Pressure Sensors

Gems™
Sensors & Controls

2200 Series / 2600 Series - Universal Industrial Pressure Transducers

- Gauge, absolute, vacuum and compound pressure models available
- Submersible, general purpose and wash down enclosures
- High stability achieved by CVD sensing element
- Millivolt, voltage and current output models

The 2200 series features stability and accuracy in a variety of enclosure options. The 2600 series extends the packaging options via an all welded stainless steel back end for demanding submersible and industrial applications. The 2200 and the 2600 feature proven CVD sensing technology, an ASIC (amplified units), and modular packaging to provide a sensor line that fits most applications and can easily accommodate specials whilst not sacrificing high performance.

Specifications

Input	
Pressure Range	Vacuum to 400bar G (6000 psi) 0 - 25bar Absolute
Proof Pressure	2 x Full Scale (FS) (1.5 x Fs for 400bar, >= 5000psi)
Burst Pressure	>35 x FS <= 6bar (100psi)
	>20 x FS >=60bar (1000psi)
	>5 x FS <= 40bar (6000psi)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.25 % FS typical (optional 0.15%FS)
Thermal Error	1.5% FS typical (optional 1%FS)
Compensated Temperatures	-20° to 80°C (-5° to 180°F)
Operating Temperatures	-40° to 125°C (-40° to 260°F) for elec. codes A, B, C, 1
	-20° to 80°C (-5° to 180°F) for elec. codes 2, D, G, 3
	-20° to 50°C (-5° to 125°F) for elec. codes F,M, P
Zero Tolerance	1% of span
Span Tolerance	1% of span
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See ordering chart
Enclosure	316 ss, 17-4 PH ss
	IP65 for elec. codes A, B, C, G (with connector fitted) D, 1, 2, 3
	IP67 for elec. code "F"
	IP68 for elec. code M
	IP30 for elec. code "3" with flying leads
Vibration	35g peak sinusoidal, 5 to 2000Hz
Acceleration	100g steady acceleration in any direction 0.032%FS/g for 1bar (15psi) range decreasing logorithmically to 0.0007% FS/g for 400 bar (6000 psi) range.
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE
Weight	Approx. 100grams (additional cable; 75g/m)

Individual Specifications

Millivolt Output units	
Output	100mv +/-1mV
Supply Voltage (Vs)	10Vdc (15Vdc max.) Regulated
Bridge resistance	2600-6000ohms
Voltage Output units	
Output	See ordering chart
Supply Voltage (Vs)	1.5Vdc above FS output to 35Vdc @ 6mA
Supply Voltage Sensitivity	0.01% FS/Volt
Min. Load Resistance	(FS output / 2) Kohms
Current Consumption	approx 6mA at 7.5V output
Current Output units	
Output	4-20mA (2 wire)
Supply Voltage (Vs)	24Vdc, (7-35Vdc) Above 100°C supply limited to 24Vdc
Supply Voltage Sensitivity	0.01% FS/Volt
Max. Loop Resistance	(Vs-7) x 50ohms

ISO 9001

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Connection Code			mV Units				Current units (4-20mA)			Voltage units			
			IN+	OUT+	OUT-	IN-	(+)	(-)	EARTH	IN+	COM	OUT+	EARTH
A, B, G	Industrial DIN	PIN	1	2	3	E	1	2	4	1	2	3	4
C	"10-6 Bayonet"	PIN	A	B	C	D	A	B	E	A	C	B	E
D	"Cable"		R	Y	BL	G	R	BK	DRAIN	R	BK	W	DRAIN
F	"IP 67 cable"		R	Y	BL	G	R	BK	DRAIN	R	BK	W	DRAIN
M	"Immersible		R	Y	BL	W	R	BL	DRAIN	R	W	Y	DRAIN
1	"8-4 Bayonet"	PIN	A	B	C	D	A	B	D	A	C	B	D
2	"Cable"		R	W	G	BK	R	BK	DRAIN	R	BK	W	DRAIN
3	"Conduit & Flying Leads"		R	W	BK	G	R	BK	G	R	BK	W	G
3	"Conduit & Cable		R	W	G	BK	R	BK	DRAIN	R	BK	W	DRAIN

Cable Legend:
R = Red
BL = Blue
BK = Black
W = White
G = Green
Y = Yellow

How to Order

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

2200 B G A60 01 A 3 U A

Series
2200 **2600**

Output
A - 100mv
B - 4-20mA
C - 1-6V
D - 1-11V
H - 1-5V
J - 0.5-5.5V
R - 0-5V
S - 0-10V

Pressure Datum
A* - Absolute
G - Gauge
*Max absolute range is 25bar.

Pressure Range - bar (Additional intermediate pressure ranges available. Please consult factory)

A10 - 0-1
A16 - 0-1.6
A25 - 0-2.5
A40 - 0-4
A60 - 0-6
B10 - 0-10
B16 - 0-16
B25 - 0-25
B40 - 0-40
B60 - 0-60
C10 - 0-100
C16 - 0-160
C25 - 0-250
C40 - 0-400
Vac = -1 bar
1A0 - Vac-0
1A6 - Vac-0.6
2A5 - Vac-1.5
4A0 - Vac-3
6A0 - Vac-5
1B0 - Vac-9
1B6 - Vac-15
2B5 - Vac-24
4B0 - Vac-39

Pressure Port
01 - G1/4 External
02 - 1/4-18 NPT External
03 - G1/2 Manometer
04 - 7/16-20UNF to SAE J514
05 - G1/4 Ext. Soft Seal
08 - 1/8-27 NPT External
09 - G1/8 Internal
00 - G1/4 Internal
0A - R1/4 External
19 - Nose Cone (2600 Only)
29 - Nose cone sink weight (2600 only)
IG - 7/16 Schraeder Depressor
Others - Consult Factory

Electrical Connection
2200 Series
A - Industrial DIN Mating Connector Supplied
B - Industrial DIN Mating Connector Not Supplied
2 - Cable Nema 4 USA
D - Cable Weatherproof IP65 Europe
F - Cable Gland Metal IP67

2600 Series
C - Fixed Plug Size 10-6 Mating Plug Not Supplied
G - Fixed Plug To DIN 43650 Mating Plug Supplied
M - Immersible Max. depth 200 metres
1 - Fixed Plug Size 8-4 Mating Plug Not Supplied
3 - Conduit Connector 1/2NPT Ext. 1M Cable
Where electrical connection -**3** and cable length -**U** occur in part number, the unit will be supplied with flying leads (IP30)
T - Micro DIN 43650 (mating connector not supplied)

Performance Code
Accuracy/Thermal
A - .25%/1.5%
B - .15%/1.0%

Cable Length (Max length on 2200 - 10 metres)
U - No Cable Fitted
D - 1 Metre
E - 3 Metres
F - 5 Metres
G - 10 Metres
H - 15 Metres
J - 20 Metres
K - 25 Metres
L - 30 Metres
M - 40 Metres
N - 50 Metres
P - 75 Metres
Q - 100 Metres
R - 125 Metres
S - 150 Metres

Code	Length (M)
4	170
5	200
6	225

Apparatus Protection
2 - mV Transient Protection CE Mark
3 - Amplified RFI Protected CE Mark

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Dimensions (in mm)

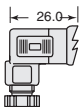
2200 Series

Industrial DIN Connector

Code "B"

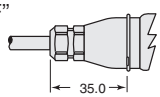
Industrial DIN Connector (mate supplied)

Code "A"



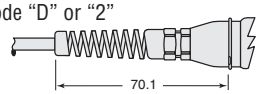
IP67 Cable

Code "F"



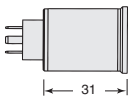
IP65 or NEMA4 Cable

Code "D" or "2"

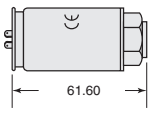


Micro DIN Connector

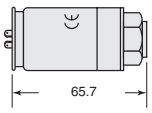
Code "T"



mV Gauge/Absolute Amplified Gauge



Amplified Absolute



Maximum diameter 27.3 mm

2600 Series

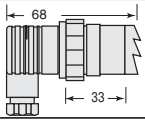
10-6 or 8-4 Mil-C Connector

10-6 Code "C"

8-4 Code "1"

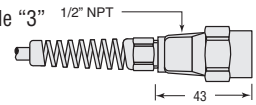
Large DIN 43650 Plug (mate supplied)

Code "G"

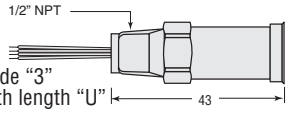


Conduit Connector with Cable

Code "3"

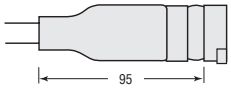


Conduit Connector with Flying Leads

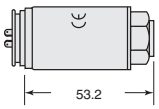


Immersible Cable

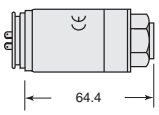
Code "M"



mV Gauge/Absolute Amplified Gauge



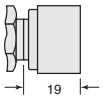
Amplified Absolute



Maximum diameter 27.3mm

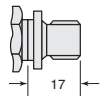
G 1/4 Internal

Code "00"



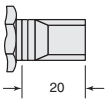
G 1/4 External

Code "01"



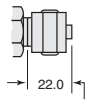
1/4 - 1/8 NPT

Code "02"



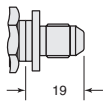
G 1/2 Manometer

Code "03"



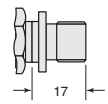
7/16-20 UNF-2A

Code "04"



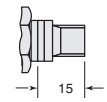
G 1/4 Soft Seal

Code "05"



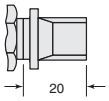
1/8-27 NPT

Code "08"



R 1/4

Code "0A"



G 1/8 Internal

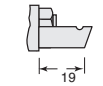
Code "09"

7/16 Schraeder

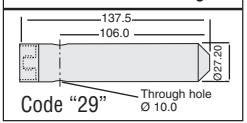
Code "1G"

Nose Cone - Black Acetal

Code "19"



Nose Cone Sink Weight



Code "29"

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Others - Consult factory

22IC Series/26IC - Intrinsically Safe Industrial Pressure Transmitters

- Ex II 1G ; EEx ia IIC T4 (-20°C ≤Ta ≤ 75°C)
- Ranges from 0.5b to 400b gauge and 0 to 25bar Absolute range
- Voltage and 2 wire 4-20mA output models
- All Stainless Steel wetted parts

Certified to the latest harmonised European standard (ATEX) the 22IC and 26IC Intrinsically safe pressure transmitters are designed to withstand the rigours of the most difficult applications with an all stainless steel construction, free from seals or oil barriers.

