**99**	**0.45~27.0**

Performance Specifications
- Accuracy: ±1.0 %;
- Repeatability: 0.3 %;
- Measuring Medium: Water;
- Pipe Material: PVC-U/white;
- Protection Rate: IP54.

Physical Specifications
- Transmitter: PVC-U/white;
- Power Supply Cable: 3.0 m (standard);
- Display: LCD Display;
- Weight: 0.5 kg~0.8kg.

Functional Specifications
- Power Supply: 10~36VDC, @500mA Max;
- Temperature:
  Transmitter:0 ~ 50 ℃,
  Transducer: 0 ~ 50 ℃;
- Humidity: Up to 99% RH; Non-condensing.

Standards and Certifications
- Immunity and Radiation: EN61326;
- Quality Management System Certification: ISO9001 approved.
- Through the CE certification: .

2. Installation and Wiring

1. Remove the product and keep the pipe interior areas are clean, then take the water at both ends of the threaded nut product area tightened for installation;

Function	Wire Color	
Power (10~36VDC)	+	Brown/Orange
	-	Black
RS485	A	Green/Blue
	B	White
4~20mA	+	Red
	-	Yellow

2. Wiring: Logo flows must be consistent with the direction of the fluid within the pipe. Cable Instructions See table below:

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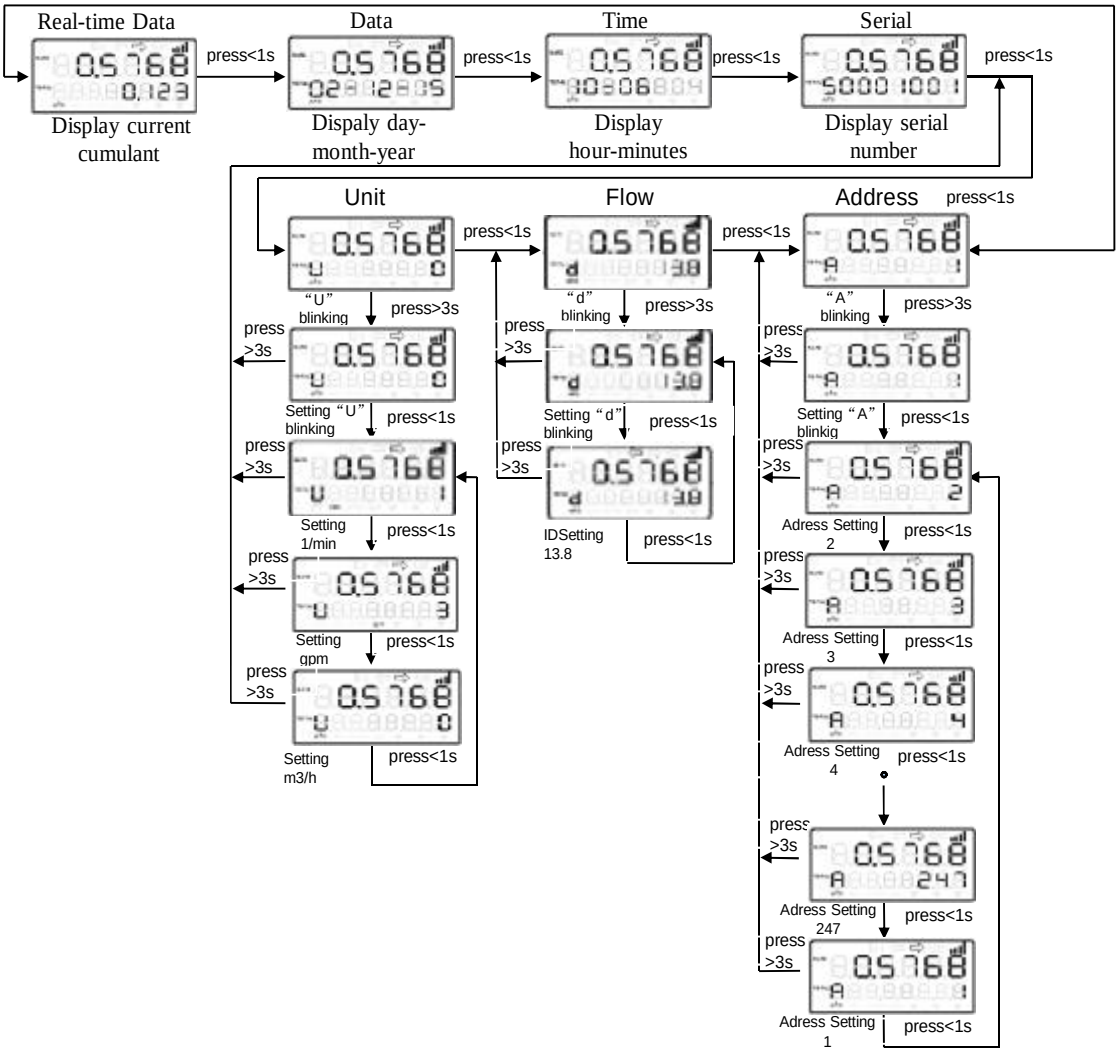
3. Menu Display

