

DPI 620 Series

Advanced Modular Calibration and HART Communication System

Combines an advanced multi-function calibrator and HART communicator
with world-class pressure measurement and generation.



HART
COMMUNICATION PROTOCOL



Modularity brings a whole new perspective to multi-function test instruments, -calibrators and HART communicators

System features

- Modular concept provides greater flexibility
- Re-range during use
- Expand over time
- Adapt by application
- Allows significant inventory reductions
- Simplifies user training
- Reduces cost of ownership
- A Complete HART communicator and multifunction calibrator in one device

The system includes:

A combined Multifunction calibrator...

- Accuracy from 0.0025%rdg + 0.002%FS
- Measure, source and simulate mA, mV, V, ohms, frequency, RTDs and thermocouples
- Easy to use with photo quality touch screen
- Robust, weatherproof and extremely compact

...and a HART digital communicator...

- Device Description Library for HART devices
- Free of charge upgrades and new device descriptions
- Integral 24V loop power supply to energise HART devices and loops
- Menu selectable 250 ohm loop resistor
- Measures mA and sources the primary variable for device trims and calibration

...with advanced connectivity and documenting features

- Automate calibration procedures and document As Found and As Left results
- Store a complete plant database including tags, devices and procedures
- Graphical views of data log files, calibration results and historical trends

- PDA version with Windows CE – view loop diagrams, datasheets, safety procedures, spreadsheets and create text documents.
- IEEE 802.11g wireless connection with Internet access

Pressure measurement modules

- 25 mbar to 1000 bar (10 inH₂O to 15000 psi)
- Accuracy from 0.005%FS
- Fully interchangeable modules with no need for set-up, calibration or tools

Pressure generation stations

- Advanced pressure generation
 - 95% vacuum to 20 bar pneumatic
 - 95% vacuum to 100 bar pneumatic
 - 0 to 1000 bar hydraulic
- Stand-alone pressure stations can replace hand pumps and can be used as comparators

Applications

- Instrumentation installation, commissioning, maintenance and calibration
- HART test, configuration and calibration
- System measurement and monitoring
- Indicator, recorder and controller testing
- Process loop set up and diagnostics
- Switch, trip and safety system testing

For ...

- Plant and process engineers
- Service companies and site contractors
- Installation and commissioning engineers
- Laboratory technicians

A flexible modular system

The DPI 620 Series - Advanced Modular Calibration and HART Communication System uses three basic components to provide the multi-functionality to perform duties formerly requiring a wide range of different instruments.

Features

- Multi-function capabilities: electrical, frequency, temperature and pressure
- Complete HART communicator included
- Modular re-rangeable and expandable concept
- Individual components can be used as stand-alone instruments
- Allows significant inventory reductions
- Simplifies training and improves operator safety
- Reduces cost of ownership

Its basic component is an ultra-compact, electrical, frequency and temperature calibrator and HART communicator, which provides simultaneous measurement and source capabilities with a fully featured HART digital interface.

Pressure measurement is provided by interchangeable pressure modules that can be attached to the calibrator by a pressure module carrier.

If pressure generation is required the calibrator and pressure module can be attached to one of three pressure generation stations, to form a fully-integrated pressure calibrator, of unparalleled performance.

The simple yet sophisticated design and concept combines, for the first time, an advanced electrical calibrator with state-of-the-art pressure measurement and generation, so that there is no longer any need to compromise one measurand capability in favour of another.



Measure and source mA, mV, V, ohms, frequency, RTD's and thermocouples.

