

PUMPHLO™ FLOWMETER

The PF 100 PUMPHLO Flowmeter is designed to totalize flow in intermittent pumping applications such as lift stations or tank filling with pumps controlled by level switches.

Typical situations have two pumps, both sized to handle the required flowrate, each running part time. The second pump may alternate with the first pump and is usually set to come ON at a higher level if required. Single pump or three pump situations can be handled as well.

In addition to totalizing the flow, various other operator information is displayed such as station flowrate, Pump 1 and Pump 2 individual pumping rates, Pump 1 and Pump 2 running time in hours, Pump 1 and Pump 2 ON/OFF cycles of operation. A proportional sampler contact output is standard as is a station flowrate analog output for recording purposes.

When a continuous level signal is available other functions such as pump sequencing and/or alternating are possible as are high or low alarms.



**PF 100 SERIES
INDICATING FLOWMETER**

USER BENEFITS

- Easy installation: No piping modifications. No straight run required. Simple electrical hookup.
- Reliable: No parts in contact with process fluid. All solid state electronics
- Accurate: based on sump dimensions and time. Parameters easily verified in the field.
- Can be installed and started up without interrupting the station operation.
- User configurable in the field without tools. As easy as dialing a touch tone phone.
- Retains configuration and data during power outages without batteries.

APPLICATIONS

- Lift stations in commercial, industrial or municipal locations.
- Standpipe and pressure tank filling from wells.
- Flow surveys.

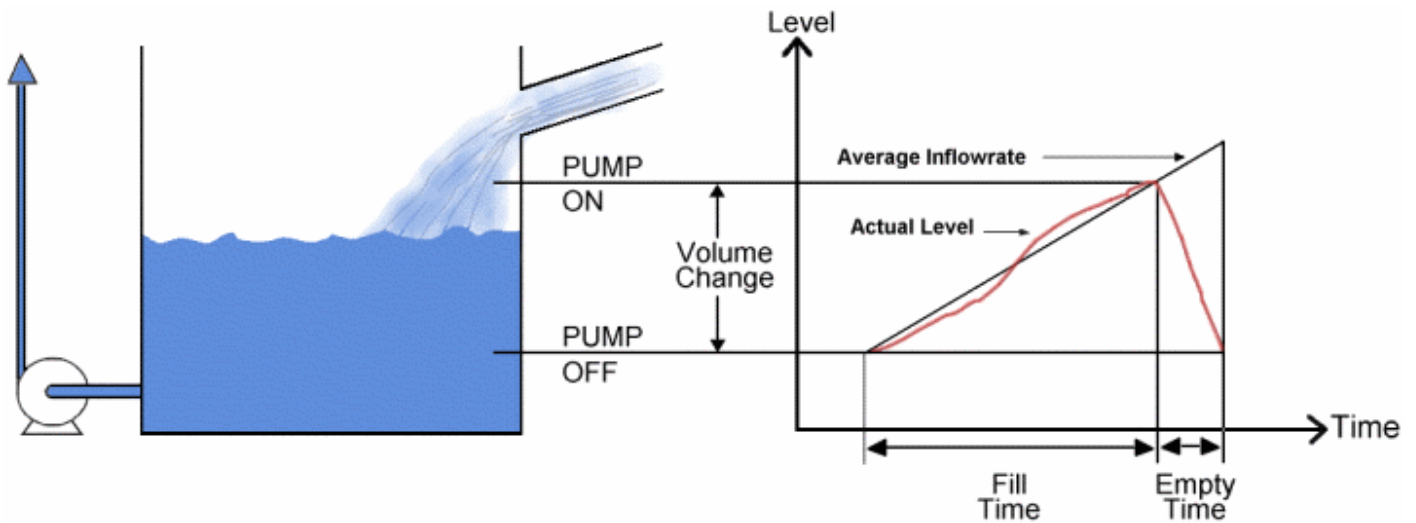
HOW IT WORKS

A displacement flowmeter can be made by filling a tank to a known high level, then blocking the inflow while pumping the tank down to a low level, shutting the pump OFF then unblocking the inflow to refill the tank, and repeating the cycle. Multiplying the number of fill cycles times the volume change per cycle gives an accurate account of the total flow.

In a typical lift station it is impractical to block the inflow. The PUMPHLO flowmeter calculates the average inflow rate while the pumps are OFF. Projecting this rate to continue while the pumps are drawing down the level eliminates the need to block the inflow.

At start-up, the sump volume change is calculated by the user based on sump dimensions and pump ON/OFF level switch settings, and is manually entered into the microprocessor by a keypad similar to a touch tone telephone.

An isolated contact closure is wired from each pump motor starter to the PUMPHLO flowmeter to provide the timing signals and the system is ready to operate.



STANDARD SPECIFICATIONS

Input Signals:

Pump Status Contact (2): ON < 100 Ohms
OFF > 10k Ohms

Inhibit Status Contact (1): Same as above

Increment Display Contact: Same as above

Level Input (1): 4-20 mA into 250 Ohms

Output Signals:

Pump Control (2): 5V DC pull down @ 20 mA max.

Alarm High/Low (2): 5V DC pull down @20 mA max.

Remote Totalizer (1): 24V DC pull down @ 100 mA max.

Proportional Sampler (1): 24V DC pull down @ 100 mA max.

Station Flowrate: 1-5V DC into > 10K Ohms &
4-20 mA into < 600 Ohms

Setting and Display Functions:

Twelve Key Entry Pad, internally mounted. Two line LCD display, 16 characters per line visible through window, used for configuration and display with password protection.

