

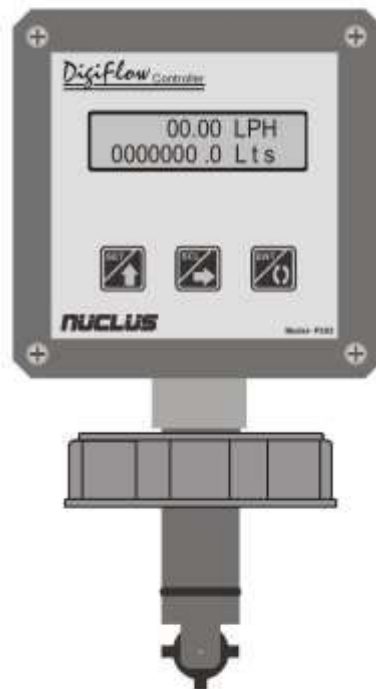
NUCLUS

Operating Manual

Model- P383

DigiFlow Transmeter

Totalizer mode



1

Authorised Dealer



NK Instruments Pvt. Ltd.

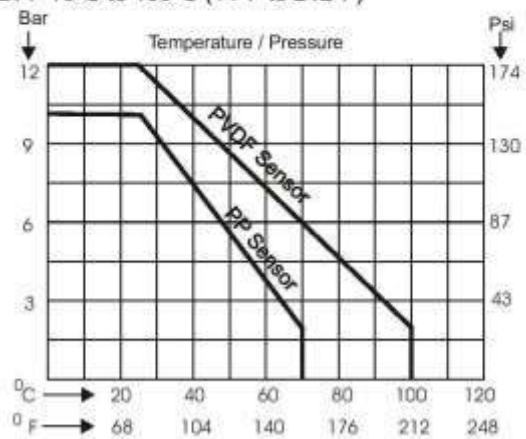
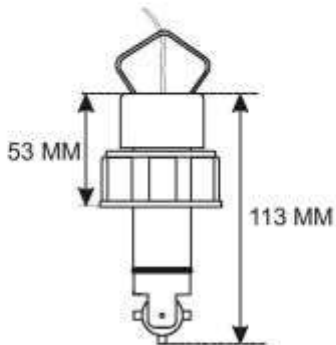
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Tecnical specification of flow sensor P812

- Flow Rate Range: 0.5 to 5 m/s (1.6 to 16.4 ft./s)
- Pipe Size Range: 15 NB to 300 NB (0.5 to 12 in.)
- Linearity: ±1% of full range
- Repeatability: ±0.5% of full range
- Min. Reynolds Number Required: 4500
- Wetted Parts
 - Sensor Body: Polypropylene (black) or PVDF (black)
SS 304 / Ss316 / SS316L
 - O-rings: Viton / Teflon
 - Rotor Pin: Hastelly C
 - Rotor: Black PVDF.
- Frequency: 38 Hz per m/s nominal
- Supply voltage: 10 to 12 VDC regulated
- Supply current: <20 mA @ 10 to 24 VDC
- Output Type: Open collector transistor, sinking
- Output Current: 10 mA max.
- Cable Type: 19/38 tefoln two core with shield
- Cable Length: 5 m (16.4 ft.) Standard
- Protection Rating: IP 67
- Operating Pressure: PP: max10 bar(145 psi) @ 25°C
PVDF: max12 bar(175 psi) @ 25°C
- Operating Temperature: PP: -10°C to 70°C (14°F to 158°F)
PVDF: -10°C to 100°C (14°F to 212°F)