Re-rangeable dual channel pressure measurement from 25 mbar (10 inH₂O) to 1000 bar (15000 psi)



Re-rangeable pressure measurement and generation from 25 mbar (10 inH₂O) to 1000 bar (15000 psi)

The DPI 620 Series - Advanced Modular Calibrator and HART Communicator

Features

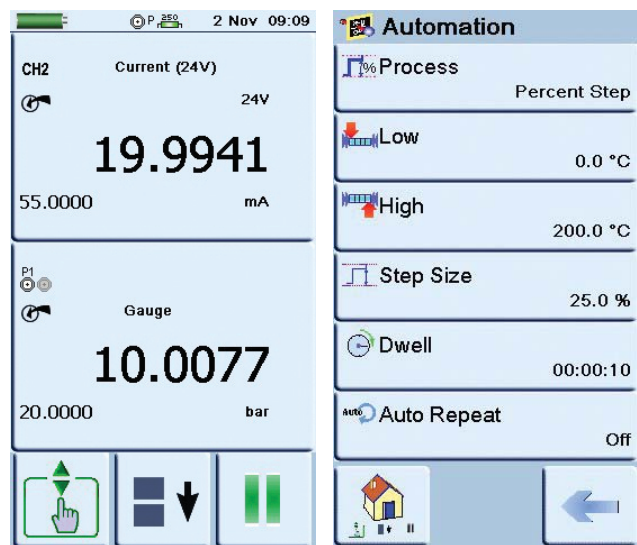
- Measure, source and simulate multiple parameters
- Complete HART communicator included
- Easy-to-use, with photo quality colour touch screen, which can be operated by a gloved hand
- Weather-proof to IP 65
- Can display up to 6 active readings
- Available with a range of add-on modules, pressure measurement modules and generation stations, Intecal Field Calibration documenting module, 300Vac measurement probe
- Digital interface for pressure modules and future options
- USB master and slave for connecting to a PC and peripherals
- Available in Windows CE version
- Long-life Lithium-Polymer battery pack

A Compact and Powerful Electrical Calibrator and HART Communicator

The DPI 620 electrical calibrator can measure and source mA, mV, V, Ohms, frequency and a variety of RTDs and T/Cs. It provides an isolated 24 V loop power supply to energise devices and control loops and a stabilized dc voltage supply for ratio metric transducers.



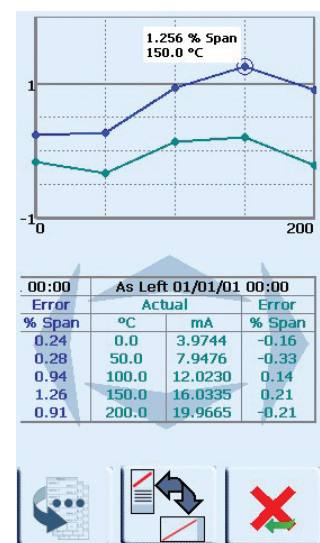
The high resolution, colour touch screen of the calibrator shows only those buttons necessary for the immediate, selected tasks. The buttons have been sized so that they can be operated by a gloved hand, with no need for a stylus. The display can be configured to show up to six reading windows and can show electrical and temperature inputs and outputs, two pressure module readings, an IDOS pressure measurement, and a USB-connected device, as well as a HART summary window or full HART communicator with active mA measurement and actual primary variable readings.



The reading windows also act as active keys and, when pressed, they expand to show more detailed information or to provide advance functions such as step and ramp outputs. Colour is used to emphasize important information, for example, red for critical or failed values and green for pass or within tolerance.

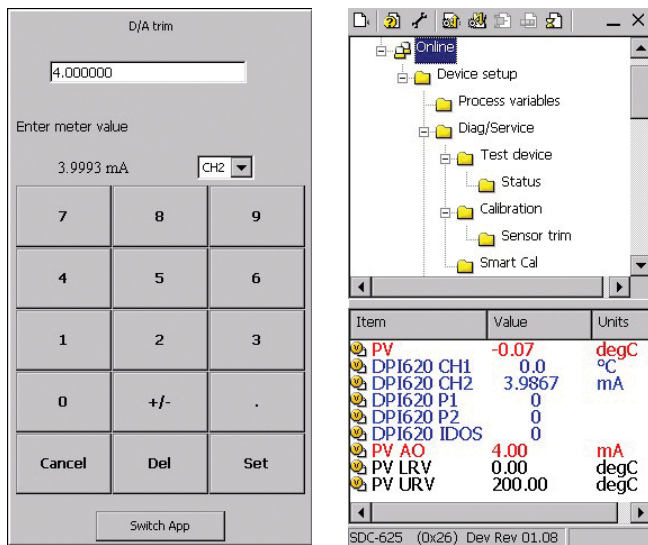
The DPI 620 includes comprehensive documenting features for automating instrument calibration when used in conjunction with Intecal Calibration Management software.

