



Pressure Sensors



Gems™
Sensors & Controls

Welcome to Gems Sensors

Pressure Catalogue

INTRODUCTION

This catalogue describes our best selling pressure sensors, from economical OEM to aerospace quality transducers we have the choice and variety of configurations for most applications. The catalogue is divided into sections, for each range of products, and includes special pages describing our immersible sensors. Dimensional drawings, specifications and photographs are included providing comprehensive technical information for designers and specifiers.

We want to make it as easy as possible for you to do business with Gems. This catalogue should provide you with all you need to know about a pressure transducer or transmitter and includes a section for accessories and additional information. Should you not find what you are looking for please do not hesitate to contact your nearest Gems Sales Office or Representative. A list of our Representatives can be found at the back of this catalogue.

We understand that some applications require a bespoke sensor. Our engineers are ready to offer comprehensive advice and, whether it is a special connector, a different label or a completely re-designed package, we can provide timely cost effective solutions.

Gems also manufactures pressure switches, level sensors, flow sensors, and tank sight level indicators some of which are illustrated on page 71. Many of these products are available ex stock through our express shipping services in Europe and North America. Please contact your sales office for full details.

For the last 40 years we have listened, and responded, to our customer needs, helping our OEM customers to maintain a competitive edge and, providing end users with reliable solutions to the most demanding pressure measuring problems.



Visit us at: www.gems-sensors.co.uk or www.gemssensors.com

The fastest way to more information:

...just complete the form below and fax it to your nearest sales office (address on back page)

From:

Name	Company
Department.....	Street/PO Box
Post Code/City.....	Telephone
Email	Fax

I have the following application.....

and I would like to talk with one of your sales engineers. Please call me (date/time)

Please send me more information on:

- | | |
|--|---|
| <input type="checkbox"/> Gems Electro Optic Level Switches | <input type="checkbox"/> Gems Single Point Level Switches |
| <input type="checkbox"/> Gems Multi Point Level Switches | <input type="checkbox"/> Gems Flow Indicators |
| <input type="checkbox"/> Gems Flow Switches | <input type="checkbox"/> Gems Pressure Switches |

www.gemssensors.com

5000 Series Low Range Pressure Transducer

- ▶ Immersible and general purpose models
- ▶ Open faced for viscous liquids
- ▶ High proof pressures

The 5000 Series features a sturdy ceramic diaphragm and precision capacitance technology to detect minute pressure variations, while withstanding large pressure spikes. The tough ceramic sensor is housed in a stainless steel case to ensure performance in the most demanding applications. Both voltage and 4-20mA outputs are available at time of order. A switch and potentiometer can be accessed for field adjustment of range with 3:1 ranging capability.

Specifications

Input

Pressure Range	0 to 25mb to 0 to 1bar
Proof Pressure	2bar for ranges 200mb and below 4bar for ranges 201mb to 350mb 7bar ranges 351mb to 1bar
Burst Pressure	3bar for 70mb and below 4bar for 71mb to 200mb 6bar for 201mb to 350mb 10bar for bar ranges 351mb to 1bar
Fatigue Life	10 million FS cycles

Performance

Long Term Stability	.25% span/annum
Accuracy	.2% span max
Thermal Error	2% span max
Compensated Temperatures	-20°C to 60°C (-5° to 140°F)
Operating Temperatures	-25°C to +85°C (-15° to 185°F) Electrical Code G and L -20°C to +50°C (-5° to 120°F) Electrical Code M and 3 -40°C to +100°C (-40° to 212°F) Process media
Zero Tolerance	0.1% span
Span Tolerance	0.1% span
Mounting Effects	.25% span max
Response Time	5ms
Supply Voltage Sensitivity	.01% span/volt
Zero Adjustment	±10% (by potentiometer)
Span Adjustment	±10% (by potentiometer)

Mechanical Configuration

Pressure Port	(See ordering guide)
*Wetted Parts	S/S to UNS 31803; Inconel 625, Ceramic & Nitrile
Electrical Connection	(See ordering guide)
Enclosure	Code M IP68 Submersible Code G IP65
Approvals	CE, Lloyds Register Exll 1G, EEx ia IIB T4 (-20<Ta<+75°C)
Weight	330gms (excluding cable)

Individual Specifications

Voltage Output units

Output	(See ordering guide)
Supply Voltage (Vs)	8 to 35V Max

Current Output Unit

Output	4-20mA (2 wire)
Supply Voltage (Vs)	9 to 35Vdc
Max. Loop Resistance	(Vs-9) x 50 ohms