Every meter is being strictly tested before leaving the factory. The meter can normally operate without settings. Specified upper computer software or setting device is required when need to reset the flow meter. Please turn to the factory for detailed operation method.

Window Display Interface	Menu Display Explanation
	Display the factory software version number of the instrument. This display will last for 25 seconds.
	Data display.
Err	Error.
⇦ ⇨	Flow direction.
	Signal strength.
m^3/h l/min gpm	Units.

The instrument has the functions of setting units, inner diameter and address. If the parameter in user's field are inconsistent with the factory parameter, you can switch the secondary display window by pressing keyboard on mask, in order to calibrate the settings of parameters. Menu instructions are as follows:

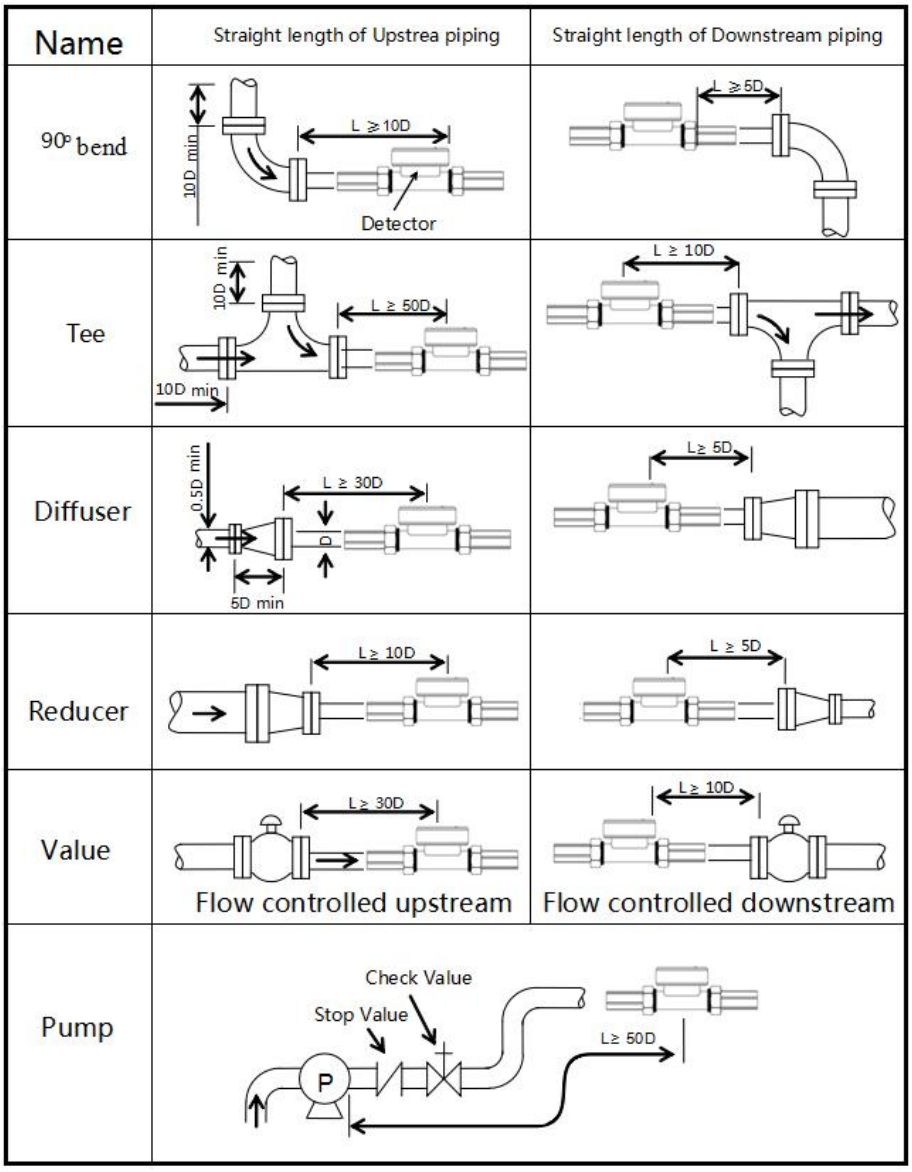


4. Measuring Site Selection

The installation of this ultrasonic flow meter is the simplest one of all kinds of flowmeters. Only one suitable measuring site needed, plug the transducers on the pipe and then start the measurement.