The compact and lightweight calibrator is designed for rugged field application, with a robust casing and weather-proofing to IP 65. It features a high-speed digital interface for connecting to pressure modules and pressure generating stations. This interface will also allow expansion to meet future requirements when new modules and stations become available. It also features USB connectivity and a microSD card slot with 2 Gb of memory installed as standard.



High performance HART communicator

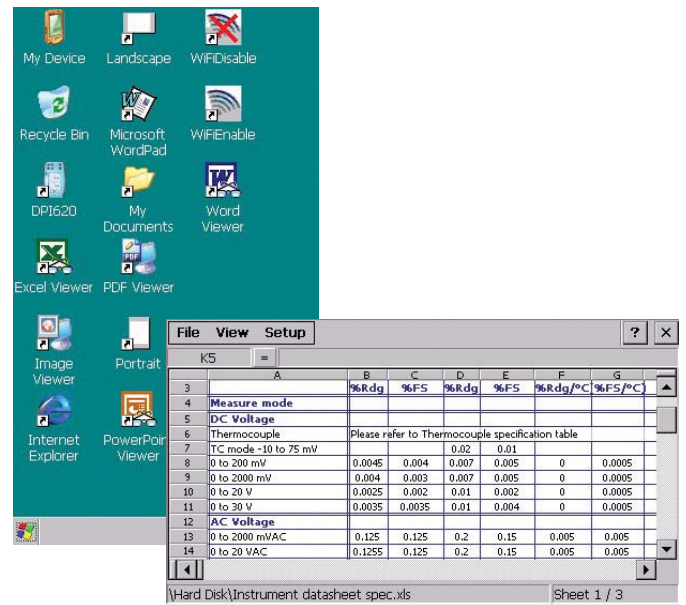
The DPI 620 multifunction calibrator now incorporates a fully featured HART® communicator which surpasses market leading communicators in functionality, ease of use and upgrade support such that a single hand held device can now configure the full range of HART devices and perform mA trims and sensor calibrations without the need for secondary equipment such as ammeters, calibrators, power supplies and loop resistors. This can significantly reduce equipment inventory, cost of ownership and greatly simplify maintenance activities. The DPI 620 contains the latest application software and a complete library of registered HART device descriptions. Upgrades can be simply downloaded free of charge from our website.



The DPI 620 CE Advanced Modular Calibrator and HART Communicator

A Multifunction Electrical Calibrator and HART Communicator with Windows CE

The Windows CE-driven version of the electrical calibrator provides all the computing power of a conventional hand-held PC or PDA. It provides standard Windows file management and offers popular Windows features to allow users to create text documents and view common file types including Excel, Power Point, Word, pdf and images. This means that operators can consult user manuals, training presentations, data sheets, installation drawings etc while in the field or on the plant.



The DPI 620 CE with WiFi Advanced Modular Calibrator and HART Communicator

A wireless IEEE 802.11g enabled Multifunction Electrical Calibrator and HART Communicator

The DPI 620 CE version can be further enhance with wireless IEEE 802.11g communications. For the first time, in a calibrator of this type, it is possible to link to the Internet and remote networks in order to access information and to transfer data. This powerful feature will benefit service technicians who spend extended periods away from head office and for those who need instant access to data, safety information, system drawings, product datasheets etc., while on the move. It will also provide an interface to future system modules when a physical connection is a hindrance.