Dimensions for sensor P812



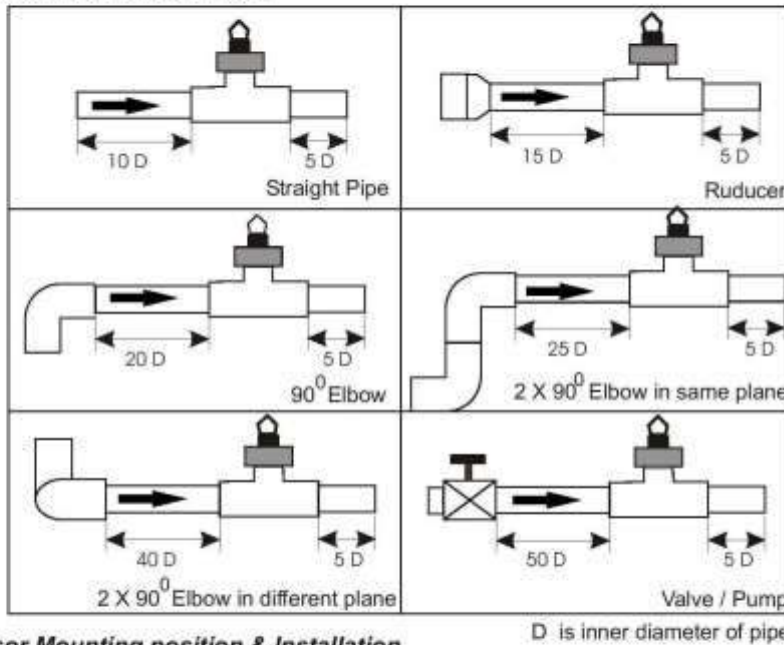
Line Size selection chart

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Line Size (NB)	15	25	40	50	65	80	100
Min. Flow (m ³ / hr)	0.26	0.88	2.04	3.50	6.30	8.0	14.0
Max. Flow (m ³ / hr)	2.60	8.80	20.4	35.0	63.0	80.0	140

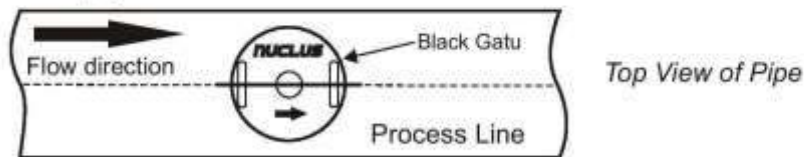
Fitting Installation Condition

All type of flow meter require straight run, as per site condition following straight pipe lengths must be provided for best result.



Sensor Mounting position & Installation

- 1) For Horizontal pipe line for best performance sensor mount in the upright position.
- 2) For Vertical pipe line sensor mount in any orientation , Upward flow is preferred to ensure full pipe.
- 3) Lubricate the sensor O-ring with a silicon gress.
- 4) Insert the sensor into the fitting, making sure the arrows mark on the black Gatu are pointing in the direction of flow, for field mounting unit sensor must be mounted such that the display becomes parallel to the pipe line .



- 5) Engage one thread of the sensor cap then turn the sensor until the alignment Pine is seated in the fitting groove. Hand tighten the sensor cap. DO NOT use wrenches or any other tools for tightening the sensor cap.



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Nuclus make model- P383 (*Disiflow* Transmeter) is flow rate indicator cum totaliser with one / two relay output. As per Relay operation Nuclus model P383 operate in four different mode

1) **TOTALIZER mode**- This mode unit shows flow rate & totaliser in selected eng.. Unit

2) **BATCH CONTROLLER mode**- This mode unit shows flow rate & Totalizer with one / two relay output on Totalizer for Batching application to ON/OFF Pump / solenoid valve.

3) **PULSE CONTROLLER mode**- This mode unit shows flow rate & Totalizer with one / two relay output on Totalizer for dosing application to controller metering pump / solenoid valve.

4) **RATE SWITCH mode**- This mode unit shows flow rate & Totalizer with one / two relay output on flow rate for HIGH / LOW alarm to operate lamps, sirens, etc.

Technical Specifications for P383

Function:	Rate indicator with Totaliser
Display:	backlit alphanumeric 2 x 16 LCD
Supply Voltage:	230 V AC
Linearity:	± 1% of FSD
Accuracy:	± 0.05 %.
Input:	from Nuclus sensor P812
Scale Factor:	00.1000000
Configuration Lock:	Password Protection.
Calibration:	Using front membrane keys
Output:	1) 4 to 20 mA output (self Power) 2) 5A pot. Free contact @ 230 VAC .
Housing:	Plastic ABS.
Protection:	IP 65 for field mounting
Meter Size:	110mm X 110 mm X 140mm
Cutout Size:	90 mm X 90 mm
Operating Temp.:	Operating: 0 to 50 C.
Sensor Supply:	12 VDC(±10%) , 30 mA.





