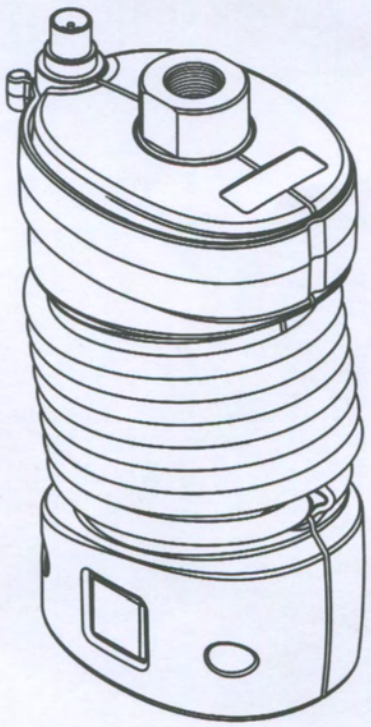
GE Infrastructure
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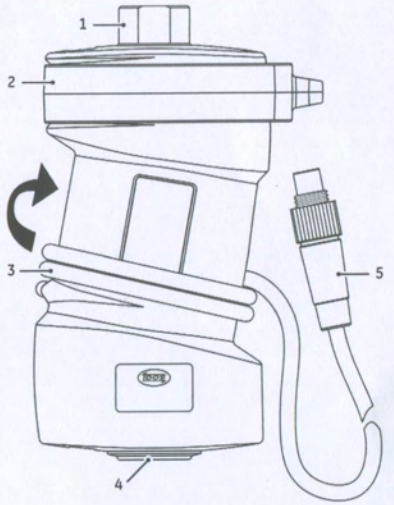
Druck IDOS UPM

Inteligent digital output sensor
Universal pressure module

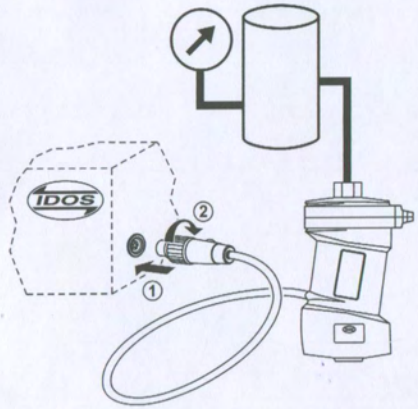
User manual - K378



A1



B1





Introduction

The IDOS Universal Pressure Modules (UPM) use Intelligent Digital Output Sensor (IDOS) technology to measure the applied pressure and supply the data to an IDOS instrument.

The IDOS technology gives instant plug and play functionality with all instruments that have the IDOS facility. The power for the UPM comes from the IDOS instrument.

Safety

Before you use the UPM, make sure that you read and understand all the related data. This includes: all local safety procedures, the instructions for the applicable IDOS instrument, and this publication.

Before you start an operation or procedure, make sure that you have the necessary skills (if necessary, with qualifications from an approved training establishment). Follow good engineering practice at all times.

WARNING

- **Some liquid and gas mixtures are dangerous. This includes mixtures that occur because of contamination. Make sure that the UPM is safe to use with the necessary media.**
- **It is dangerous to ignore the specified limits for the UPM or to use the UPM when it is not in its normal condition. Use the applicable protection and obey all safety precautions.**
- **To prevent a dangerous release of pressure, isolate and bleed the system before you disconnect a pressure connection.**
- **Do not use the UPM in locations with explosive gas, vapor or dust. There is a risk of an explosion.**

Safety - Marks and symbols on the UPM

MWP The maximum working pressure for the connector. Example: 2 x FS (FS = Full scale pressure)
REFERENCE The connector is a reference port for reference pressure only. Refer to "Specification data".
CE Complies with European Union directives

The identification on each pressure connector includes the type of thread (1/8 NPT, G1/8 ...).

Location of items A1

Item	Description
1.	Pressure connector (+ port).
2.	Cable strap
3.	UPM cable. For storage, wind the cable in the direction shown.
4.	Gage (g) UPM: Reference port connector for gage and differential (g/d) pressure (refer to "Specification data". Sealed gage (sg) or absolute (a) UPM: PTFE vent filter.
5.	Communications port connector for an IDOS instrument. The connector includes a thread to lock the connector in position.

Operation

This section shows how to connect the UPM. Before you start:

- Read and understand the "Safety" section.
- Do not use a damaged UPM.

Operation - Pressure connections

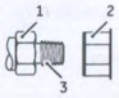
CAUTION: To prevent damage, do not apply torque to the body of the UPM. If available, use the flat faces on the pressure connector to hold the UPM in position.

Use an applicable method to seal the pressure connections, and then tighten to the applicable torque (Figure 1 and Table 1).