Technical Specifications

General Specifications

Display	Size: 110 mm (4.3 in) diagonal; 480 x 272 pixels LCD: Colour display with touch-screen
Languages	English (Default)
Operating temperature	-10° to 50°C (14° to 122°F)
Storage temperature	-20° to 70°C (-4° to 158°F)
Ingress Protection	IP65 (Dust-tight, jets of water)
Humidity	0 to 90% RH Non condensing
Shock / Vibration	BS EN 61010:2001; Def Stan 66-31, 8.4 cat III, 1 m Drop Tested
EMC	Electromagnetic compatibility: BS EN 61326-1:2006
Electrical safety	Electrical – BS EN 61010 : 2001
Pressure safety	Pressure Equipment Directive - Class: Sound Engineering Practice (SEP)
Approved	CE Marked
Size (L: W: H)	DPI 620 only: 183 x 114 x 42 mm (7.2 x 4.5 x 1.7 in) + MC 620: ≈ 265 x 114 x 64 mm (10.4 x 4.5 x 2.5 in) + PM 620: ≈ 265 x 114 x 93 mm (10.4 x 4.5 x 3.7 in)
Weight	DPI 620 only: ≈ 575 g (1.3 lb) – battery included. MC 620 only: ≈ 640 g (1.4 lb). PM 620 only: ≈ 100 g (0.2 lb).
Power supply	Lithium-Polymer battery (GE Part number : IO620-Battery); Capacity: 5040 mAh (minimum), 5280 mAh (typical); Nominal voltage: 3.7 V. Charge temperature: 0° to 40°C (32° to 104°F) Discharge temperature: -20° to 60°C (-4° to 140°F). Note: For best battery performance, keep the temperature less than 60°C (140°F). Charge/discharge cycles: > 500 > 70% capacity.
Duration	Measure functions (CH1): ≈ 12 hours continuous. Dual Function, mA measure (CH2): ≈ 7 hours (24 V Source at 12 mA)