Incorporating Gems CVD Sensors and ASIC technology the 22IC and 26IC offer long term reliability, excellent performance and long term stability ensuring long service life without routine maintenance.

Available with a wide choice of pressure fittings units can be supplied to IP65 or fully immersible to IP68 200mWG and a variety of electrical connectors.

Ex II IG

CE

CE

Ex II IG

Specifications

Input	
Pressure Range	Vacuum to 400bar G (6000 psi) 0-25bar Absolute
Proof Pressure	2 x Full Scale (FS) (1.5 x FS for 400bar, >= 5000psi)
Burst Pressure	>35 x FS <= 6bar (100psi) >20 x FS >=60bar (1000psi) >5 x FS <= 400bar (6000psi)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.25 % FS typical (optional 0.15% FS)
Thermal Error	1.5% FS typical (optional 1% FS)
Compensated Temperatures	-20° to 80° C (-5° to 180° F)
Operating Temperatures	-40° to 125°C (-40° to 260°F) for elec. codes A, B, C -20° to 80°C (-5° to 180°F) for elec. code G -20° to 50°C (-5° to 125°F) for elec. codes F,M, 3
Zero Tolerance	1% of span
Span Tolerance	1% of span
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See ordering chart
Enclosure	316 ss, 17-4 PH ss IP65 for elec. codes A, B, C, G (with connector fitted) 3 IP67 for elec. code "F" IP68 for elec. codes M,
Vibration	35g peak sinusoidal, 5 to 2000Hz
Acceleration	100g steady acceleration in any direction 0.032%FS/g for 1 bar (15psi) range decreasing logarithmically to 0.0007%FS/g for 400bar (6000psi) range
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	Ex II 1G ; EEx ia IIC T4 (-20 ≤ Ta ≤ +75°C)
Weight	Approx. 100grams (additional cable; 75g/m)

Individual Specifications

Voltage Output units	
Output	See ordering chart
Supply Voltage (Vs)	1.5Vdc above FS output to 25.5Vdc
Supply Voltage Sensitivity	0.01%FS/Volt
Min.Load Resistance	(FS output / 2) Kohms
Current Consumption	Approx 6mA at 7.5V output
Current Output Units	
Output	4-20mA (2 wire)
Supply Voltage (Vs)	24Vdc, (7-25.5Vdc) above 100°C supply limited to 24Vdc
Supply Voltage Sensitivity	0.0 1% FS/Volt
Max. Loop Resistance	(Vs-7) x 50 ohms

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Wire Code			Current Units (4-20mA)		
			(+)	(-)	EARTH
A, B, G	Industrial DIN	PIN	1	2	4
C	"10-6 Bayonet"	PIN	A	B	E
D	Cable		R	BK	DRAIN
F	IP 67 cable		R	BK	DRAIN
1	"8-4-Bayonet"	PIN	A	B	D
3	"Conduit & cable"		R	BK	DRAIN
M	Immersible IP68 to 200m		R	BL	DRAIN

Wire Code			Voltage Units			
			IN+	COM	OUT+	EARTH
A, B, G	Industrial DIN	PIN	1	2	3	4
C	10-6 Bayonet	PIN	A	C	B	E
D	Cable		R	BK	W	DRAIN
F	IP 67 cable		R	BK	W	DRAIN
1	"8-4-Bayonet"	PIN	A	C	B	D
3	"Conduit & cable"		R	BK	W	DRAIN
M	Immersible IP68 to 200m		R	W	Y	DRAIN

Cable Legend:
R = Red
BL = Blue
BK = Black
W = White

How to Order

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

22IC B G A60 01 A B U A

Series
22IC **26IC**

Output
B - 4-20mA
C - 1-6V
D - 1-11V
H - 1-5V
J - 0.5-5.5V
R - 0-5V
S - 0-10V

Pressure Datum
G - Gauge
A - Absolute

Pressure Range - bar (Additional intermediate ranges available - please consult factory)
A10 - 0-1
A16 - 0-1.6
A25 - 0-2.5
A40 - 0-4
A60 - 0-6
B10 - 0-10
B16 - 0-16
B25 - 0-25
B40 - 0-40
B60 - 0-60
C10 - 0-100
C16 - 0-160
C25 - 0-250
C40 - 0-400
Vac = -1 bar
1A0 - Vac-0
1A6 - Vac-0.6
2A5 - Vac-1.5
4A0 - Vac-3
6A0 - Vac-5
1B0 - Vac-9
1B6 - Vac-15
2B5 - Vac-24
4B0 - Vac-39

Pressure Range – psi (Additional intermediate ranges available - please consult factory)
F15 - 0-15
F30 - 0-30
F60 - 0-60
G10 - 0-100
G15 - 0-150
G20 - 0-200
G30 - 0-300
G50 - 0-500
G60 - 0-600
H10 - 0-1,000
H15 - 0-1,500
H20 - 0-2,000
H30 - 0-3,000
H40 - 0-4,000
H50 - 0-5,000
H60 - 0-6,000
Vac = -15 psi
1F5 - Vac-0
3F0 - Vac-15
6F0 - Vac-45
1G0 - Vac-85
1G5 - Vac-135
2G0 - Vac-185
3G0 - Vac-285

Pressure Port
01 - G1/4 External
02 - 1/4-18 NPT External
03 - G1/2 Manometer
04 - 7/16-20UNF to SAE J514
05 - G1/4 Ext. Soft Seal
08 - 1/8-27 NPT External
09 - G1/8 Internal
00 - G1/4 Internal
0A - R1/4 External
19 - Nose Cone (2600 Only)
Others - Consult Factory

Electrical Connection
22IC Series
A - Industrial DIN Mating Connector Supplied
B - Industrial DIN Mating Connector Not Supplied
F - Cable Gland Metal IP67

26IC Series
C - Fixed Plug Size 10-6 Mating Plug Not Supplied
G - Fixed Plug To DIN 43650 Mating Plug Supplied
M - Immersible Max. depth 200metres
1 - Fixed Plug Size 8-4 Mating Plug Not Supplied
3 - Conduit Connector 1/2NPT Ext. 1M Cable

Performance Code
Accuracy/Thermal
A - .25%/1.5%
B - .15%/1.0%

Cable Length
(Max length on 22IC-10 Metres)
U - No Cable Fitted
D - 1 Metre
E - 3 Metres
F - 5 Metres
G - 10 Metres
H - 15 Metres
J - 20 Metres
K - 25 Metres
L - 30 Metres
M - 40 Metres
N - 50 Metres
P - 75 Metres
Q - 100 Metres
R - 125 Metres
S - 150 Metres

Apparatus Protection
B - Intrinsically safe, zener barrier, Gauge only
G - Intrinsically safe, galvanic barrier Gauge or Absolute

Ex II IG
EEx ia IIC T4
(-20 < Ta < +75°C)

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Dimensions (in mm)

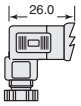
22IC Series

Industrial DIN Connector

Code "B"

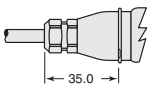
Industrial DIN Connector (mate supplied)

Code "A"



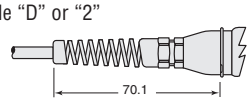
IP67 Cable

Code "F"



IP65 or NEMA4 Cable

Code "D" or "2"



26IC Series

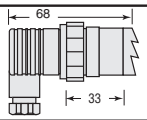
10-6 or 8-4 Mil-C Connector

10-6 Code "C"

8-4 Code "1"

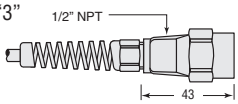
Large DIN 43650 Plug (mate supplied)

Code "G"



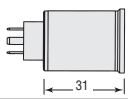
Conduit Connector with Cable

Code "3"



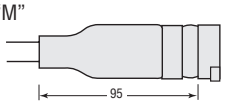
Micro DIN Connector

Code "T"

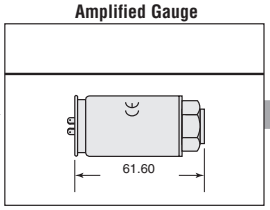


Immersible Cable

Code "M"

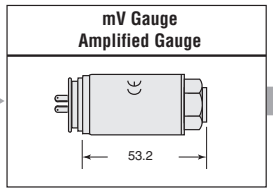


mV Gauge
Amplified Gauge



Maximum diameter 27.3mm

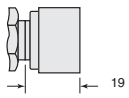
mV Gauge
Amplified Gauge



Maximum diameter 27.3mm

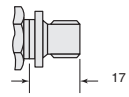
G 1/4 Internal

Code "00"