When selecting a measurement site, it is important to select an area where the fluid flow profile is fully developed to guarantee a highly accurate measurement. Use the following guidelines to select a proper installation site:

* Choose a section of pipe that is always full of liquid, such as a vertical pipe with flow in the upward direction or a full horizontal pipe.
* The site should have a straight pipe run length equal to at least 10 pipe diameters upstream and 5 pipe diameters downstream from any throttling valves or other flow disturbance producing elements, such as pipe reducers, elbows, tees, etc.



* Ensure that the measuring site temperature is under the transducer temperature limits.
* Consider the inside condition of the pipe carefully. If possible, select a section of pipe where the inside is free of excessive corrosion or scaling.
* Choose a section of sound conducting pipe.

5. Communication Protocol

MODBUS Protocol

The flow meter supports MODBUS-I protocol, its default slave address is 88, and its default baud rate is 9600bps, following are some function codes:

Function code	Performance data
0x03	Read Register
0x06	Single Write Register

MODBUS Protocol function code 0x03 usage

a) Read Register Address List (use 0x03 function code to read)

PDU Address	Register	Read	Write	Type	Illustration
$0000	40001	Flow - low word	32 bits real	2	m/s
$0001	40002	Flow - high word			
$0002	40003	Flow rate - low word	32 bits real	2	Unit:m^3/h
$0003	40004	Flow rate - high word			
$0004	40005	Flow total - low word	32 bits real.	2	Unit:m^3
$0005	40006	Flow total - high word			
$0014	40021	Error code	16 bits int	1	"0"means normal; "1" means no signal.
$0016	40023	ESN- string 1,2	String	4	
$0017	40024	ESN - string 3,4			
$0018	40025	ESN - string 5,6			
$0019	40026	ESN - string 7,8			
$001E	40031	Flow rate integer - low word	32 bits int.	4	Unit: m^3
$001F	40032	Flow rate integer - high word			
$0020	40033	Flow rate decimal - low word	32 bits real		
$0021	40034	Flow rate decimal - high word			

b) single write register Address List (use 0x06 function code to write).

Register Address	Register	Data Description	R/W	Data Type	Register Number
$1003	44100	ESN (1-247)	R/W	16 bits int.	1
$1004	44101	Communication baud rate: 0 = 19200, 1 = 9600, 2 = 4800	R/W	16 bits int.	1
$1005	44102	Flow rate unit: 0 = m^3/h, 1 = l/min, 3 = gpm (EN).	R/W	16 bits int	1

FUJI Protocol

The host device requests the flowmeter to answer by sending a "command". The baud rate of asynchronous communication (Primary station, computer system, Secondary station, ultrasonic flowmeter) is generally 9600 bps. A single byte data format (10 bits): One start bit, one stop bit and 8 data bits. Check bit: None.

Communication Commands

Command	Description	Data Format
dqh(cr)(lf)	Return hourly instantaneous flow	±d.dddddE±dd(cr) (lf)
dv(cr) (lf)	Return instantaneous velocity	±d.dddddE±dd(cr) (lf)
di+(cr) (lf)	Return positive accumulative flow	±ddddddE±d(cr) (lf)
did(cr) (lf)	Return identification code of instrument (address code)	001~247 (cr) (lf)
dc(cr) (lf)	Return current error code	dd(cr) (lf) * 1
esn(cr) (lf)	Return electronic serial number	ddddddd(cr)(lf)
addxxx(cr) (lf)	Write the slave address	Range of address : 001-247
sze(cr) (lf)	Zero Set Calibration	Pls ensure the fluid in the pipe to keep in a static condition.
stfx.xx(cr) (lf)	Write K coefficient	X.xx *3

Note :

1. (cr) expresses carriage return. Its ASCII value is 0DH. (lf) expresses line feed. Its ASCII value is 0AH.
2. Return 10 expresses no signal.
3. Range of K coefficient : 0.70 ~ 1.30.