Electrical Measurement and Source

		NLH&R ±1°C (2°F) for 24 hrs (note 1)		Total Uncertainty 10° to 30°C (50° to 86°F) for 1 year (note 3)		Additional error -10° to 10°C (14° to 50°F) 30° to 50°C (86° to 122°F)		Resolution	Display reading window		
		%Rdg	+ %FS	%Rdg	+ %FS	%Rdg/°C	+ %FS/°C				
Measure mode											
DC Voltage	Thermocouple	Please refer to Thermocouple specification table								CH1	
	TC mode -10 to 100 mV	0.0045	0.008	0.007	0.01	0	0.0005	0.001	CH1		
	± 200 mV	0.0045	0.004	0.007	0.005	0	0.0005	0.001	CH1	CH2	
	± 2000 mV	0.004	0.003	0.007	0.005	0	0.0005	0.01	CH1	CH2	
	± 20 V	0.0025	0.002	0.01	0.002	0	0.0005	0.00001	CH1	CH2	
	± 30 V	0.0035	0.0035	0.01	0.004	0	0.0005	0.0001	CH1	CH2	
AC Voltage (note 2)	0 to 2000 mVAC	0.125	0.125	0.2	0.15	0.005	0.005	0.1	CH1		
	0 to 20 VAC	0.1255	0.125	0.2	0.15	0.005	0.005	0.001	CH1		
	0 to 300 VAC	1	0.06	1.5	0.1	0.1	0.05	0.01	CH1		
Current	± 20 mA	0.006	0.005	0.012	0.006	0	0.0005	0.0001	CH1	CH2	
	± 55 mA	0.005	0.005	0.016	0.005	0	0.0005	0.0001	CH1	CH2	
Resistance (True, 4 wire)	RTD	Please refer to RTD specification table								CH1	
	0 to 400 Ω	0.0055	0.001	0.009	0.0012	0	0.0005	0.001	CH1		
	0 to 4000 Ω	0.0055	0.001	0.009	0.0012	0	0.0005	0.01	CH1		
Resistance (4 wire)	RTD	Please refer to RTD specification table								CH1	
	0 to 400 Ω	0.012	0.005	0.015	0.006	0	0.001	0.001	CH1		
	0 to 4000 Ω	0.0115	0.0045	0.015	0.006	0	0.001	0.01	CH1		
Frequency	0 to 1000 Hz	0.0003	0.0002	0.003	0.0002			0.0001	CH1		
	1 kHz to 50 kHz	0.0003	0.0004	0.003	0.0004			0.00001	CH1		
	0 to 999999 CPM	Refer to equivalent frequency							0.01	CH1	
	0 to 999999 CPH	Refer to equivalent frequency							0.01	CH1	
	Trigger level	Automatic and adjustable 0 to 20 V							0.1		
Pressure	25 mbar to 1000 bar (0.35 psi to 15000 psi)	Please refer to PM 620 pressure range table								P1	P2
	IDOS external module	Please refer to IDOS UPM datasheet. P/N IO620-IDOS-USB+IO620-USB-PC required								IDOS	
	USB port	Please refer to GE Sensing for compatible devices								USB	
Source mode											
DC Voltage	TC mode	Please refer to Thermocouple specification table									
	TC mode -10 to 100 mV	0.009	0.008	0.014	0.01	0	0.0005	0.001	CH1		
	0 to 200 mV	0.0045	0.004	0.007	0.005	0	0.0005	0.1	CH1		
	0 to 2000 mV	0.004	0.003	0.007	0.005	0	0.0005	0.1	CH1		
	0 to 12 V	0.006	0.0035	0.01	0.0035	0	0.0005	0.001	CH1		
Current	0 to 24 mA	0.01	0.004	0.015	0.005	0	0.0005	0.001	CH1	CH2	
	0 to 24 mA (24 V loop power)	0.01	0.004	0.015	0.005	0	0.0005	0.001		CH2	
	24 V loop power	24 V ±10%									
Resistance	RTD	Please refer to RTD specification table								CH1	
	0 to 400 Ω (0.1mA)	0.024	0.0035	0.03	0.0075	0	0.001	0.01	CH1		
	0 to 400 Ω (0.5mA)	0.004	0.0025	0.008	0.003	0	0.001	0.01	CH1		
	400 to 2000 Ω (0.05mA)	0.048	0.0035	0.06	0.006	0	0.001	0.01	CH1		
	2k to 4 kΩ (0.05mA)	0.048	0.0035	0.06	0.0045	0	0.001	0.01	CH1		
	Maximum input current	0-400 Ω 5 mA, 400-2000 Ω 1mA, 2000-4000 Ω 0.5 mA									
Frequency	0 to 1000 Hz	0.0003	0.00023	0.003	0.00023			0.1	CH1		
	1kHz to 50 kHz	0.0003	0.000074	0.003	0.000074			0.001	CH1		
	Output waveform	Square, positive swing up to 12V (adjustable), negative swing -80mV (fixed) Sine and Triangular, adjustable amplitude and offset within the limits -2.5 to +12 V									
	Square wave peak output	0 to 12 V +/-20mV (10 mA maximum)									
	0 to 99999 CPM	Please refer to equivalent frequency							1	CH1	
0 to 99999 CPH	Please refer to equivalent frequency							1	CH1		

Note 1: NLH&R (non-linearity, hysteresis and repeatability) specification applies when calibration temperature is between 10 and 30°C (50°F and 86°F).

Note 2: Specification applies, 45 to 65Hz and between 10% and 100% of fullscale.

