



Pulsar Guard 2001

INSTRUCTION MANUAL

PULSARGUARD 2001 (FOURTH EDITION)

November 2012

Part Number PG-2001-4

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TECHNICAL ENQUIRIES

Please contact Pulsar Process Measurement Limited for technical support.

COMMENTS AND SUGGESTIONS

If you have any comments or suggestions about this product, then please contact:

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Start Here...

Congratulations on your purchase of a Pulsarguard 2001 sensor. This quality product has been developed over many years and represents the latest in high technology ultrasonic sand detection.

It has been designed to give you years of trouble-free performance, and a few minutes spent reading this operating manual will ensure that your installation is as simple as possible.

About this Manual

It is important that this manual is referred to for correct installation and operation.

There are various parts of the manual that offer additional help or information as shown:



Tips

TIP

At various parts of this manual you will find tips to help you.

Additional Information

Additional Information

At various parts of the manual, you will find sections like this that explain specific items in more detail.



Functional Description

The Pulsarguard 2001 is an ultrasonic sensor that has been designed primarily for use by the oil and gas industry in conjunction with the Pulsar SandAlert sand monitoring system.

This Sand monitoring sensor is more immune than previous sensors to the noise that can be received from high flowing wells.

The unit can be used as a direct replacement for the previous sensor (still available and called PULSAR guard 2011).

Product Specification

Physical

Dimensions overall	118 (long) x 70 (height) x 65 (wide) mm
Weight	Nominal 1.5 kg
Case material/description	Type 316 Stainless Steel (investment casting)
Cable entry detail	1 x M20 Brass (fitted with EMC gland)

Environmental

IP Rating (electronics housing)	IP68
Max. & Min. temperature (electronics)	-20 °C to +80 °C
CE approval	EMC approval to BS EN 50081-1:1992 for emissions BS EN50082-2: 1995 for immunity BS EN61010-1:1993 for Low Voltage Directive

Hazardous Area Approval

ATEX IS	II 1 G, EEx ia IIC T4 (T _{amb} = -20°C to+80°C).Cert No.Sira04ATEX2110
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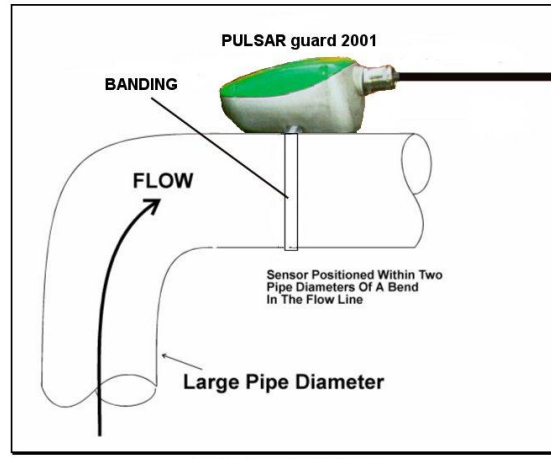
Outputs

Analogue output	0-5volts.
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Supply

Power supply	DC 24V via Galvanic or Zener Barrier
Current Consumption	Less than 20mA

Sensor Positioning



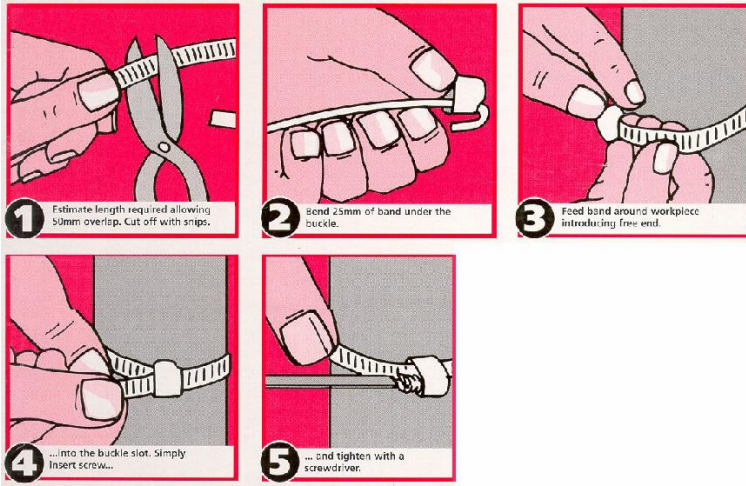
Sensor Positioning

The acoustic sensor detects the high frequency sound generated by the impacts of sand and other solid particles e.g. proppant on the inside of the pipe wall. Therefore, the best results will be obtained if the sensor is positioned on or just after a bend (within two pipe diameters of the bend), or fixed restriction to the flow. See Figure above.

Do not position the sensor in close proximity to a choke, or other variable restriction, since changes in the choke position may affect the SIR readings. It may be necessary to experiment with the sensor position to obtain the best results.