Top line display sequence includes:

- Station Flow Rate
- Pump 1 Flow Rate
- Pump 2 Flow Rate
- Run Time Hours Pumps 1 and 2
- Operating Cycles Pumps 1 and 2
- Level % of F.S.
- Displacement Volume
- Alarm/Pump Status: 3, 2, 1, 0

Bottom line: Total Flow

Terminal Connections:

Signal, power and grounding wiring use #6-32 Captive Wire-Clamping Plated Screw for 12 thru 22 AWG with or without lugs.

Mounting:

Surface Mount and 2 inch pipe mount hardware provided in plated steel.

Housing:

High impact, corrosion resistant, NEMA 4X & 12, solid thermoplastic body and cover with captive 304 stainless steel cover screws.

13.7H x 10.4W x 7.1D inches. (348H x 264W x 180D mm).

Wire entry:

Quantity 3-1/2 inch (12.7mm) conduit entry holes on bottom.

Operating Conditions:

Ambient Temperature 32 to 122°F (0 to 50°C)

With /HTR option -40 to 122°F (-40 to 50°C)

Ambient Humidity: 5 to 95% relative humidity.

Power Supply:

120V AC ± 10%, 50/60 Hz.

Fuse: 0.5 A.

Power: Normal 10 W, with /HTR option 38 W.

Weight:

10 lbs. (4.5 kg)

OPTIONAL SPECIFICATIONS

Alarm Relay (1) /AR1

Plug in type relay with Dual Form C (DPDT) contacts rated at minimum 100 mA @ 12V AC/12V DC and maximum 3 A @ 120V AC/28V DC resistive load. Screw terminals #4-40 with captive washer accepts 14 thru 20 AWG stripped wires.

Pump Control Relays (2) /CR2

Fully isolated solid state relay with one (1) Form A (SPST) normally open contact rated: 0.02 to 10 A rms @ 20 to 280 V AC continuous. Screw terminals #6-32 for spade or ring lugs.

Heater Thermostatic /HTR

Low heat density heating element (28 W) with thermostat set to operate below 50°F (10°C)

NOTE: Either 120 or 240V AC heating element supplied based on primary instrument power. See below.

240VAC Power /240

Factory wiring of power transformer jumpers to accommodate 240V AC ± 10% power instead of 120V AC. Change may be performed in the field. Consult factory for instructions.

Special Option /SPO: Consult factory for this option.

Left Terminal	Description	Right Terminal	Description
P1	Pump 1 Status Contact (Closed = On)	CT24	Remote Totalizer Power +24V DC
GND	Ground	TOT	Totalizer Output
P2	Pump 2 Status Contact (Closed = On)	SMP	Sampler Output
GND	Ground	+5V	
INH	Inhibit Contact (Closed = On)	APO	ALARM/PUMP 0 Outputs Status
GND	Ground	+5V	
INC	Momentary Closed to Increment Display	AP1	ALARM/PUMP 1 Output Status
GND	Ground	+5V	
1-5V	Station Flowrate V DC Output	AP2	ALARM/PUMP 2 Output Status
GND	Ground	+5V	
4-20	Station Flowrate mA Output	AP3	ALARM/PUMP 3 Output Status
GND	Ground	GND	AC Power Ground
LVL	Level 4-20 mA Input	NEUT	AC Power Neutral
+24V	DC Power Source	LINE	AC Power Hot

HOW TO ORDER:

Model	Options	Description
PF 100		Flowmeter
	/ AR1	Alarm Relay (1)
	/ CR2	Pump Control Relays (2)
	/ HTR	Heater Thermostatic
	/ 240	240V AC Power
	/ SPO	Special Option (Provide written desc.)

Sample Model No. PF100 / AR1 / CR2

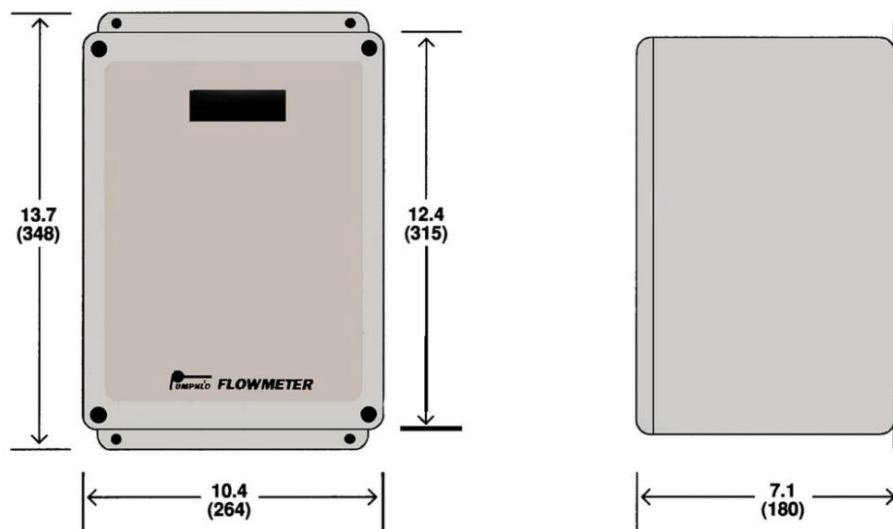
WARRANTY:

All PUMPHLO instruments are warranted free of defects in materials and workmanship for one full year from the date of original factory shipment. If returned, freight prepaid within the warranty period, and upon factory inspection, the cause of the malfunction is determined to be defective material or workmanship, the instrument will be repaired or replaced at no cost to the purchaser. Purchaser assumes the risk of loss or damage in transit and must return instrument in original shipping container or equivalent.

PUMPHLO will pay outgoing freight using the same shipping method purchaser used to return instrument to factory.

PUMPHLO Company shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of the instrument.

There are no other warranties expressed or implied.



Units: inches
(mm)



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