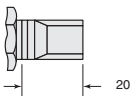
G 1/4 External

Code "01"



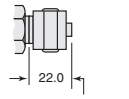
1/4 - 1/8 NPT

Code "02"



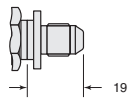
G 1/2 Manometer

Code "03"



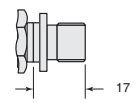
7/16-20 UNF-2A

Code "04"



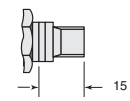
G 1/4 Soft Seal

Code "05"



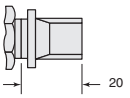
1/8-27 NPT

Code "08"



R 1/4

Code "0A"



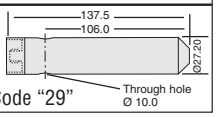
G 1/8 Internal

Code "09"

Nose Cone - Black Acetal

Code "19"

Nose Cone Sink Weight



Code "29"

Others - Consult factory

Indicators and Accessories Pages 64-69

2800 Series High Performance Industrial Pressure Transmitters

- 1% Error band over -30° to 100°C
- Customised options
- Ranges from 0.5 to 400bar
- Choice of outputs

The 2800 series features stability and enhanced accuracy in a variety of enclosure options for demanding submersible and industrial applications. The 2800 features proven CVD sensing technology, an ASIC and modular packaging to provide a sensor with high performance over a wide temperature range. Modular construction allows customised options to be easily accommodated

Specifications

Input	
Pressure Range	Vacuum to 400bar G (6000psi) 0 - 25bar Absolute
Proof Pressure	2 x Full Scale (FS) (1.5 x Fs for 400bar, >= 5000psi)
Burst Pressure	>35 x FS <= 6bar (100psi)
	>20 x FS >=60bar (1000psi)
	>5 x FS <= 400bar (6000psi)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.1% FS max.
Thermal Error	1% FS max.*
Compensated Temperatures	-30° to +100°C (-20° to +212°F)
Operating Temperatures	-40° to 125°C (-40° to 260°F) for elec. codes C and D
	-20° to 50°C (-5° to 125°F) for elec. code M
Zero Tolerance	1% of span
Span Tolerance	1% of span
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See ordering chart
Enclosure	316 ss, 17-4 PH ss
	IP40 for elec. code C Gauge Datum
	IP65 for elec. code C Absolute Datum
	IP66 for elec. code D
	IP68 for elec. code M
Vibration	35g peak sinusoidal, 5 to 2000Hz
Acceleration	100g steady acceleration in any direction 0.032% FS/g for 1bar (15psi) range decreasing logorithmically to 0.0007% FS/g for 400bar (6000psi) range.
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE
Weight	Approx. 100grams (additional cable; 75g/m)

* Standard ranges only

Individual Specifications

Voltage Output units	
Output	See ordering chart
Supply Voltage (Vs)	1.5Vdc above FS output to 35Vdc @ 6mA
Supply Voltage Sensitivity	0.01% FS/Volt
Min. Load Resistance	(FS output / 2) Kohms
Current Consumption	approx 6mA at 7.5V output
Current Output units	
Output	4-20mA (2 wire)
Supply Voltage (Vs)	24Vdc, (7-35Vdc) Above 100°C supply limited to 24Vdc
Supply Voltage Sensitivity	0.01% FS/Volt
Max. Loop Resistance	(Vs-7) x 50ohms

Indicators and Accessories Pages 64-69

Connection Code			Current units (4-20mA)			Voltage units			
			(+)	(-)	EARTH	IN+	COM	OUT+	EARTH
C	"10-6 Bayonet"	PIN	A	B	E	A	C	B	E
D	"Cable"		R	BL	DRAIN	R	W	Y	DRAIN
M	"Immersible		R	BL	DRAIN	R	W	Y	DRAIN

Cable Legend: R = Red
BL = Blue
W = White
Y = Yellow

How to Order

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

2800 B G A60 01 A 3 005 A

Series
2800

Output
B - 4-20mA
C - 1-6V
D - 1-11V
H - 1-5V
J - 0.5-5.5V
R - 0-5V
S - 0-10V

Pressure Datum
A* - Absolute
G - Gauge
*Max absolute range is 25bar.

Pressure Range - bar (additional intermediate pressure ranges available - consult factory)
A10 - 0-1
A16 - 0-1.6
A25 - 0-2.5
A40 - 0-4
A60 - 0-6
B10 - 0-10
B16 - 0-16
B25 - 0-25
B40 - 0-40
B60 - 0-60
C10 - 0-100
C16 - 0-160
C25 - 0-250
C40 - 0-400
Vac = -1 bar
1A0 - Vac-0
1A6 - Vac-0.6
2A5 - Vac-1.5
4A0 - Vac-3
6A0 - Vac-5
1B0 - Vac-9
1B6 - Vac-15
2B5 - Vac-24
4B0 - Vac-39

Pressure Port
01 - G1/4 External
02 - 1/4-18 NPT External
03 - G1/2 Manometer
04 - 7/16-20UNF to SAE J514
05 - G1/4 Ext. Soft Seal
08 - 1/8-27 NPT External
09 - G1/8 Internal
00 - G1/4 Internal
0A - R1/4 External
19 - Nose Cone
others - consult factory

Electrical Connection
C - Fixed Plug Size 10-6 Mating Plug Not Supplied
D - Weatherproof cable IP66
M - Immersible Max depth 200 metres

Performance Code
Accuracy/Thermal
A - 0.1%/1%

Cable Length
001 = 1 metre cable
099 = 99 metres cable
Applies to code D & M electrical connection only
Code C = 000

Apparatus Protection
RFI Protected CE Mark

Indicators and Accessories Pages 62-69

Dimensions (in mm)

2800 Series

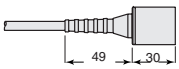
10-6 or 8-4 Mil-C Connector

10-6 Code "C"

8-4 Code "1"

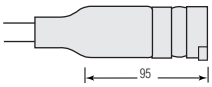
IP66 Cable

Code "D"

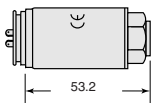


Immersible Cable

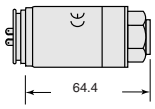
Code "M"



Amplified Gauge



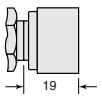
Amplified Absolute



Maximum diameter 27.3mm

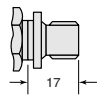
G 1/4 Internal

Code "00"



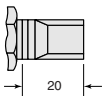
G 1/4 External

Code "01"



1/4 - 1/8 NPT

Code "02"

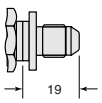


G 1/2 Manometer

Code "03"

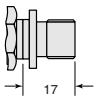
7/16-20 UNF-2A

Code "04"



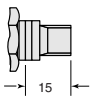
G 1/4 Soft Seal

Code "05"



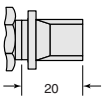
1/8-27 NPT

Code "08"



R 1/4

Code "0A"



G 1/8 Internal

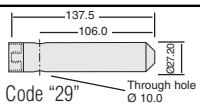
Code "09"

Code "M"

Nose Cone - Black Acetal

Code "19"

Nose Cone Sink Weight



Code "29"

Others - Consult factory

Indicators and Accessories Pages 64-69

28IC Series High Performance Intrinsically Safe Industrial Pressure Transmitters

- 1% Error band over -30° to 100°C
- Ex II 1G: EEx ia IIC T4 (-20°C ≤ 75°)
- Ranges from 0.5 to 400bar
- All stainless steel wetted parts

The Intrinsically Safe 28IC series offers high performance for critical measurements. Available in a choice of standard or custom designed packages, the 28IC utilises Gems CVD sensing technology with ASIC to provide optimum performance while the all stainless steel wetted parts ensure media compatibility.

Specifications

Input	
Pressure Range	Vacuum to 400bar G (6000 psi) 0 - 25bar Absolute
Proof Pressure	2 x Full Scale (FS) (1.5 x Fs for 400bar, >= 5000psi)
Burst Pressure	>35 x FS <= 6bar (100psi)
	>20 x FS >=60bar (1000psi)
	>5 x FS <= 400bar (6000psi)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.1% FS max.
Thermal Error	1% FS max.*
Compensated Temperatures	-30° to +100°C (-20° to +212°F)
Operating Temperatures	-40° to 125°C (-40° to 260°F) for elec. codes C and D
	-20° to 50°C (-5° to 125°F) for elec. code M
Zero Tolerance	1% of span
Span Tolerance	1% of span
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See ordering chart
Enclosure	316 ss, 17-4 PH ss
	IP40 for elec. code C Gauge Datum
	IP65 for elec. code C Absolute Datum
	IP66 for elec. code D
	IP68 for elec. code M
Vibration	35g peak sinusoidal, 5 to 2000 Hz
Acceleration	100g steady acceleration in any direction 0.032% FS/g for 1bar (15psi) range decreasing logorithmically to 0.0007% FS/g for 400bar (6000psi) range.
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	Ex IIG 1G: EEx ia IIC T4
Weight	Approx. 100grams (additional cable; 75g/m)

* Standard ranges only

Individual Specifications

Voltage Output units	
Output	See ordering chart
Supply Voltage (Vs)	1.5Vdc above FS output to 35Vdc @ 6mA
Supply Voltage Sensitivity	0.01% FS/Volt
Min. Load Resistance	(FS output / 2) Kohms
Current Consumption	approx6mA at 7.5V output
Current Output units	
Output	4-20mA (2 wire)
Supply Voltage (Vs)	24Vdc, (7-25.5V) Above 100°C supply limited to 24Vdc
Supply Voltage Sensitivity	0.01% FS/Volt
Max. Loop Resistance	(Vs-7) x 50 ohms