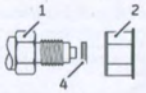
For disposal information go to www.gesensing.com/environment

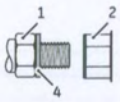
Note: If the UPM uses G1/8 connections, and the pressure is ≥1500 psi (100 bar), connection method (b) is mandatory.

a) 1/8 NPT connections

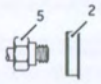


b) G1/8 connections: Pressure ≥1500 psi (100 bar)





c) G1/8 connections: Pressure <1500 psi (100 bar)



d) M5 or 10-32 UNF connections: Refer to "Table 3"

Figure 1: Connection methods

Table 1: Key to figure 1

Item	Description
1.	Process connector. Maximum torque: 1/8 NPT: 26 lbf.ft (35 Nm) G1/8: 18.4 lbf.ft (25 Nm)
2.	Applicable UPM pressure connector (Table 3)
3.	(1/8 NPT only) Thread with an applicable sealant
4.	(G1/8 only) Applicable bonded seal
5.	Reference port connector: M5 or 10-32 UNF (Table 3) Maximum torque: 1.5 lbf.ft (2 Nm)

Operation - Communications port connections

Refer to figure B1. The power can be on or off when you attach the UPM cable to the IDOS communications port.

To measure the pressure, refer to the user manual for the applicable IDOS instrument.

Maintenance

Clean the case with a moist, lint-free cloth and a weak detergent. Do not use solvents or abrasive materials.

You must return the unit to the supplier for all repairs.

Calibration

Note: GE can provide a calibration service that is traceable to international standards.

We recommend that you return the UPM to the manufacturer or an approved service agent for calibration.

If you use an alternative calibration facility, make sure that it uses these standards.

Calibration - Equipment and conditions

To do an accurate calibration, you must have:

- an IDOS instrument. Example: DPI 8xx, DPI 142/150
- an applicable pressure standard (primary or secondary) with a total uncertainty of 0.01% reading or better.
- a stable temperature environment: 70 ± 2°F (21 ± 1°C)

Calibration - Procedures

1. Connect the UPM to the IDOS instrument and to the pressure standard (figure B1).
2. Let the equipment get to a stable temperature (minimum: 30 minutes since the last power on).
3. Use the calibration menu on the IDOS instrument to do a two-point calibration (Zero and +FS) or a three-point calibration (-FS, Zero and +FS). Refer to Table 2.

Table 2: Calibration pressures

Ranges: g/d	Nominal applied pressure psi (mbar)		
	-FS †	Zero	+FS
≤ 10.0 psi (700 mbar)	-FS	0	+FS
> 10.0 psi (700 mbar)	-13.1 (-900)	0	+FS

† *For a three-point calibration, do not apply more than -90% of the specified FS for the unit.*

Ranges: a	Nominal applied pressure psi (mbar)	
	Zero	+FS
5.00 psi (350 mbar)	< 0.02 (1.0)	+FS
30.0 psi (2 bar)	< 0.07 (5.0)	+FS
100.0 psi (7 bar)	< 0.29 (20.0)	+FS
300.0 psi (20 bar)	< 0.73 (50.0)	+FS

Ranges: sg	Nominal applied pressure	
	Zero	+FS
≥ 5000 psi (350 bar)	Use atmospheric pressure as zero.	+FS

4. The display shows the applicable instructions to complete the calibration.
5. To make sure that the calibration is correct, apply these pressures to the UPM and record the results:

- Ranges g/d or sg: 0, 20, 40, 60, 80, 100 (%FS)
  Then: Go back to 0 in the same steps.
  Then (three-point calibration only):
  -20, -40, -60, -80, -100 (%FS)
  Then: Go back to 0 in the same steps.
- Ranges a: 0, 20, 40, 60, 80, 100 (%FS)
  Then: Go back to 0 in the same steps.

Standard accuracy:

The specified accuracy (refer to "Specification data") includes an allowance for temperature changes, reading stability for one year, and the uncertainty of the standard used for calibration.

In step 5, make sure that the error between the applied pressure and the reading on the unit is not more than 0.015% FS.

Premier precision:

The specified precision (refer to "Specification data") includes an allowance for temperature changes and the uncertainty of the standard used for calibration.

In step 5, make sure that the error between the applied pressure and the reading on the unit is not more than the specified value for *Premier precision*.

Specification data

All accuracy statements are for one year.

Specification - General

Operating temperature	14 ... 122°F (-10 ... 50°C)
Storage temperature	-4 ... 158°F (-20 ... 70°C)
Humidity	0 to 90% without condensation (Def Stan 66-31, 8.6 cat III)
Shock/Vibration	BS EN 61010:2001; Def Stan 66-31, 8.18 and 8.4 cat III

EMC	BS EN 61326-1:1998 + A2:2001
Safety	Electrical - BS EN 61010:2001; Pressure Equipment Directive - Class: Sound Engineering Practice (SEP); CE Marked
Size (L: W: H)	Maximum: 5.1 x 2.4 x 1.8 in (130 x 60 x 45 mm)
Weight	8.5 ... 11.5 oz (240 ... 325 g)

Specification - Pressure measurement

The % full scale (FS) statements for Standard accuracy and Premier precision are only applicable if there is a regular zero correction by the IDOS instrument.

