

Disposable Rotary Flowmeters

The Disposable Rotary Flow Meters offered by PendoTECH can conveniently measure flow in your process both accurately and cost effectively. They are the perfect alternative low-cost solution for use with tubing and bioprocess containers to the existing re-usable rotary flow meters on the market. They are perfect for filtration processes, chromatography and more. Even though they are called single use, they are also suitable for repeat or long-term use. They are available in a variety of sizes and different materials to insure process compatibility and scalability. The tubing slides over the hose barb on the rotor and may be affixed with a cable tie or a more secure method. The reusable flow sensor electronics connect to a flow monitor by a 3 foot (1 meter) electrical cable. Suitable monitors include the PendoTECH Flow Monitor, a PendoTECH PressureMAT-PLUS, or a PendoTECH Process Control System or other qualified 3rd party monitors.

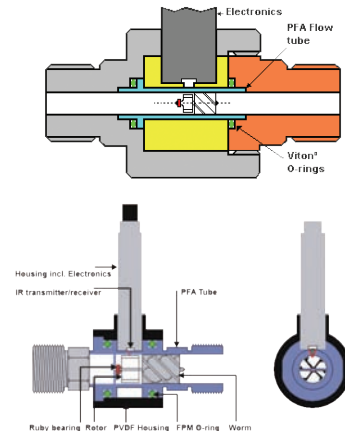


Sensor Features

- Available with hose barb fittings from ¼ to ¾ inch and a flow range of 30 mL/min to 38 L/min
- Can be used to measure total flow in addition to flow rate
- Can be gamma irradiated with tubing and bag assemblies
- 1% accuracy
- Wide operating temperature range (-20 to 80C)
- Fluid path materials meet USP Class VI
- Maybe be autoclaved to 140C

How it Works and Connection to Monitors

The flow sensor works by measuring the rotations of the rotor that is in the flow path. The rotor rotates on a ruby bearing and is the only moving part. The rotor blades reflect an infrared light beam and each rotation measured is converted to an electrical pulse that is received by the flow monitor which has a "pulse accumulator" that counts the pulses. The rotations per second are converted to volume/minute by a factor called the *pulse constant*. The *pulse constant* is different for each rotor size and standard values are available. For best accuracy with fluids of viscosity much different than water, the pulse constant can be easily calculated by measuring a known volume and setting the monitor to count the pulses. The pulse constant is then calculated by the pulse counted divided by the volume.

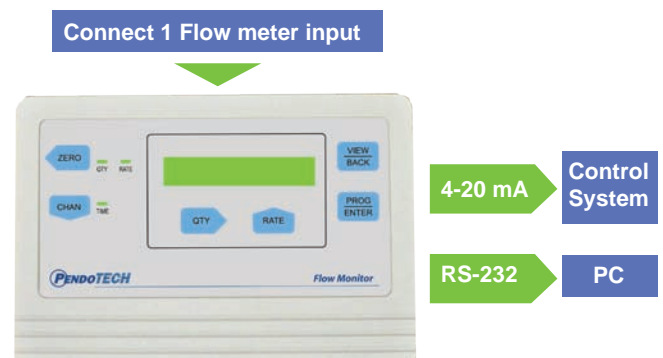


Flow Monitor

The PendoTECH Flow Monitor is a high quality, reliable microcomputer-based process monitoring instrument. It has been designed to provide precision liquid measurement, value monitoring, & data communication for a variety of applications. It also has the ability to measure totalized volume in addition to present flow rate. This can use useful in applications such as filtration and diafiltration and can be used an alternative to a scale to measure total flow.

Monitor - The pulse constant is permanently saved in non-volatile memory. User can access all the function of the unit through the menu-driven integrated keypad and LCD. Multicolored front panel LED's indicate the status. There is on-board audio annunciation for alarms and keypad key activation.

Transmitter - Data can be collection to a PC via the RS-232 serial port using the unit report feature where monitored information can be sent based on alarms, service time or set schedules. The 4-20mA output can be used to integrate the unit to a process control system such as a PLC or DeltaV. Medical- style input and output connector plugs and shielded cables are used to enhance operating reliability and eliminate ambient noise from affecting measurements.



Flow Specification Table

Flow Meter Specifications	PDKT-FM 22WV ^	PDKT-FM 23WV ^	PDKT-FM 24WV
(based on water)			COMING SOON
Connection	1/4" hose barb	1/2" hose barb	3/4" hose barb
Fluids	Liquids	Liquids	Liquids
Flow Range	0.03 - 2 L/min	0.3 - 20 L/min	2 - 38 L/min
Fluid Path Materials	PVDF, ruby glass bearing	PVDF, ruby glass bearing	PVDF, ruby glass bearing
Approx. Turndown Ratio	17:1	13:1	14:1
Accuracy (linearity deviation)	+/-1%	+/-2%	+/-3%
Repeatability	<0.15%	<0.15%	<0.15%
Standard Pulse Constant	100,000 pulses/L	4,500 pulses/L	2,050 pulses/L
Operating Temperature	-20 - 80C	-20 - 80C	-20 - 80C
Static Temperature	-20 to 100C	-20 to 100C	-20 to 100C
Viscosity Range	0.8 - 10 cP	0.8 - 10 cP	0.8 - 10 cP
Max. Operating Pressure @ 20C	25 Bar	15 Bar	10 Bar
Length	2 inches (53mm)	2.5 inches (63mm)	2.9 inches (73 mm)
Fluid Path Materials	PVDF, ruby glass bearing	PVDF, ruby glass bearing	PVDF, ruby glass bearing

Also available in PFA (teflon)

Re-usable Cables

PDKT-FM-22WV-E	Electronic assembly for one PVDF rotor with 1/4 inch hose barb (includes one rotor)
PDKT-FM-23WV-E	Electronic assembly for one PVDF rotor with 1/2 inch hose barb (includes one rotor)
PDKT-FM-24WV-E	Electronic assembly for one PVDF rotor with 3/4 inch hose barb (includes one rotor)

Electronics - 3 wires - +5VDC Power (Red), Common Ground (Black or Silver), 5V Square Output (White), 34 mA Power



Flow Monitor Monitor Number FMT1 Specification Table

System Component	Specifications
Enclosure	Size-Weight 6.3x4.3x1.3 (160x110x33 mm), 10.5 oz (300 gm) ABS Enclosure NEMA 4X front panel/surface mount
Power Inlet	2.1 mm center pos 10-16 VDC
Sensor Input	One flow meter input to measure 5V square wave, 3.5mm three conductor plug or screw terminal plug (option) sleeve=gnd ring=sig tip=excitation
Analog Output (4-20mA)	0-20.000mA source z-out > 2.0 meg ohms accuracy ±0.005% (typ) stability ±10ppm/°C sleeve=n/c ring=neg tip=pos
RS232 Serial Output	3.5 mm audio stereo plug EIA/TIA 232D (RS-232C) full duplex 2400bps sleeve=gnd ring=txd tip=rx
Environment	0-55°C, 0-95% RH non-condense, ship-store -20° to +85°C, 30 min warm to rated accuracy
Regulatory Compliances	FCC Part 15 Class A, Part 68 5TUUSA-23969-DT-E, UL/CSA/VDE power adapter, CE

System includes: Instrument, User Guide, power adapter, 4-20mA output cable (part number FMT-ANALOG)
Option: RS232 cable for data collection to a PC (part number FMT-RS232)