Nuclus Digiflow Controller in TOTALIZER mode is rate indicator cum totalizer

Calibration Procedure

Press key for 3 seconds display shows PASSWORD
0000

Press & keys to set password as PASSWORD
1603

Then press key display shows scale factor SCALE FACTOR
00.0000000

For re-calibration of flow meter the previously programmed scale factor can be increased in proportion to the difference in the reading between the actual flow rate and the displayed reading.

Press & keys to set scale factor than press Key,

display shows Discharge unit selection SET UNIT
LPH

Press key to select operating unit as M3/hr / LPH / LPM / LPS / GPM us / GPM uk.

Then press Key, display shows averaging time for rate in sec. AVERAGE TIME
00 Sec

Press & keys to set flow rate averaging time in seconds 1 to 20 seconds max

Then press Key, display shows set point for 4 mA SET 4 mA = RATE
0000000.00

Press & keys to set flow rate at which current output is 4 mA

Then press Key, display shows set point for 20 mA SET 20 mA = RATE
0000000.00

Press & keys to set flow rate at which current output is 20 mA,

The current output changes in proportion of flow rate changes from set point 4 mA to set point 20 mA Than press Key, display shows SE_BAUD_RATE (*Not applicable for current output*)

Then press Key, display shows


CONFIG COMPLETE
< 0 - 0 - 0 > Than press Key, display shows SAVING PARAMETER
< 0 - 0 - 0 >

Then display shows regular flow rate & Totalizer reading





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Total Reset Procedure

Press  key for 3 seconds display shows


PASSWORD
0000

Press  &  keys to set password as

PASSWORD
1600

Then press  key display shows scale factor

RESET TOTALIZER
NO

Press  key to select reset totalizer YES / NO than press  key display shows

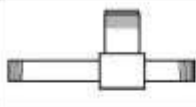

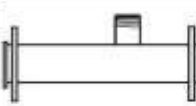

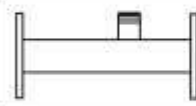
CONFIG COMPLETE
< 0 - 0 - 0 >

Then press  Key, display shows

SAVING PARAMETER
< 0 - 0 - 0 >

Then display shows regular flow rate & Totalizer reading

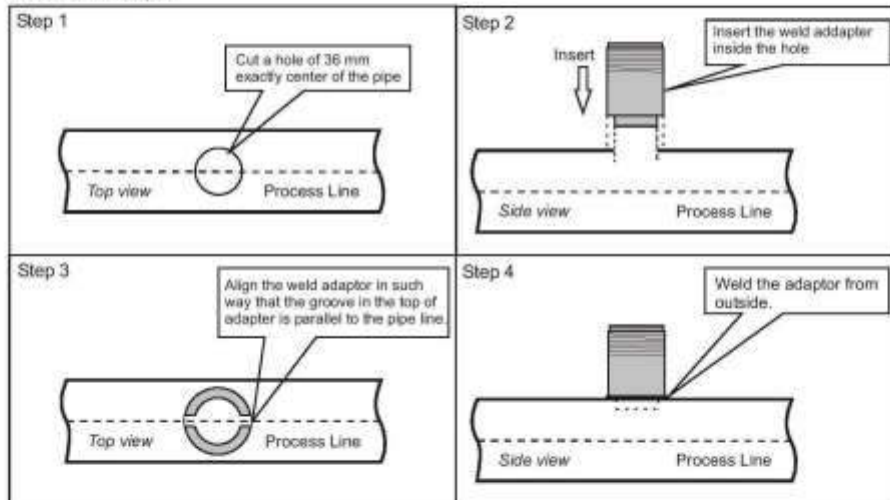


	<p>S. S. T fitting threaded end</p> <ul style="list-style-type: none"> •Use for 15 NB to 40 NB line size •Threading as per BSP standard 		<p>Block Fitting</p> <ul style="list-style-type: none"> •Use for 15NB & 25NB line size •Remove sensor at the time of welding
	<p>S. S. T fitting Stub end</p> <ul style="list-style-type: none"> •For 50 NB to 100 NB line size • MS flanges as per Bs10 table D 		<p>Weld adapter</p> <ul style="list-style-type: none"> •Use for 50 NB to 300 NB line size •Cut 36 mm hole weld directly on line •Remove sensor at the time of welding
	<p>SS T fitting Welded flange end</p> <ul style="list-style-type: none"> •For 50 NB to 100 NB line size •Flanges as per requirement 		

Weld adapter installation

Remove sensor from weld adapter before start welding.