Connection Code			Current units (4-20mA)		
			(+)	(-)	EARTH
C	"10-6 Bayonet"	PIN	A	B	E
D	"Cable"		R	BL	DRAIN
M	"Immersible		R	BL	DRAIN

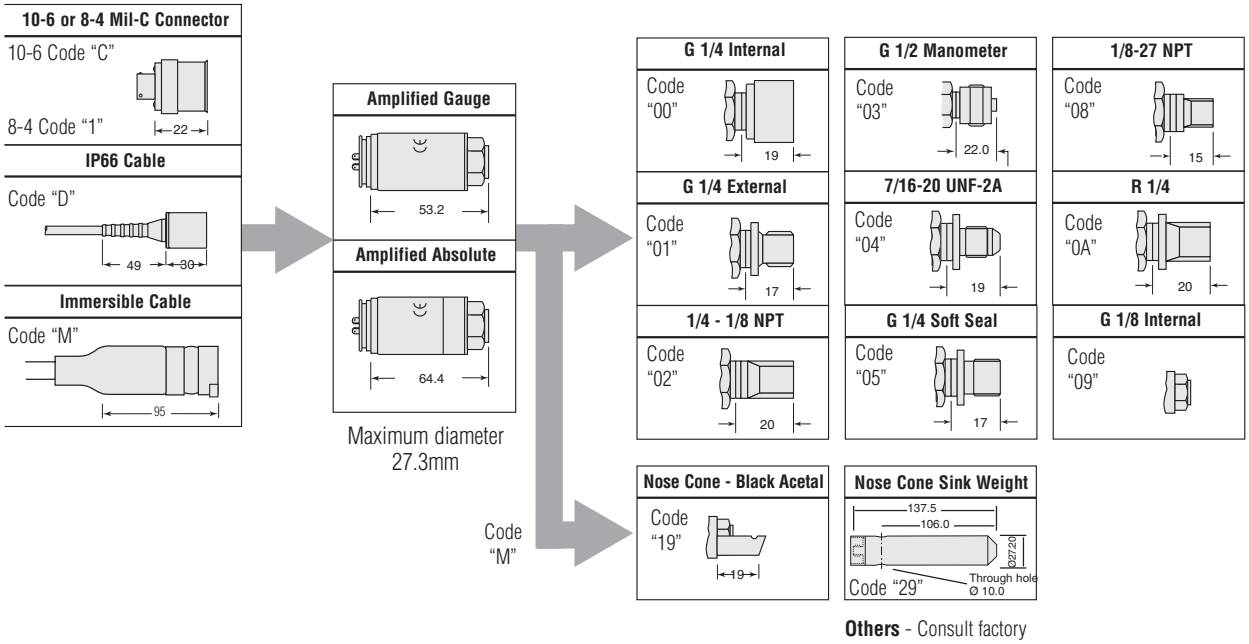
Connection Code			Voltage units			
			IN+	COM	OUT+	EARTH
C	"10-6 Bayonet"	PIN	A	C	B	E
D	"Cable"		R	W	Y	DRAIN
M	"Immersible		R	W	Y	DRAIN

Cable Legend: R = Red, BL = Blue, W = White, Y = Yellow

Indicators and Accessories Pages 64-69

Dimensions (in mm)

28IC Series



Others - Consult factory

How to Order

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

28IC **B** **G** **A60** **01** **A** **B** **005** **A**

Series
28IC

Output
B - 4-20mA
C - 1-6V
D - 1-11V
H - 1-5V
J - 0.5-5.5V
R - 0-5V
S - 0-10V

Pressure Datum
A* - Absolute
G - Gauge
*Max absolute range is 25bar.

Pressure Range - bar (see note 1)
A10 - 0-1
A16 - 0-1.6
A25 - 0-2.5
A40 - 0-4
A60 - 0-6
B10 - 0-10
B16 - 0-16
B25 - 0-25
B40 - 0-40
B60 - 0-60
C10 - 0-100
C16 - 0-160
C25 - 0-250
C40 - 0-400
Vac = -1 bar
1A0 - Vac-0
1A6 - Vac-0.6
2A5 - Vac-1.5
4A0 - Vac-3
6A0 - Vac-5
1B0 - Vac-9
1B6 - Vac-15
2B5 - Vac-24
4B0 - Vac-39

Pressure Port
01 - G1/4 External
02 - 1/4-18 NPT External
03 - G1/2 Manometer
04 - 7/16-20UNF to SAE J514
05 - G1/4 Ext. Soft Seal
08 - 1/8-27 NPT External
09 - G1/8 Internal
00 - G1/4 Internal
0A - R1/4 External
19 - Nose Cone

Electrical Connection
C - Fixed Plug Size 10-6 Mating Plug Not Supplied
D - Weatherproof cable IP66 (see note 1)
M - Immersible Max. depth 200 metres

Performance Code

Accuracy/Thermal
A - .0.10%/1%

Cable Length
001 - 1metre cable
099 - 99metres cable
Applies to code 'D & M' electrical connection only
Code C = 000

Apparatus Protection
B - Intrinsically Safe, zener barrier, Gauge only
G - Intrinsically safe, galvanic barrier, Gauge or Absolute

Ex II IG

EEx ia IIC T4
(-20<Ta<+75°C)

Notes:
1 Additional Pressure Ranges are available. Please consult factory.

Indicators and Accessories Pages 64-69

6700 Series-Stable Industrial Transmitters with Turndown Capabilities

- Gauge and absolute pressure models
- Submersible, general purpose and wash down enclosures
- High stability achieved by CVD sensing element

The 6700 series features customer accessible 5:1 turndown from nominal range via a switch and potentiometre. Down ranging whether factory or user adjusted is ideal for applications requiring high overpressure. The 6700 are housed in a rugged enclosure for harsh conditions and features superb stability by incorporating Gems' CVD sensing element.

Lloyds Register

Specifications

Input	
Pressure Range	0.5 to 400bar; (7.5 to 6,000psi) Gauge and Absolute
Proof Pressure	2 x Full Scale (FS) (1.5 x FS for 400bar, >= 5000psi)
Burst Pressure	>35 x FS <= 6bar (100psi)
	>20 x FS >=60bar (1000psi)
	>5 x FS <= 400bar (6000psi)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Output	4-20mA (2 wire)
Supply Voltage (Vs)	9.5 to 40Vdc
Supply Voltage Sensitivity	0.005% of max span/Volt
Long Term Drift	0.15% of max span/year (non-cumulative)
Accuracy	0.15 % FS typical
Thermal Error Typical	-10° to 50°C (15° to 120°F) 0.5% of max span
	-20° to 80°C (-4° to 176°F) 1% of max span
Operating Temperatures	-20° to 85°C (-4° to 185°F) elec. conn. code C G & L
	-20° to 50°C (-4° to 122°F) elec. conn. code M, 3
	-30° to 100°C (-22° to 212°F) process/media
Zero Tolerance	0.1 % span, typical
Span Tolerance	0.1% span, typical
Zero Adjustment	+/- 10% (100% at factory) by potentiometer
Span Adjustment	17% to 100 % of span by potentiometer/switches
Max. Loop Resistance	(Vs-9.5) x 50 ohms
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See ordering chart
Enclosure	321 ss, 17-4 PH ss
	IP40 for gauge datum elec code C, L
	IP65 for absolute datum elec code C, L
	IP65 for elec. code G (with connector fitted), 3
	IP68 for elec. code M
Vibration	35g peak sinusoidal, 5 to 2000Hz
Acceleration	100g steady acceleration in any direction 0.036%FS/g for 0.75bar (10psi) range decreasing logarithmically to 0.0007%FS/g for 400bar (6000psi) range.
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE, Lloyds Register
	EXII 1G; E Exia II CT4 (-40°C < T amb <75°C) Cert BASEEFA 02ATEX00040X
Weight	Approx. 250grams (additional; cable 75g/m)

Electrical connection		**Wiring**		
		(+)	**(-)**	**EARTH**
G	"DIN"	1	2	4
C	"10-6 Bayonet"	A	B	E
M	IP68 cable	R	BL	DRAIN
L	M12	1	2	4
3	Leads	R	BL	G

Cable Legend:
R = Red
BL = Blue
G = Green

Indicators and Accessories Pages 64-69

How to Order

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

6700 **B** **G** **B10** **00** **G** **3** **010** **B**

6700 series for bar ranges
Output Response
B - 4-20mA
Pressure Datam
G - Gauge and compound; **A -** Absolute
Insert pressure range code from table below
Pressure Port see chart
Electrical Connection
C - Fixed plug size 10-6, **L -** M12 x 1 (5 pin) **3 -** ½ - 14 NPT conduit
M - Submersible cable, to 200 metres; **G -** Fixed plug to DIN 43650, mate supplied
Approvals/Protection
3 - CE;
G - ATEX approved ExII 1G, EEx ia IIC T4 (-40< Ta <+75°C), galvanic isolators
Cable Length in metres (requires electrical connection code M or 3)
000 - No cable **001 -** 1 metre cable **999 -** 999 metres
Static/Thermal performance
B - 0.25%/2%