Lloyds Register



How to Order

Use the **Bold** characters from the chart below to construct a product code

SELECT

Series **5000**

Output

- B** - 4-20mA **C** - 1-6Vdc **F** - 0.1-5.1Vdc
- H** - 1-5Vdc **J** - 0.5-5.5Vdc **R** - 0-5Vdc

Pressure Datum

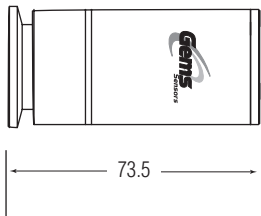
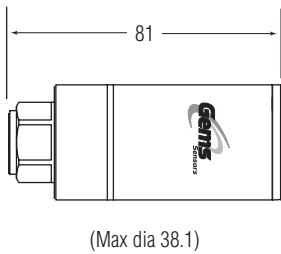
G - Gauge

Pressure range code*

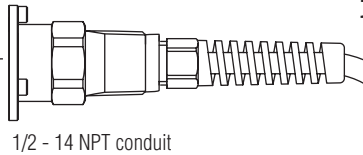
- M70** - 25 to 70mb
- N20** - 71mb to 200mb
- N35** - 201mb to 350mb
- A10** - 351mb to 1bar

* specify range setting required at time of order
eg. 0 to 75mb, 0 to 1mWG etc

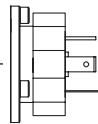
- 5000** - Series
 - B** - Output
 - G** - Pressure Datum
 - N20** - Pressure range code
 - BK** - Electrical Connection
 - M** - Pressure Connection
 - 3** - Electrical Connection
 - 001** - Cable Length
 - A** - Static/Thermal Error Band
- Static/Thermal Error Band**
A - 0.25%/2%
 - Cable Length**
000 - No cable
001 - 1 metre
999 - 999 metres etc
 - Approvals**
3 - CE Marked
G - ATEX approved ExII 1G
EEx ia IIB T4 (-20< Ta <+75°)
 - Electrical Connection**
3 - 1/2 - 14 NPT conduit
G - Fixed Plug to DIN 43650,
Mating Connector Supplied
L - M12 x 1 (5 pin)
M - Immersible Cable Assembly, IP68
 - Pressure Connection**
00 - G1/4 Internal
0F - KF25 Flange
AK - G 1/4 External
BK - 1/4 - 18NPT External
KK - 7/16 - 20unf - 3A External
MK - M14x1.5 External
19 - Acetal nose cone



Flange Face Diameter (1.57/40)



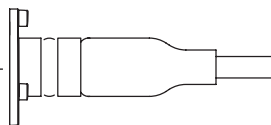
Code 3



Code G



Code L

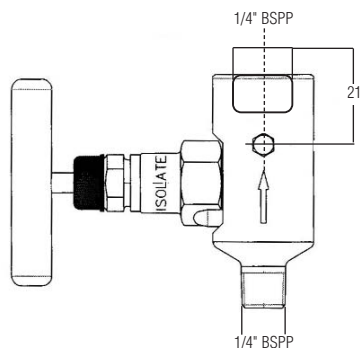


Code M

Electrical Connection	Wiring mA			Wiring Voltage			
	+	-	EARTH	+IN	OV	+OP	EARTH
G DIN	PIN 1	2	4	1	2	3	4
M IP68 CABLE	RED	BLUE	DRAIN	RED	WHITE	YELLOW	DRAIN
3 CONDUIT	RED	BLUE	DRAIN	RED	WHITE	YELLOW	DRAIN

Isolating Needle Valve

Part No. 557740

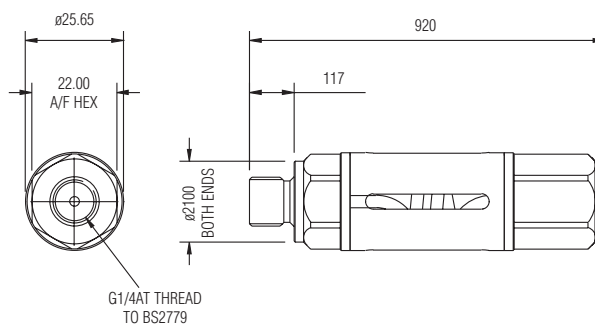


Cable and Cable Assemblies

Part No.	Sheath	Operating Temperature
557692	Polyurethane	-20 to +50°C
557725	Hytrel	-40 to +100°C
496687	Polylofin	-54 to 120°C

Temperature Isolator 558564 - 0001

Pigtail, siphon tubes and other forms of temperature isolation are used to reduce media temperature at the transducer. This self-contained 316 SS temperature isolator is packaged in a small housing 92mm long, and reduces the media temperature at the transducer, to about a fifth (transducer temp = media temp/5 + ambient temp). Max. temp. 400°C, max. pressure 400bar.