Details for use of the 11mm banding

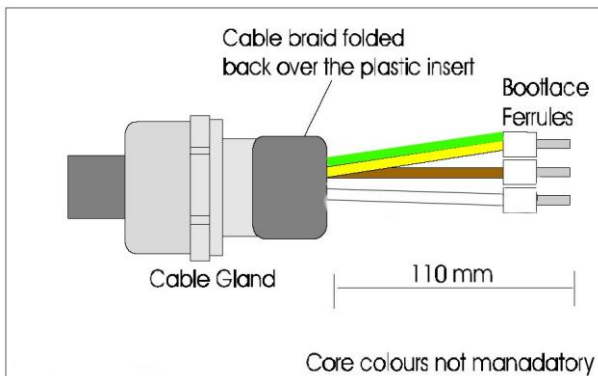
This is an acoustic sensor and the coupling between the pipe and the sensor is critical, make sure the pipe is clean and smooth (use sandpaper if necessary to clear the surface of paint or rust).



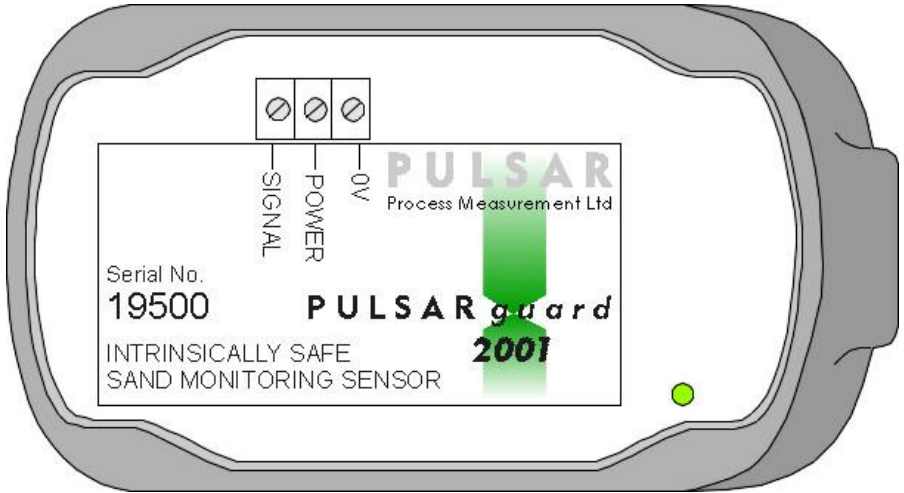
Power Supply Requirements

This unit is a hazardous area product and certified to be used in Zone 0, therefore it must be supplied via a suitable 28V safety barrier, either zener or galvanic. Suitable barriers are contained with the SandAlert portable and the SandAlert lite.

Wiring Detail



Connections are as follows: Cable screen should be earthed at the barrier end (SCREEN). The Power terminal should be supplied with 24V from a 28V barrier (POWER+). The signal and power returns (grounds) connect to the 0V terminal. The signal terminal should connect (SIGNAL+) via a barrier to the processing unit. Ensure that the lid is refitted and all screws are tightened to ensure a good seal.



Instructions specific to hazardous area installations

(Reference European ATEX Directive 94/9/EC, Annex II, 1.0.6.)

The following instructions apply to equipment covered by certificate number Sira 04ATEX2110:

1. The equipment may be used with flammable gases and vapours with apparatus groups IIC, IIB, and IIA with temperature classes T1, T2, T3 and T4.
2. The equipment is only certified for use in ambient temperatures in the range -20°C to +80°C and should not be used outside this range.
3. Installation shall be carried out in accordance with the applicable code of practice by suitably-trained personnel.
4. Repair of this equipment shall be carried out in accordance with the applicable code of practice.
5. Certification marking as detailed in D-804-0594-A.
6. If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

Aggressive Substances - e.g. acidic liquids or gases that may attack metals or solvents that may affect polymeric materials.

Suitable Precautions - e.g. regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.

7. The manufacturer should note that, on being put into service, the equipment must be accompanied by a translation of the instructions in the language or languages of the country in which the equipment is to be used and by the instructions in the original language.

EC DECLARATION OF CONFORMITY

Pulsar Process Measurement Ltd. No. DC300412

Pulsar Process Measurement Ltd. Declares under our sole responsibility that the product(s) listed below conform with the relevant provisions of directive 94/9/EC of 23rd March 1994.

Product(s): Pulsarguard 2001 Ultrasonic Sensor

Notified Body: Sira Certification Service (0518)
Rake Lane
Eccleston
Chester
CH4 9JN

Conformity has been demonstrated with reference to the following documentation:

EC type examination certificate Sira 04ATEX2110 dated 28th April 04

Quality Assurance Notification Sira 02ATEXM230 dated 11th December 02

Compliance with the Essential Health & Safety Requirements has been assessed by reference to the following standards:

EN 60079:0

EN 60079:11

S. Lycett

Date 30-4-12

Steve Lycett – R & D Manager, Pulsar Process Measurement Ltd, Cardinal Building, Enigma Commercial Centre, Sandy's Road, Malvern, Worcestershire, WR14 1JJ