6700 Model Bar Ranges	Range Code	Gauge (G) Absolute (A)
0 to 500mb	**N50**	G, A
0 to 1	**A10**	G, A
0 to 1.6	**A16**	G, A
0 to 2.5	**A25**	G, A
0 to 4	**A40**	G, A
0 to 6	**A60**	G, A
0 to 10	**B10**	G, A
0 to 16	**B16**	G, A
0 to 25	**B25**	G, A
0 to 40	**B40**	G
0 to 60	**B60**	G
0 to 100	**C10**	G
0 to 160	**C16**	G
0 to 250	**C25**	G
0 to 400	**C40**	G

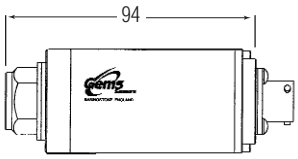
Pressure Ports for the 6700 series

Code	Description of Stainless Steel Fittings
OO	G 1/4 internal
AO	G 1/4 external
KO	7/16-20 UNF-3A external
MO	M14 x 1.5 external
PO	G 1/2 manometer
BO	1/4-18 NPT external
GO	1/2-14 NPT external
SO	7/16-20 UNJF-3A, MS 33656E4
Immersible Sensors	
19	Plastic nose cone
20	Nose cone with restrictor
30	Nose cone w/ s steel sink weight

Dimensions (in mm)

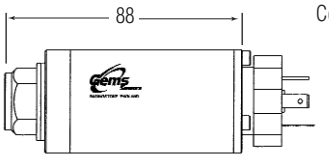
Max diameter 39mm, all models

Code C



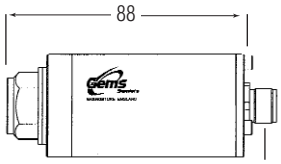
6 Pin Fixed Plug (10-6)

Code G



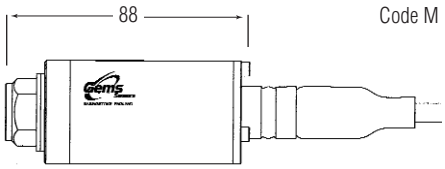
Fixed Plug to DIN 43650 Mating Connector Supplied

Code L



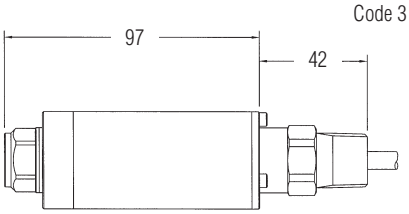
Electrical Connector M12 x 1 (5 Pin)

Code M



Immersible to 200mWG

Code 3



1/2 to 14 NPT Conduit

Indicators and Accessories Pages 64-69

4000 Series - High Performance, Long Term Stability Pressure Transducers

- Gauge, sealed, absolute, and differential pressure models
- Submersible, general purpose and weather proof enclosures
- High stability achieved by sputtered sensing element

The 4000 series provides exceptional levels of stability and other performance specifications in a wide variety of enclosures from submersible to differential styles. By using a sputtered sensing element, which achieves a molecular fusion of a strain gauge material, an insulating material, and the 17-4 PH ss sensing element, the 4000 series provides the most stable sensor construction possible. These sputtered sensors are packaged for harsh applications requiring long term service where precise laboratory type measurements are required.

Also in the 4000 series is a range of high performance amplified sensors with voltage and current outputs. These laboratory specification sensors utilise the same thin film sensor as 4000.

Specifications

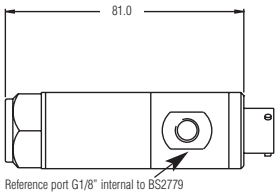
Input		
Pressure Range	0 to 1 - 0 to 690bar	
Proof Pressure	2 x Full Scale (FS) (1.5 x FS for Inconel ports)	
Burst Pressure	>35 x Fs <= 10bar (150psi) ranges	
	>15 x FS <= 100bar (1500psi) ranges	
	>8 FS <= 690bar (10,000psi) ranges	
Fatigue Life	3 million FS cycles	
Common Line Pressure	Max. 60bar absolute (850 psia) differential units only	
Performance		
Output*	30mV +/- 1% (certificate supplied)	
	(4010, 25 to 33mV)	
Supply Voltage (Vs)	10Vdc Regulated (15Vdc max)	
Long Term Drift	0.06% per year non cumulative	
Performance Code	Accuracy	Thermal error over any 50°C band between -54°C to +120°C
	Typical	Typical
J	0.1 % span	1.2 % span
K	0.1 % span	0.6 % span
L	0.08 % span	0.6 % span
M	0.08 % span	0.3 % span
Compensated Temperatures	-54° to 120 °C (-65° to 250°F)	
Operating Temperatures	-54° to 135°C (-65° to 275° F) for twist lock conn. "C"	
	-54° to 120°C (-65° to 250°F) for cable units "D"	
	-20° to 50°C (-4° to 122°F) for submersible unit "M"	
Zero Tolerance	0mV +/- 1mV for performance codes J & K	
	0mV +/- 0.6mV for performance codes L & M	
Bridge Resistance	2200 to 5250 ohms	
Mechanical Configuration		
Pressure Port	See ordering chart	
Wetted Parts	17-4 PH ss (optional Inconel)	
	[17-4 PH and 15-7 Mo Stainless Steel <= 1.6bar (30psi)] Differential: dry non corrosive gas only on reference port	
Electrical Connection	See ordering chart	
Enclosure	321 ss case	
	IP40 for elec. Code "C" gauge datum	
	IP65 for elec. Code "C" Absolute or Sealed Datum	
	IP66 (weatherproof) for elec. code "D"	
	IP68 (submersible) for elec. code "M"	
Vibration	35g peak sinusoidal, 5 to 2000Hz	
Shock	Withstands free fall to EIC 68-2-32 proc 1	
Approvals	CE	
Weight	150grams max (excluding cable)	

Note: * Inconel 2.5bar (30psi) range output is 25mV +/- 1%

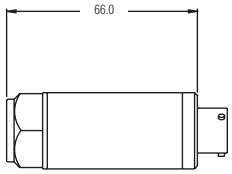
Electrical connection		**Voltage units**				
		IN+	**OUT+**	**OUT-**	**IN-**	**Case Earth**
C	"10-6 Bayonet"	A	B	C/F	D/E	
D	Weatherproof cable	Red	Yellow	Blue	White	Screen
M	IP68 cable	Red	Yellow	Blue	White	Screen

Dimensions (in mm)

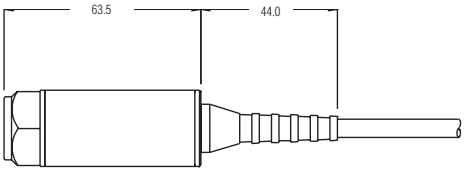
Differential — Code C



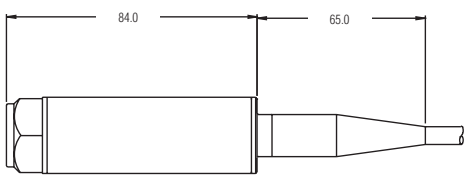
Absolute and Gauge — Code C



Absolute and Gauge — Code D



Absolute and Gauge — Code M



Maximum diameter 25.7mm

Indicators and Accessories Pages 64-69

How to Order

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

4000 K G B10 00 D 2 D J

Series
4000 series for bar ranges, **4010** series for psi ranges
Bridge Resistance
K is 3500 ohms
Pressure Datum
G - Gauge; **A -** Absolute; **S -** Sealed; **U -** Uni-directional differential *
Insert pressure range code from table below
Pressure Port see chart
Electrical Connection
C - Fixed plug size 10-6, mate sold separately part # 499532-0006
D - Weatherproof Cable IP 66
M - Immersible Cable IP68 to max depth 200 metres
Approvals/Protection
2 - CE
Cable Length in metres (requires electrical connection to be cable codes D or M)
U - no cable **E -** 3 **G -** 10 **J -** 20 **L -** 30 **N -** 50 **Q -** 100 **S -** 150
D - 1 **F -** 5 **H -** 15 **K -** 25 **M -** 40 **P -** 75 **R -** 125
Static/Thermal Performance
J - 0.1%/1.2%; **K -** 0.1%/0.6%; **L -** 0.08%/0.6%; **M -** 0.08%/0.3% typical over any 50°C band between -54°C to +120°C

*Differential datum units are available in electrical code "C" only and performance codes either "L" or "M".

4000 Model Bar Ranges	Range Code	Gauge (G) Absolute (A) Sealed (S) Differential (U)
0 to 1	**A10**	**G, A, U**
0 to 1.6	**A16**	**G, A, U**
0 to 2.5	**A25**	**G, A, U**
0 to 4	**A40**	**G, A, U**
0 to 6	**A60**	**G, A, U**
0 to 10	**B10**	**G, A, U, S**
0 to 16	**B16**	**G, A, S**
0 to 25	**B25**	**G, A, S**
0 to 40	**B40**	**G, A, S**
0 to 60	**B60**	**G, A, S**
0 to 100	**C10**	**G, A, S**
0 to 160	**C16**	**G, A, S**
0 to 250	**C25**	**G, A, S**
0 to 400	**C40**	**G, A, S**
0 to 600	**C60**	**G, A, S**
0 to 690	**C69**	**G, A, S**

Diaphragm and internal port Inconel, external adaptors are available in stainless steel or Inconel

Pressure Ports

Codes		Description
SS	**Inconel**	
00	**OK**	G 1/4 internal
AO	**AK**	G 1/4 AT external
KO	**KK**	7/16-20 UNF-3A external
MO	**MK**	M14 x 1.5 external
PO	**PK**	G1/2 AT external
BO	**BK**	1/4-18 NPT external
GO	**GK**	1/2-14 NPT external
SO	**SK**	7/16-20 UNJF-3A, MS 33656F4
10	**10**	Plastic nosecone
20	**20**	Plastic nosecone with restrictor
30	**30**	Sink weight nose cone

Differential Units	
OD	G1/4 internal ss, G1/8 internal ss
OL	G1/4 internal Inconel, G1/8 internal ss

Indicators and Accessories Pages 64-69

4700 Series - High Performance, High Stability, with 5:1 Turndown Capability Industrial Transmitters

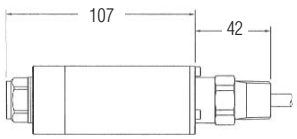
- Gauge, sealed and absolute models
- Submersible, general purpose and wash down enclosures
- IS models

The 4700 series provides precise laboratory type measurements in a rugged industrial package complete with turndown capabilities. Exceptional levels of stability and other performance specifications are achieved by using a sputtered sensing element, which achieves a molecular fusion of a strain gauge material, an insulating material, and the 17-4 PH ss sensing element. Sputtered thin film technology provides years of worry free measurements under demanding environmental conditions.