Cable Assemblies: 3100/3200 Series pages 22 and 24

557703 - 01M0	12mm x 1 4pin electrical connector with 1metre cable
557703 - 02M0	12mm x 1 4pin electrical connector with 2metre cable
557703 - 03M0	12mm x 1 4pin electrical connector with 3metre cable
557703 - 04M0	12mm x 1 4pin electrical connector with 4metre cable
557703 - 05M0	12mm x 1 4pin electrical connector with 5metre cable

Accessories

Mounting Clamps

Generally our pressure transducers are supported by the piping they are mounted to, however when thin tubing, vibrations or large transducers are present then a mounting clamp is required. These clamps utilise a plastic-mounting bracket to

secure the transducer's outer case and a metal base strip to firmly attach the clamp to a surface.

Polypropylene -30 to 90°C	Polyamide -40 to 120°C	For Pressure Transducers	C	
499877-1000	499877-1001	4000 series (25 mm dia.)	64	
499877-1120	499877-1121	1200, 1600, 2200, 2600, 2800 series (28 mm dia.)	73	
499877-1500	499877-1501	4700, 5000 & 6700 series (38 mm dia.)	86	

Cylindrical Connectors

Part Number	Size	Temperature	For Use With	
166267-0006	10-6 Bayonet	-70 to 195°C	4000-C	
499532-0006	10-6 Bayonet	-54 to 120°C	4000-C 5000-C 1600-C 2600-C 2800-C 4700-C 6700-C	
499855-0001 Requires strain relief clamp 499855-0011	10-5 twist	-54 to 230°C	4000-N	
557702	DIN 72585	-40 to 140°C	3000-7	Drawing not available
557703-0000	12mm x 1 4pin	-20 to 120°C	3000-E	Drawing not available
557704-0000	12mm x 1 5pin	-20 to 120°C	4700-L, 5000-L 6700-L, 9000-L	Drawing not available

Square/Rectangular Connectors

Part Number	Type	Temperature	For Use With	
557254	DIN 43650A	-20 to 120°C	1600-G, 2600-G, 4700-G 5000-G, 6700-G, 1700-G, 1701-G	
557230	Industrial DIN connector	-20 to 120°C	1200-A, 2200-A	
557701	Amp Superseal	-40 to 125°C	3000-6	Drawing not available

Restrictors

In most applications quasi static pressure measurement is all that is required. Often, transient pressure pulses are present in the system and it is recommended that a rapid acting pressure snubber or a restrictor is fitted to protect the transmitter or transducer. These pulses are often classified as water or pipe hammer.

Pressure snubbers are widely available and generally employ a moving element to isolate the sensor from a pressure pulse. A high volume displacement is

usually necessary for satisfactory operation.

Since our pressure sensors require only a low volume displacement to actuate, these snubbers may not provide adequate protection. Our restrictors on the other hand attenuate high frequency pulses and only allow steady state or slow changes to pass through. These thread directly into 4000, 4700 and 6700 series, and also 22/2600 and 2800 with G1/4 threads. Available in stainless steel these are designed for hydraulic applications.

Description	Part Number	
Integral capillary 0.5mm diameter, 13.5mm long plus a bleed screw all in stainless steel	466175-0000	
This restrictor has a helical groove, approximately 0.5mm diameter and 56 mm long. Made in japanned steel.	557002	
As above but in stainless steel	557000-0002	

Industrial Bonded Seals

Description	Part Number	
Sealing for G1/4 thread. Nitrile in zinc plated steel, temperature range -40 to 100°C.	232646-0002	
Sealing for G1/4 thread. Viton in cadmium plated steel, temperature range -26 to 200°C.	499207-0002	
Sealing for G 1/8 thread. Nitrile in zinc plated steel, temperature range -40 to 100°C.	232646-0006	

Ingress Protection (IP) Codes

FIRST NUMERAL Protection against solid bodies		SECOND NUMERAL Protection against liquid	
		0	NO PROTECTION
Example: IP65 - equipment is dust-tight and protected against water jets		0	NO PROTECTION
		1	VERTICALLY DRIPPING WATER
0	NO PROTECTION	2	ANGLED DRIPPING WATER -75 TO 90°
1	OBJECTS GREATER THAN 50mm	3	SPRAYED WATER
2	OBJECTS GREATER THAN 12mm	4	SPLASHED WATER
3	OBJECTS GREATER THAN 2.5mm	5	WATER JETS
4	OBJECTS GREATER THAN 1.0mm	6	HEAVY SEAS (HOSE PROOF)
5	DUST-PROTECTED	7	EFFECTS OF IMMERSION TO 1 METER
6	DUST-TIGHT	8	INDEFINITE IMMERSION TO SPECIFIED DEPTH
6K	DUST TIGHT	9K	JET WASH PROOF

ELECTROMAGNETIC CAPABILITY

Meets the requirements for CE marketing of EN50081-2 for emissions and EN50082-2 for susceptibility.

