

## **GEMS SENSORS & CONTROLS**

### **OPERATING & INSTALLATION INSTRUCTIONS SERIES 33XX**

**PLEASE READ CAREFULLY BEFORE INSTALLING**

**Part Number:** 560550-0116

**Issue:** A

### **INTRODUCTION**

The Series 33XX pressure transducers use molecularly bonded high output strain gauges to provide 100mV output for full range pressure, when used with a 10V d.c. power supply.

Series 33XX high output pressure transducers and transmitters are fitted with an Asic providing various optional (at time of order) voltage outputs, and a 4-20mA current output capable of being used in control and indicating loops without further amplification.

Series 33XX with the CE Mark conform with the essential protection requirements of the EMC Directive 2004/108/EC by certified type testing to BS EN61326-1:2006 and EN61326-2-3:2006.

Series 33XX with the CE0086 mark also complies with the requirements of the Pressure Equipment Regulations 1999 and is classed as a safety accessory and can be used as a safety-related device on Category IV pressure equipment. No other product should be used as "Safety Accessories" as defined by the PED Article 1, Paragraph 2.1.3.

### **HAZARDOUS PRODUCTS**

The Consumer Protection Act of 1987, Section 6 of the Health and Safety at Work Act 1974 and the Control of Substances Hazardous to Health Regulations 1988 require that we advise recipients and users of our products of any potential hazards associated with their storage, handling or use.

The products which our Company supplies may be classified as Electrical, Electro-Mechanical and Electronic equipment.

These products are tested and supplied in accordance with our published specifications or individual special requirements that are agreed in writing at time of order. They are constructed so as not to affect adversely the safety of persons and property when properly installed, maintained and used by qualified personnel, in the applications for which they were designed and manufactured.

**Conformity with the requirements of the CE mark only applies when the installation conditions described in these instructions have been met. For units supplied without a cable assembly connection to the transducer must be accomplished using Gems Sensors approved cable. See APPROVED CABLE section.**

## **GENERAL**

- \* Transducer should not be subjected to greater than the maximum allowable pressure (P.S.) / Temperature (T.S) as defined on the transducer label.
- \* Transducer should not be subjected to mechanical impact.
- \* In the event of fire the end user must ensure that the system pressure is vented to a safe area.
- \* The effects of decomposition of unstable fluids should be considered by the user when placing this device in service.
- \* The pressure transducer has no means of draining or venting, this must be performed by another component in the end users system.
- \* Pressure range must be compatible with the maximum pressure being measured.
- \* Pressure media must be compatible with the transducer/transmitter wetted parts listed in these instructions.
- \* Liquid must not be allowed to freeze in the pressure port.
- \* The gasket must be fitted under the electrical connector.
- \* Supply voltage must not exceed the value stated on the unit label.

## **MECHANICAL INSTALLATION**

**Mounting:** Pressure Transducer is designed to be attached by the coupling thread only. Omni-directional, self supported directly into the pipework. Use a 22mm spanner on the hexagon provided to apply a maximum torque of 15Nm. The Customer must ensure that the pressure seal is suitable for the application. If in doubt contact Gems Sensors.

## **ELECTRICAL INSTALLATION**

All types with the CE Mark include suppression devices providing EMC protection to EN 61000-4-2, EN 61000-4-3, EN 61000-4-4 and EN61000-4-6. Conformity with the requirements of the CE mark only applies when connection is made with Gems Sensors approved cable, see APPROVED CABLE section, and is connected as shown below:-

## **APPROVED CABLE**

Gems sensors uses cables comprising 2, 3 or 4 colour-coded cores, enclosed by an aluminised polyester screen where the screen is in intimate contact with a separate drain wire. The outer sheath is chrome PVC and overall diameter is approximately 4 mm.

## **OPERATION**

Having installed the transducers as instructed, they are ready for use. The transducer should not be removed whilst the system is at pressure. Before applying power, check that the correct polarity and excitation levels are being applied. See Table 1 for electrical connections.

## **CALIBRATION**

Transducers are calibrated to the datum requested at time of order; this can be identified by the sixth letter of the identification code as follows:-

A - Absolute datum

G - Gauge datum vented to atmosphere via the electrical connector or cable

## **LOAD CHARACTERISTICS** (4-20mA Current Output)

The total resistive load in the loop (to include all the cable resistance) can be from 'zero to 50 x (supply volts -7.5) ohms' e.g. with a 24V d.c. supply the permissible load is from zero up to 825 ohms.

## **OPERATIONAL LIFE:**

Limited to 100M cycles to maximum allowable pressure.