Specifications

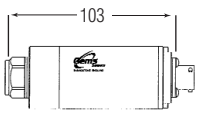
Input	
Pressure Range	1bar to 690bar; (10 to 10,000psi)
Proof Pressure	2 x Full Scale (FS) for Stainless Steel Units
	1.5 x FS for Inconel Units
Burst Pressure	>35 x Fs <= 10bar ranges
	>15 x FS <= 100bar ranges
	>8 FS <= 690bar ranges
Fatigue Life	3 million FS cycles
Performance	
Output	4-20mA (2 wire)
Supply Voltage (Vs)	9.5 to 40Vdc
Supply Voltage Sensitivity	0.005% of max. span/Volt
Long Term Drift	0.1%of max span per year non-cumulative
Accuracy	0.1 % FS typical
Thermal Error (typical)	0.8% of max span for performance code E
	0.5% of max span for performance code F
Compensated Temperatures	-25° to 75°C (-13° to 167°F)
Operating Temperatures	-25° to 85°C (-13° to 185°F) elec. conn. code C G & L
	-20° to 50°C (-4° to 122°F) elec. conn. code M, 3
	-30° to 100°C (-22° to 212°F) process/media
Zero Tolerance	0.1%FS, typical
Span Tolerance	0.1%FS, typical
Zero Adjustment	+/- 10% (100% at factory) by potentiometer
Span Adjustment	17% to 130 % of span by potentiometer
Max. Loop Resistance	(Vs-9.5) x 50 ohms
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH ss (optional Inconel)
	[17-4 PH and 15-7 Mo Stainless Steel <= 1.6 bar (30 Psi)]
Electrical Connection	See ordering chart
Enclosure	321 ss, 17-4 PH ss
	IP40 for gauge datum & electrical conn. code C, L
	IP65 for absolute and sealed datum codes C, L
	IP65 for electrical connection code G (with connector code fitted), 3 IP68 for electrical connection code M
Vibration	35g peak sinusoidal, 5 to 2000Hz
Acceleration	100g steady acceleration in any direction 0.05% FS/g for 1bar (15psi) range decreasing logarithmically to 0.0001%FS/g for 690bar (10000psi) range.
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE ExII 1G, E Exia II CT4 (-40°C < T amb <75°C) Cert BASEEFA 02ATEX0040X Lloyds Register
Weight	Approx. 305g (additional; cable 75grams/m)

Lloyds Register



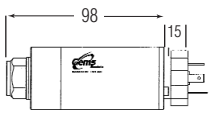
Code 3

½ - 14 NPT conduit



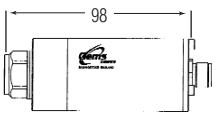
Code C

6 pin fixed plug size (10-6)



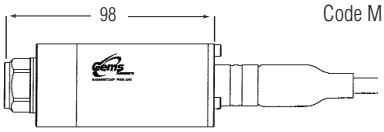
Code G

Fixed plug to DIN 43650 mate supplied



Code L

5 pin M12 x 1 fixed plug



Code M

Immersible IP68 to 200mWG

Diameter 39mm

Indicators and Accessories Pages 64-69

How to Order

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

4700 B G B10 00 G 3 005 E

Series
4700 - series for bar ranges
Output Response
B - 4-20mA
Pressure Datum
G Gauge; **S** Sealed; **A** Absolute
(For compound ranges consult sales)
Insert pressure range code from table below
Pressure Port see chart
Electrical Connection
C - Fixed plug size 10-6, 3-20mm conduit
M - Submersible cable, to 200 metres
G - Fixed plug to DIN 43650 mating plug supplied
L - M12 x 1 (5 pin)
3 - 1/2 - NPT conduit
Approvals/Protection (For flame proof units see next page)
3 - CE
G - ATEX approved ExII 1G, EEx ia IIC T4 (-40< Ta <+75°C), galvanic isolators
Cable Length in metres (requires electrical connection code M or 3)
001 - 1 metre cable
999 - 999 metre cable
Static/Thermal Performance
E - 0.1%/0.8%; **F -** 0.1%/0.5%. 500mbar range performance code **E** only

4700 Model Bar Ranges	Range Code	Gauge (G)* Absolute (A) Sealed (S)
0 to 500mb	**N50**	**G, A**
0 to 1	**A10**	**G, A**
0 to 1.6	**A16**	**G, A**
0 to 2.5	**A25**	**G, A**
0 to 4	**A40**	**G, A**
0 to 6	**A60**	**G, A**
0 to 10	**B10**	**G, A, S**
0 to 16	**B16**	**G, A, S**
0 to 25	**B25**	**G, A, S**
0 to 40	**B40**	**G, A, S**
0 to 60	**B60**	**G, A, S**
0 to 100	**C10**	**G, A, S**
0 to 160	**C16**	**G, A, S**
0 to 250	**C25**	**G, A, S**
0 to 400	**C40**	**G, A, S**
0 to 600	**C60**	**G, A, S****
0 to 690	**C69**	**G, A, S****

* For compound ranges consult sales
** Internal Inconel fitting required external fitting can be SS.

Pressure Ports

Codes		Description
SS	**Inconel**	
00	**OK**	G 1/4 internal
AO	**AK**	G 1/4 AT external
KO	**KK**	7/16-20 UNF 3A external
MO	**MK**	M14 x 1.5 external
PO	**PK**	G1/2 AT external
BO	**BK**	1/4-18 NPT external
GO	**GK**	1/2-14 NPT external
SO	**SK**	7/16-20 UNJF external, MS 33656E4
Immersible		
19	Plastic nose cone	
20	Nose cone with restrictor	
30	Nose cone w/ss Sink Weight	

Electrical connection		Wiring		
		(+)	(-)	EARTH
G	"DIN"	1	2	4
C	"10-6 Bayonet"	A	B	E
M	IP 68 cable	R	BL	DRAIN
E	M12 x 1	1	2	4
3	Conduit	R	BL	DRAIN

R = Red BL = Blue

Indicators and Accessories Pages 62-67

9000 Series CANbus Digital Output Pressure Transducer

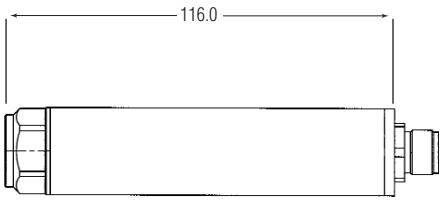
- High accuracy over wide operating temperature range T.E.B. ±0.2% Span, -40°C to +85°C
- Excellent long term stability <0.05% per year, non-cumulative
- Small size: 25mm diameter, 120mm length
- Isolated high speed CAN interface - ISO11898
- Programmable update rate
- Standard application interface - CANopen DS301 & DSP404
- In system programmable
- Self diagnostics - bridge fault detection, hours in service, watchdog, last calibration date, next calibration date
- Unsurpassed customer support - Rapid Development Kit

The 9000 CANBUS pressure transducer meets the demands of the test and measurement industry, including automotive and marine applications, with high levels of accuracy over a wide temperature range. The digital output in engineering units eliminates the need for user system calibration.

Designed to have a wide input voltage range, input to output isolation, immunity to noise and self-diagnostics the 9000 is ideal for electrically noisy environments or applications where earthing or grounding can be a problem.

Through the standard CANopen protocol multiple devices can be used on a single bus reducing user cabling.