TEST DATA:

- ▶ EN6100-4-2 Electrostatic Discharge. 8kV air discharge. 4kV contact discharge. Unit survived.
- ▶ ENV50140 Radiated RF Susceptibility. 10V/m, 80MHz-1GHz, 1kHz mod. Maximum recorded output error was $\leq \pm 1\%$.
- ▶ ENV50204 Radiated RF Susceptibility to Mobile Telephones. 10V/m, 900MHz Maximum recorded output error was $\leq \pm 1\%$.
- ▶ EN61000-4-4 Fast Burst Transient. 2kV. 5/50ns, 5kHz for 1 minute. Unit survived.
- ▶ ENV50141 Conducted RF Susceptibility. 10Vms. 1kHz mod. 150kHz - 80MHz. Maximum recorded output error was $\leq \pm 1\%$.

CE MARKING
The CE mark shows that a product complies with the requirements of all European Community Directives relevant to that product.

Also available from Gems

Electro Optic Level sensors

ELS-1100 ELS-1200

- ▶ Compact size
- ▶ Integral electronics
- ▶ No moving parts
- ▶ Simple installation



These level sensors use an infrared LED and receiver. When media is in contact with the prism the light is reflected onto the receiver. Manufactured in Polysulphone, the ELS is available in a variety of mountings, power requirements and electrical terminations.

Single Point Level Switches

Vertical Mounting

- ▶ Simple working principle
- ▶ Precise repeatability
- ▶ Cost effective

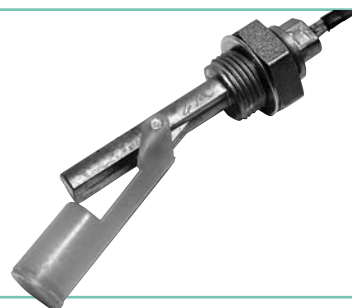


Gems has a large choice of single float level switches with designs for horizontal or vertical mounting. The wide variety of materials available mean compatibility with most media.

Horizontal Mounting

- ▶ Robust design
- ▶ High vibration and shock resistance
- ▶ Customer defined solutions available

Available with flanged or threaded mountings, the Gems multi level switches use the same durable technology as single point switches. With up to 7 switch points per unit and a choice of plastics, brass and stainless steel construction it is possible to configure a solution to almost any application.



Multiple Point Level Switches

- ▶ Bright visual indication
- ▶ Pulse, switch or voltage output options

Today's Rotorflow sensors combine the visual indication of flow with electronic outputs.



Flow Switches and Indicators

- ▶ Rugged, low maintenance design
- ▶ Flow rates from 0.005 to 380l/min

Flow switches are available in paddle, piston and shuttle types with a large choice of connections. Typical applications include machine tool flow monitoring, air conditioning, plastic moulding and laser cooling.



Pressure Switches

- ▶ Field-Adjustable or Factory Set Switches
- ▶ High Proof Pressure
- ▶ Rugged and Dependable

Gems offers a choice of pressure switches, from compact cylindrical models for OEM use, to larger, enclosed units for rugged process applications.



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N	Hypotech		Sales Hotline: + 47 32 80 7400 Fax Hotline: + 47 32 80 7401
NI	Parks Automation		Sales Hotline: +28 9077 7743 Fax Hotline: +28 9077 7794
P	Contimetra Instrumentos		Sales Hotline: + 351 214 203 900 Fax Hotline: + 351 214 203 901
E	Sistec S L		Sales Hotline: + 34 93 573 0950 Fax Hotline: + 34 93 573 0995
CH	Bachofen AG		Sales Hotline: + 41 1 944 1111 Fax Hotline: + 41 1 944 1233
TR	Elimko Electronics Imalet Ve		Sales Hotline: + 90 312 212 6450 Fax Hotline: + 90 312 212 4143
RSA	Transducer Technology		Sales Hotline: + 27 11 397 7733 Fax Hotline: + 27 11 425 2294
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