Ranges: Gage and differential operation (g/d), sealed gage (sg), absolute (a)	Type	Standard Accuracy * % FS	Premier Precision † % FS	Notes
+/- psi: 0.36 (+/- mbar: 25)	g/d	0.1	0.03	*1/2*
+/- psi: 1, 3, 5, 10 (+/- mbar: 70, 200, 350, 700)	g/d	0.075	0.03	*1/2*
psi: -15 to [15 or 30] (bar: -1 to [1 or 2])	g/d	0.05	0.01	*1/2*
psi: -15 to [50, 100, 150, or 300] (bar: -1 to [3.5, 7, 10, or 20])	g/d	0.05	0.01	*1/3*
psi: 500, 1000, 1500, 2000, 3000 (bar: 35, 70, 100, 135, 200)	g/d	0.05	0.01	*1/3*
psi: 5 (mbar: 350)	a	0.1	-	*2*
psi: 30 (bar: 2)	a	0.075	-	*2*
psi: 100, 300 (bar: 7, 20)	a	0.075	-	*3*
psi: 5000, 10000 (bar: 350, 700)	sg	0.05	-	*3*

* *Standard accuracy is for 32 ... 122°F (0 ... 50°C); Stability: 1 year*

† *Premier precision is for 65 ... 82°F (18 ... 28°C); Stability: ≤psi 10 (700 mbar) = 0.02% of reading/Year Stability: >10 psi (700 mbar) = 0.01% of reading/Year Premier precision for 41 ... 113°F (5 ... 45°C): ≤10 psi (700 mbar): 0.075% FS >10 psi (700 mbar): 0.014% FS*

Notes:

1. *Reference port media: Non-corrosive, dry gas*
2. *+ port media: Non-corrosive, non-conductive liquid or Non-corrosive, dry gas*
3. *+ port media: Media applicable to stainless steel*

Table 3: UPM pressure connections

Ranges	Pressure connections
g/d: ≤ 30 psi g (2 bar g)	1/8 NPT female (+ port) + 1/8 NPT female reference port OR G1/8 female (+ port) + G1/8 female reference port
g/d: > 30 psi g (2 bar g)	1/8 NPT female (+ port) + 10-32 UNF reference port OR G1/8 female (+ port) + M5 reference port
sg or a: all ranges	G1/8 female (+ port) or 1/8 NPT female (+ port)

Table 4: Maximum pressure (+ port)

Ranges: g/d, sg, a	MWP	Maximum transient / intermittent pressure
≤ 5 psi (350 mbar)	2 x FS	4 x FS
> 5 psi (350 mbar)	1.2 x FS	2 x FS

Table 5: Maximum pressure (Reference port)

Ranges: g/d only	MWP
≤ 5 psi (350 mbar)	2 x FS
10 to 15 psi (700 mbar to 1 bar)	1.2 x FS
≥ 30 psi (2 bar)	2 bar

Customer service

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Part Name/部件名称	Hazardous Substances/有害物质					
IPM Instrument Pressure Module	Lead (Pb)/铅	Mercury (Hg)/汞	Cadmium (Cd)/镉	Hexavalent Chromium (Cr(VI))/六价铬	Polybrominated biphenyls (PBB)/多溴化联苯	Polybrominated diphenyl ethers (PBDE)/多溴化二苯醚
IPM	X	O	O	O	O	O
Case/外壳	O	O	O	O	O	O
PCB/电路板	X	O	O	O	O	O
Sensor/传感器	O	O	O	O	O	O
Batteries/电池	O	O	O	O	O	O
Metal Brackets/金属支架	O	O	O	O	O	O
Manifold/Valves/多管阀	O	O	O	O	O	O
Display/显示屏	O	O	O	O	O	O
Cables & wires/电缆&电线	O	O	O	O	O	O
Max concentrations	0.10%	0.10%	0.01%	0.10%	0.10%	0.10%

O: Indicates that this hazardous substance may be contained in all of the homogenous materials for this part below the limit requirement in GB/T 26572.
X: Indicates at least one of the hazardous substances is contained in at least one of the homogenous materials used for this part is above the limit requirement in GB/T 26572.

O：表示该有害物质在该部件所有均值材料中的含量均在GB/T26752规定的限量要求以下。
X：表示该有害物质至少在该部件的某一均值材料中的含量超出GB/T26752规定的限量要求。

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