Dimensions (in mm)



Specifications

Input	
Pressure Range	0 to 1 - 0 to 690bar Gauge or Absolute
Proof Pressure	2 x FS (ranges <400b) 1.5 x FS (≥400b)
Burst Pressure	>35 x FS for ranges <= 6bar >15 x FS for ranges >=100bar >4 x FS for ranges <= 690bar
Supply Voltage	7-30Vdc, 0.6W
Performance	
Long Term Stability	Zero drift <0.05% Full range out put non cumulative
Accuracy	± 0.1% Full Scale
Total Error Band	± 0.2% Full Scale
Compensated Temperature	-40° to 85°C
Operating Temperature	-40° to 85°C
Mechanical Configuration	
Pressure Port	(see table below)
Wetted Parts	17-4 PH or Inconel
Electrical Connection	5 pin M12 x 1, cable to IP68, others on request
Enclosure	SS
Vibration	<0.08%FRO/g 20Hz to 2000Hz, 35g
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE Emissions EN 61000-6-4, Immunity EN 61000-6-2
Weight	<180grams

Connection Code

L	M12	(+)	(-)	Shield	CAN Hi	CAN Lo	
		2	3	1	4	5	

Indicators and Accessories Pages 64-69

How to Order

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

9000 1 G B10 0K L 3 000 A

Series
9000

Output
1 - Canbus

Datum
G - Gauge
A - Absolute
S - Sealed Gauge

Pressure Ranges - bar

A10	1	**B10**	10	**C10**	100
A16	1.6	**B16**	16	**C16**	160
A25	2.5	**B25**	25	**C25**	250
A40	4	**B40**	40	**C40**	400
A60	6	**B60**	60	**C60**	600
				C69	690

Pressure Adaptor

Stainless Steel	Inconel	Description
00	**OK**	G1/4 Internal
AO	**AK**	G1/4 AT External
KO	**KK**	7/16-20 UNF-3A External
MO	**MK**	M14 x 1.5 External
PO	**PK**	G1/2 AT External
BO	**BK**	1/4-18 NPT External
GO	**GK**	1/2-14 NPT External
SO	**SK**	7/16-20 UNJF-3A, MS 33656F4

Performance Code
Static/Thermal
0.05/0.2

CE Marked

Electrical Connection
L - M12 Industrial 5 pin

Accessories

Order Code	Description
557002	Restrictor Kit
499877-1000	Saddle Mounting Kit
562320-02M0	2m, unscreened, 5 core, cable - Terminated to M12 male connector
562320-05M0	5m, unscreened, 5 core, cable - Terminated to M12 male connector
562321	Rapid Development Kit - including 9V battery, M12 to 9 way D type cable terminated assembly, USB to CAN Interface, Gems start up CD ROM
562293	User manual
557749	M12, 5 pole duo field wireable connector with screw terminals

Indicators and Accessories Pages 64-69

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.

Ex

CE

Lloyds Register

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 ExII 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

How to Order

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

SELECT **5000** **B** **G** **N20** **BK** **M** **3** **001** **A**

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

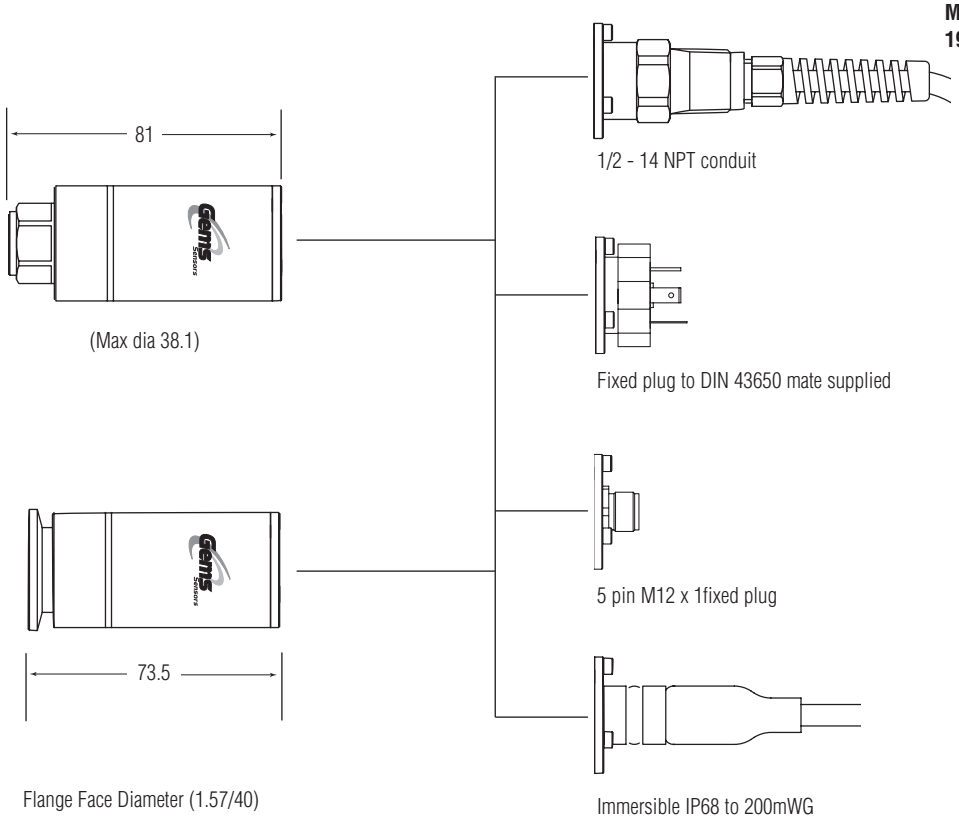
Pressure Connection
00 - G1/4 Internal
OF - KF25 Flange
AK - G 1/4 External
BK - 1/4 - 18NPT External
KK - 7/16 - 20unf - 3A External
MK - M14x1.5 External
19 - Acetal nose cone

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

Approvals
3 - CE Marked
G - ATEX approved ExII 1G EEx ia IIB T4 (-20< Ta <+75°)

Cable Length
000 - No cable
001 - 1 metre
999 - 999 metres etc

Static/Thermal Error Band
A - 0.25%/2%



Electrical Connection		Wiring mA			Wiring Voltage			
		+	-	EARTH	+IN	0V	+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

Indicators and Accessories Pages 64-69

2400 Slimline Borehole Transducer/Transmitters

- Triple sealed to ensure immersible integrity
- <10ms switch on/settling period
- 19mm diameter

Gems Sensors 2400 Series immersible pressure transducer has been specifically designed to met the rigours of long term immersibility. A custom designed hermetic header guarantees that water cannot enter the transducer even if the cable sheath is damaged during use. The large bore vent tube is connected directly to the back of the sensor which provides rapid venting, even on the longest cable run. The sensor itself is impervious to the effects of water guaranteeing long service life even in areas of high humidity, which can cause condensation. The all welded electronics enclosure is completely segregated from all other areas with the electronics themselves designed to provide fast switch on and settling to ensure maximum battery life and ease of calibration.

Specifications

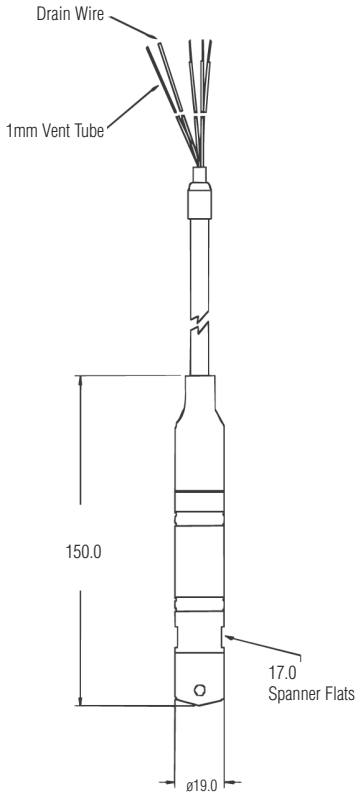
Input	
Pressure Range	0 to 4 to 0 to 200mwg (mA & V) 0 to 10, 20, 50,100, 200mwg (mV)
Proof Pressure	1.5 x Fs nominal range
Burst Pressure	3 x Fs
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.25% FS typical
Thermal Error	0.5% Typical 0-50°C
Compensated Temperatures	-10° to +50°C
Operating Temperatures	-40° to +80°C
Zero Tolerance	1% of span
Mechanical Configuration	
Pressure Port	G1/4" AT external fitted with nosecone
Wetted Parts	316 Stainless Steel, Polyurethane, Acetal
Electrical Connection	Polyurethane Cable
Enclosure	IP68 to 200mwg
Vibration	35g peak sinusoidal, 5 to 2000 Hz
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE
Weight	Approx. 100grams (additional; cable 75g/m)

Individual Specifications

Voltage Output units	
Output	0 to 10V
Supply Voltage (Vs)	13 to 28Vdc
Supply Voltage Sensitivity	0.026% span/V
Min. Load Resistance	(FS output / 2) Kohms
Current Consumption	Approx 6mA @ 8Vdc
Current Output units	
Output	4-20mA (2 wire)
Supply Voltage (Vs)	24Vdc, (8-28 Vdc)
Supply Voltage Sensitivity	0.026% span/V
Max. Loop Resistance	(Vs-7) x 50 ohms
Millivolt units	
Output	100mV ±1mV
Supply Voltage	10Vdc regulated (15Vdc max)
Bridge Resistance	3K5 ± 20% @ 25°C
Sink Weight	P/N 562266

Wiring Details	mV	mA	Voltage
Red	+Ve excitation	+Ve	+Ve in
Yellow	+Ve output	-	+Ve out
White	-Ve excitation	-	Common
Blue	-Ve output	-Ve	-
Drain	Earth	Earth	Earth

Dimensions (in mm)



How to Order

2400 B 2 010

Series

Cable Length
001 = 1 metre, 999 = 999 metres etc

Code	Millivolt
1	10mWG
2	20mWG
3	50mWG
4	100mWG
5	200mWG

Code	(mA/V)*
1	4mWG to 10mWG
2	11mWG to 20mWG
3	21mWG to 40mWG
4	41mWG to 100mWG
5	101mWG to 200mWG

Code	Electrical Output
A	100mV Not Rangeable
B*	4-20mA
S*	0-10Vdc

* For mA & Voltage units specify level range required at time of order.