The weld adaptor supplied can be directly welded on to any MS / SS pipe line as per following instruction steps

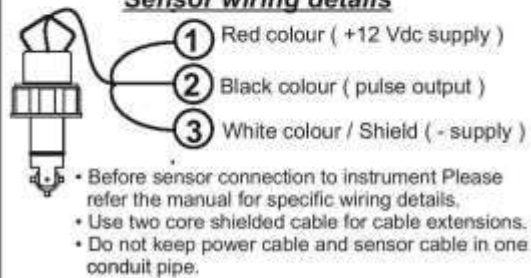


- Insure that at the time of welding there is no welding bur on the threading of the weld adaptor.
- Insert the flow sensor as per the sensor mounting guidelines.

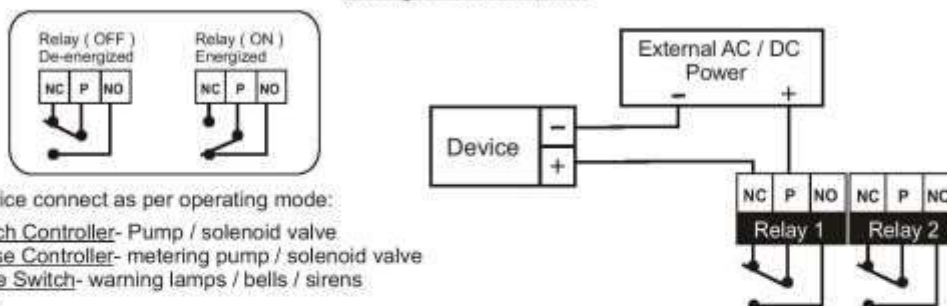
Connection Details for Model P383

Sensor 1			Reset			Current out					
V+	Out	Com	Res	Com	-	+	1	2	3	4	5
1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
			NC	P	NO	NC	P	NO	L	N	E
			Relay 1			Relay 2			230 VAC		

Sensor wiring details



Relay Connections



Device connect as per operating mode:

- Batch Controller- Pump / solenoid valve
- Pulse Controller- metering pump / solenoid valve
- Rate Switch- warning lamps / bells / sirens

Note:

- Maximum relay contact ratings 5 A @ 230 VAC
- External heavy-duty relay must be used for devices with operating currents that exceed the above specifications.

Trouble shooting

Problem	Possible Causes	Suggested Solutions
Display remains zero even when actual flow is there	Flow less than the minimum flow rate.	Check if any downstream valve is closed. Open valve. Remove sensor from the fitting & check change in reading by physically rotating the paddle. If meter shows reading check the actual flow rate. Change the fitting if the normal flow is lower than the minimum
	Sensor not inserted in the correct plane.	Ensure that the arrow on the sensor is in direction of flow.
	Rotor not moving freely	Remove the sensor, clean Rotor & Pin and ensure free movement of the Rotor.
	Wrong sensor wiring. (mainly applicable for panel mounted meters or field mounted units where sensor wire is extended.)	Connect the sensor wires as per wiring connection details in the manual / on the meter.
Reading getting displayed but not correct.	Meter & sensor serial number are not matching.	Ensure that the meters are connected to its corresponding sensor & fitting only.
	Adequate straight run is not provided on inlet & outlet side of sensor. Presence of a pressure reducing valve before the sensor can result in error.	Provide straight run as per guide lines. OR adjust the scale factor to match the actual flow. Provide a bend between the valve & the sensor. Refer installation guide line for proper placement of sensor.
	Set scale factor disturbed.	Check scale factor. Correct factor as per mentioned on meter or sensor.
Meter is malfunctioning / not given any output.	Flow meter setting disturbed.	Correct meter setting as per operating manual.
No display / shows only back light	No power supply	Checks input supply and make proper connections.
	Micro-Controller hanged	Switch off supply for 1 minute and then switch On the supply again
Totalizer is reset to zero when power supply is OFF	CR 2032 Battery is drain.	Replace new CR 2032 Lithium Battery.

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