## **WARRANTY**

We guarantee this instrument against faulty workmanship and material for a period of two years from date of delivery. The Company undertake to repair, free of charge, ex-works any instrument found to be defective within the specified period providing the instrument has been used within the specification in accordance with these instructions and has not been misused in any way.

Detailed notice of such defects and satisfactory proof thereof must be given to the Company immediately after the discovery and the goods are to be returned free of charge to the Company, carefully packed and accompanied by a detailed failure report. See "RETURN TO FACTORY".

## **WETTED PARTS**

17-4 PH stainless steel plus Nickel Braze to BS1845 : NK3/HTN2.

## **SERVICING**

The transducer cannot be repaired locally and if damaged should be returned to ourselves at the address shown below or to accredited dealers when a replacement/repair is required:

Gems Sensors & Controls  
Lennox Road  
Basingstoke  
Hants. RG22 4AW

Gems Sensors Inc  
1 Cowles Road  
Plainville, CT 06062  
U.S.A.

## **RETURN TO FACTORY**

**PLEASE NOTE:** To comply with Health and Safety requirements, the instrument must be clean and safe to handle and accompanied by a formal statement to that effect duly signed by an authorised officer of the Company.

Any instrument returned without certification will be quarantined and no action will occur until cleared. It may ultimately be returned to you and subject to a transportation charge.

## **MAINTENANCE**

**Routine Inspection:** Not required except for periodic inspection of the cable and connector to ensure that these are neither damaged nor softened by incompatible liquid.

**TABLE 1**  
**CONNECTIONS 33XX SERIES**

<b>M12 CONNECTOR – CODE E</b>		
<b>OUTPUT IDENTIFICATION</b>	<b>CURRENT OUTPUT 4-20 mA</b>	<b>VOLTAGE OUTPUT</b>
1	POSITIVE	SUPPLY POSITIVE
2	DO NOT CONNECT	PRESSURE OUTPUT
3	NEGATIVE	COMMON
4	DO NOT CONNECT	DO NOT CONNECT

<b>INDUSTRIAL DIN CLASS C (GDS 207 CONNECTOR) – CODE B</b>		
<b>OUTPUT IDENTIFICATION</b>	<b>CURRENT OUTPUT 4-20 mA</b>	<b>VOLTAGE OUTPUT</b>
1	DO NOT CONNECT	PRESSURE OUTPUT
2	POSITIVE	SUPPLY POSITIVE
3	DO NOT CONNECT	DO NOT CONNECT
4	NEGATIVE	COMMON

<b>INDUSTRIAL DIN CLASS C (GDS 207 CONNECTOR) – CODE K</b>		
<b>OUTPUT IDENTIFICATION</b>	<b>CURRENT OUTPUT 4-20 mA</b>	<b>VOLTAGE OUTPUT</b>
1	POSITIVE	SUPPLY POSITIVE
2	NEGATIVE	COMMON
3	DO NOT CONNECT	PRESSURE OUTPUT
4	DO NOT CONNECT	DO NOT CONNECT



## EC DECLARATION OF CONFORMITY

**Manufacturers Name:** Gems Sensors & Controls  
**Manufacturers Address:** Lennox Road, Basingstoke, Hants, RG22 4AW  
**Product Type:** 33XX  
**Description:** Strain Gauge Pressure Transducers  
**Date of Issue:** 20<sup>th</sup> February 2009

Gems Sensors & Controls hereby declares that the product above conforms with the essential protection requirements of the following EC Directives:

**PED:** *Equipment marked CE0086 complies with the requirements of the Pressure Equipment Directive 97/23/EC and is classed as a safety accessory and can be used as a safety-related device on Category IV pressure equipment. Conformity assessment procedure followed is to Modules B+D. Module B EC Type examination certificate number CE542059 issued by BSI 0086 Maylands Avenue, Hemel Hempstead, Herts, HP2 4SQ, England. The notified body monitoring the quality assurance system is BSI 0086 Maylands Avenue, Hemel Hempstead, Herts, HP2 4SQ, England. The Technical Specifications used are Gems Sensors Design Standards.*

**SAFETY:** *“For the equipment within which this component is installed to comply with the Low Voltage Directive (73/23/EEC), this product must be powered from a Safety Extra Low Voltage (SELV) source of 42V peak maximum.*

*When the power source is derived from a transformer this must conform to EN 60742 or equivalent, with intrinsic short circuit protection. The power source to this component must also incorporate suitable over-current protection related to the current rating of this component”*

**This apparatus must not be put into service until the equipment into which it is to be incorporated has been declared in conformity with the provisions of the relevant New Approach Directive.**

Signed for and on behalf of  
Gems Sensors & Controls  
N Kettlewell  
Engineering Manager  
England