DCL 9300/9400 Series - Digitally Compensated Level Transmitter

- User Rangeable
- Total error band <±0.1% FS (-5 to +45°C)
- In-situ calibration
- Range 4mWG to 100mWG
- 20mm diameter

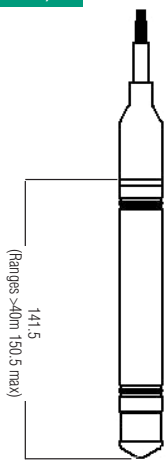
The DCL 9300/9400 Series Transmitter offers unprecedented levels of long term accuracy for level measurement. Using digital compensation techniques to correct for errors due to temperature, specific gravity and local altitude the DCL 9300/9400 offers a version that can easily be adjusted on site and reverse acting options are also available.

The DCL can be supplied in ranges from 4mWG to 100mWG and is operable over -5 to 45°C with a total error band of <±0.1%FS. The 20mm diameter makes it suitable for small bore installations.

Specifications

Input	
Pressure Ranges	0 to 4 to 0 to 100mwg 0.4 to 10 bar
Proof Pressure	1.5 x Fs nominal range
Burst Pressure	3 x Fs
Fatigue Life	Designed for more than 100 million FS cycles
Electrical	
Output	4-20mA
Supply Voltage	8 to 30Vdc
Warm Up Time	250ms
Surge Protection	EN61000-4-5 ±4kv
Performance	
Long Term Drift	±0.05% year
Accuracy	±0.05%
Total Error Band	<±0.1% FS (-5 to +45°C)
Compensated Temperatures	-5 to 45°C
Operating Temperatures	-25 to +70°C (non-freezing)
Mechanical Configuration	
Pressure Port	Nosecone (M16 x 1.5 for calibration)
Wetted Parts: 9300	316/318 Stainless Steel, Polyurethane, Acetal, Nitrile
: 9400	Hastelloy, 318 Stainless Steel, Polyurethane, Acetal, Nitrile
Electrical Connection	Polyurethane Cable
Enclosure	IP68 to 200mwg
Vibration	35g peak sinusoidal, 5 to 2000 Hz
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE EN61000-6-2, EN61000-6-3
Weight	Approx. 100grams (additional, cable 75g/m)

Dimensions (in mm)



How to Order

9300 **02** **P** **01** **075M** **0100M**

WettedParts
9300 316/318 Stainless Steel
9400 Hastelloy/318 Stainless Steel

Output
01 Factory set 4-20mA
02 Factory set reversed 20-4mA
***03** Rangeable (set 4-20mA)
***04** Rangeable (reversed set 20-4mA)

***Via** Interface module 563008

Measurand
L Level
P Pressure

Pressure Connection
00 Nosecone
01 G1/4" external
02 1/4" NPT external

Calibrated Range
XXXM MWG (004M to 100M)
XXXF FtWG (012F to 330F)
XXXP PSI (006P to 145P)
XXBX Bar (00B4 to 10B0)

Cable Length
XXXXM Cable length in metres

Wiring Details

	mA
Red	+Ve
Blue	-Ve
Green	Comms

Immersible Accessories Page 51

DCL 9500/9600 Series - Slimline Groundwater Monitoring Transmitters

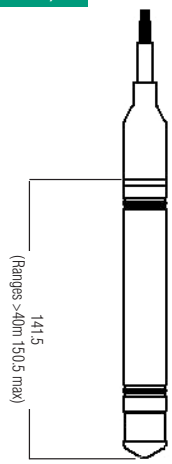
- Remote ranging via pc interface
- 20mm diameter
- SDI-12 communications
- 318 S/S wetted parts
- Total error band <±0.1% FS (-5 to +45°C)

The 9500/9600 series of pressure transducers from Gems Sensors has been designed specifically to meet the rigorous conditions for ground water monitoring while providing ultimate performance. The 9500 has built in specific gravity compensation, so gives a true level reading even when the media is subject to temperature changes over the ranges -5 to +45°C. Manufactured with 318 stainless steel wetted parts, which provide excellent corrosion resistance, the 9500/9600 can be adjusted via the cable by means of a PC or hand-held interface which reduces the installation time and removes the need to withdraw the unit from the media for calibration. The SDI-12 communicating version offers minimal current draw for battery powered applications.

Specifications

Input	
Pressure Ranges	0 to 4 to 0 to 100mWG
Proof Pressure	1.5 x Fs nominal range
Burst Pressure	3 x Fs
Fatigue Life	Designed for more than 100 million FS cycles
Electrical	
Output	SDI-12 (Temp output ± 0.5°C) or 4 - 20mA
Supply Voltage	8-30Vdc
Current Consumption	Standby less than 450µA
	Active less than 4mA average
Surge Protection	61000-4-5 ± 4kv
Performance	
Long Term Drift	±0.05% year
Accuracy	±0.05%
Total Error Band	<±0.1% FS (-5 to +45°C)
Compensated Temperatures	-5 to 45°C
Operating Temperatures	-25 to +70°C (non-freezing)
Mechanical Configuration	
Pressure Port	Nosecone (M16 x 1.5 for calibration)
Wetted Parts: 9500	316/318 Stainless Steel, Polyurethane, Acetal, Nitrile
: 9600	Hastelloy, 318 Stainless Steel, Polyurethane, Acetal, Nitrile
Electrical Connection	Polyurethane Cable
Enclosure	IP68 to 200mWG
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE
Weight	Approx. 100grams (additional, cable 75g/m)

Dimensions (in mm)



How to Order

9500 05 L 01 0100M 0060M

WettedParts
9500 316/318 Stainless Steel
9600 Hastelloy/318 Stainless Steel

Output
05 SDI 12
03 4-20mA

Measurand
L Level
P Pressure

Pressure Connection
00 Nosecone
01 G1/4" External
02 1/4" NPT External

Calibrated Range
XXXM mWG (004M to 100M)
XXXF FtWG (012F to 330F)
XXXP PSI (006P to 145P)
XXBX Bar (00B4 to 10B0)

Cable Length
XXXXM Cable length in metres (MAX 0060 for SDI-12)

Wiring Details

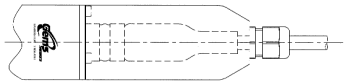
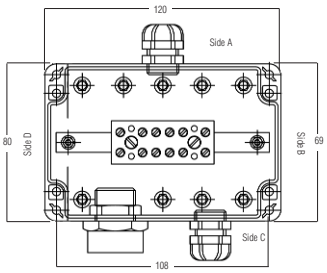
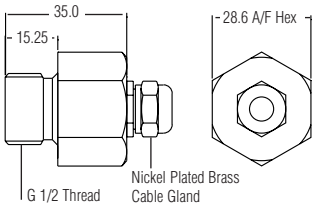
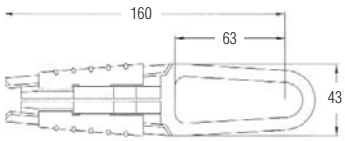
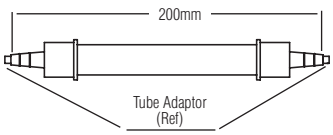
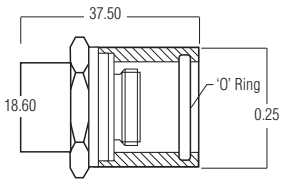
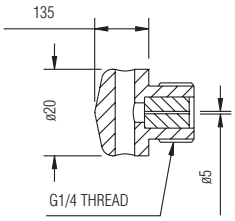
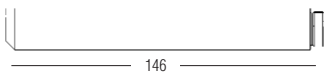
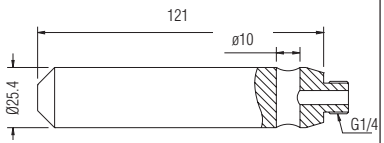
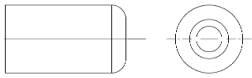
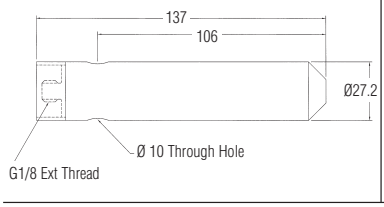
	SDI-12	mA
Red	Positive excitation	+Ve
Blue	Negative excitation	-Ve
Green	SDI-12	Comms

Immersible Accessories Page 51

Accessories for Immersible Products

This range of accessories is designed for use with Gems Sensors immersible products and can be supplied fitted to the units or supplied as separate items.

Nose cone and sink weights for the 2600 and 2800 series can be found in the respective sections.

Description	Order code	Used with	Description	Order code	Used with
Anti-Fouling Cover Kit 	**562923**	4700-M 5000-M 6700-M	Junction Box with breather drain 	**557737**	2400-M 2600-M 2800-M 4000-M 4700-M 5000-M 6700-M 9300 9400 9500 9600
G ½ gland plate cable mount adaptor 	**563195**	2400-M 2600-M 2800-M 4000-M 4700-M 5000-M 6700-M 9300 9400 9500 9600	Cable Support Straight cable suspension 	**557738**	2400-M 2600-M 2800-M 4000-M 4700-M 5000-M 6700-M 9300 9400 9500 9600
Dessicator 	**195316**	2400-M 2600-M 2800-M 4000-M 4700-M 5000-M 6700-M 9300 9400 9500 9600	Calibration Adaptor 	**563105**	9300 9500
	Adaptor Code				
Plastic Nosecone with restrictor Part No. 555825-0003 	**19** **20**	4000K-M 4700-M 6700-M 5000-M	Sink weight nose cone Part No. 562685-02 	**562685**	9300 9400 9500 9600
Sink weight nose cone Part No. 555825-0003 	**30**	2600-M 2800-M	Rear mounted sink weight (5 required) 	**562685-01**	2400-M 2600-M 2800-M 4000-M 4700-M 5000-M 6700-M 9300 9400 9500 9600
Sink weight nose cone Part No. 560595-29 	**29**	2400			

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