



PULSARflow

500 series

PULSAR
Process Measurement

Description

Flow measurement using ultrasonic Doppler technology is accepted as a reliable, non-invasive method of indicating liquid and slurry flow in pipes, where high accuracy is simply not required.

The Pulsarflow 500 series utilises this technique to provide cost effective flow monitoring and switch point output.

There are three units in the range, **Pulsarflow 510 and 515**, both general purpose units system and **Pulsarflow 511** for use in flammable atmospheres (approval pending)

Application

The Pulsarflow 500 series is capable of operating in general flow measurement applications with velocities from 0.3m/second to 3.5m/second on liquids and slurries. (The Pulsarflow 515 offers higher flow capacity.)

Operation

Pulsarflow 500 series is a non-invasive pipe-mounted liquid indicator with analogue and switch output. The unique design combines both sensor and electronics in a single robust stainless steel enclosure which allows quick and easy installation on the outside of a metal or plastic pipe. Pulsarflow 500 series has internal transmit and receive transducers which detect ultrasonic reflections from particles (minimum particle size 100 microns > 150ppm) or air inclusions in the liquid or slurry. The change in frequency detected from these reflections is proportional to the velocity of the particle in the flow, and therefore can be converted by the system into a flow indication. It is possible, on the majority of liquids, to indicate the flowrate and provide a repeatable switching point on higher or lower than desired flow.

Each unit has ease of installation and calibration as a key feature, having a single button set up with status feed-back during initial calibration from red and green LEDs. The Pulsarflow 500 series has ingress protection to IP68. The rugged design provides a high degree of protection from bump, shock and vibration within a typical industrial environment.



Typical Industries

Chemical
Food and Drink
Mineral Extraction
Pharmaceutical
Power Generation
Pulp and Paper
Sewage and Water Treatment

Typical Applications for the Pulsarflow 500 Range

Activated carbon slurries
Aerated liquids
Coal slurries
Cooling water circulation
Filter back wash
Fly ash slurries
Limestone slurries
Oil/coal mixtures
Paint
Paper slurry/stock
Primary sewage and sludge
Raw sewage
Resin slurries
Return activated sludge
River water
Secondary effluent
Soap solutions
Spent acids
Taconite slurries
Tertiary effluent
Thickened or digested sludge

500 Series
non invasive flow switches

Pulsar Process
Measurement Ltd.

Oak House
Bromyard Road
Worcester WR2 5HP
England.

Telephone:
+44 (0)870 6039112

Fax:
+44 (0)870 6039114

e mail:
info@pulsar-pm.com

Web site:
www.pulsar-pm.com

Specifying information and wiring diagrams are available on request from Pulsar

Technical Specification: 500 Series

Outputs

Pulsarflow 510/515	1 volt free contact, programmable 1A at 30V dc SPCO
	4-20mA auto scaled
	0-10 V dc analogue
Pulsarflow 511 (Approval pending)	0-10 V dc analogue

Power requirements

22-36Vdc, 120mA typically

Operating temperatures

-40°C to +80°C

Ingress protection rating

IP68

Velocity range

Minimum particle size in liquid: 100 microns > 200ppm 510 unit 0.3m/sec to 3.5m/sec 515 unit 0.5m/sec to 6m/sec

Size / weight

Size: 118mm L x 70mm H x 65mm/Weight:1kg

Pipe diameter

30mm min. diameter up to 400mm max.

Pipe wall thickness

Metal or rigid plastic pipe up to 10mm

Flammable atmospheres approval

(Pending) EEx m IIC T6 (Pulsarflow 511 only)

Installation

By means of a suitable fixing strap, hose clip or similar (having an 11mm max. width) using a silicone grease coupler material applied to the base of the sensor and the pipe. Silicone compound from Dow Corning DC-4 or equal.

Cable entry

M20 x 1.5mm for gland

Repeatability / accuracy

± 7.5%, application dependent

Housing material

Type 316 stainless steel investment casting

CE / EMC Approval

Complies with BS EN 50081-1:1992 for emissions & BS EN 50082-2:1995 for immunity

Bump, shock & vibration

Complies with BS 60068



Installation Recommendations

The Pulsarflow units should be mounted in direct contact with the outside wall of the pipe, which should be clean and free from any loose or flaking material. The sensor to pipe contact area should be coated with non melting waterproof silicone compound to provide a direct acoustic coupling. A suitable strap, is provided to firmly position and clamp the sensor in place.

The sensor must be mounted to coincide with liquid flow, for example on pipes where there may be large inclusions of air running along the top of the section of the pipe. It is recommended that the Pulsarflow unit is mounted some degrees off vertical. Once clamped on to the pipe the 510/515 unit's lid is unscrewed (the four captive screws are retained by the lid) and electrical connections made to the terminal strip. Commissioning and set-up are simple and straightforward. The set-up consists of a one button calibration routine to establish flow rate, and to enable an alarm setting with an option for 'high flow' or for 'low flow'.

Represented by



Our policy is one of constant development and improvement. Pulsar reserve the right to amend technical details as necessary.

TS 009 3/00 MP