Note 3: Total uncertainty includes reference standard uncertainty NLH & R and typical long term stability for one year (k=2)

The display can be configured to show a maximum of 6 simultaneous reading windows as follows: CH1, CH2, P1, P2, IDOS, HART

"True Ohms" RTD Measure Mode (4-wire)

Type	Temperature coefficient	Temperature range				Total Uncertainty 10° to 30°C (50° to 86°F) for 1 year		
		°C		°F		Rdg %	Tos	
		From	To	From	To		°C	°F
Pt 50	3.85	-200.00	0.00	-328.00	32.00	0.012	0.05	0.09
		0.00	850.00	32.00	1562.00			
Pt 100	3.85	-200.00	0.00	-328.00	32.00	0.012	0.04	0.07
		0.00	850.00	32.00	1562.00			
Pt 100	3.92	-200.00	0.00	-328.00	32.00	0.012	0.04	0.07
Pt 200	3.85	-200.00	0.00	-328.00	32.00	0.01	0.03	0.051
		0.00	260.00	32.00	500.00			
		260.00	850.00	500.00	1562.00			
Pt 500	3.85	-200.00	-60.00	-328.00	-76.00	0.01	0.026	0.044
		-60.00	0.00	-76.00	32.00			
		0.00	850.00	32.00	1562.00			
Pt 1000	3.85	-200.00	-150.00	-328.00	-238.00	0.009	0.024	0.04
		-150.00	0.00	-238.00	32.00			
		0.00	850.00	32.00	1562.00			
Cu 10	4.27	-200.00	0.00	-328.00	32.00	0.00	0.14	0.25
		0.00	260.00	32.00	500.00			
D 100	6.18	-200.00	0.00	-328.00	32.00	0.01	0.035	0.06
		0.00	640.00	32.00	1184.00			
Ni 100	6.72	-60.00	0.00	-76.00	32.00	0.00	0.026	0.047
		0.00	250.00	32.00	482.00			
Ni 120	6.72	-80.00	0.00	-112.00	32.00	0.00	0.022	0.04
		0.00	270.00	32.00	518.00			
		270.00	320.00	518.00	608.00			

Standard RTD Measure Mode (4-wire)

Type	Temperature coefficient	Temperature range				Total Uncertainty 10° to 30°C (50° to 86°F) for 1 year		
		°C		°F		Rdg %	Tos	
		From	To	From	To		°C	°F
Pt 50	3.85	-200.00	0.00	-328.00	32.00	0.021	0.16	0.28
		0.00	850.00	32.00	1562.00			
Pt 100	3.85	-200.00	0.00	-328.00	32.00	0.017	0.1	0.175
		0.00	850.00	32.00	1562.00			
Pt 100	3.92	-200.00	0.00	-328.00	32.00	0.017	0.1	0.175
		0.00	850.00	32.00	1562.00			
Pt 200	3.85	-200.00	0.00	-328.00	32.00	0.017	0.069	0.12
		0.00	260.00	32.00	500.00			
		260.00	850.00	500.00	1562.00			
Pt 500	3.85	-200.00	-60.00	-328.00	-76.00	0.0165	0.051	0.09
		-60.00	0.00	-76.00	32.00			
		0.00	850.00	32.00	1562.00			
Pt 1000	3.85	-200.00	-150.00	-328.00	-238.00	0.016	0.044	0.074
		-150.00	0.00	-238.00	32.00			
		0.00	850.00	32.00	1562.00			
Cu 10	4.27	-200.00	0.00	-328.00	32.00	0.035	0.66	1.18
		0.00	260.00	32.00	500.00			
D 100	6.18	-200.00	0.00	-328.00	32.00	0.019	0.1	0.174
		0.00	640.00	32.00	1184.00			
Ni 100	6.72	-60.00	0.00	-76.00	32.00	0.00	0.071	0.13
		0.00	250.00	32.00	482.00			
Ni 120	6.72	-80.00	0.00	-112.00	32.00	0.00	0.06	0.11
		0.00	270.00	32.00	518.00			
		270.00	320.00	518.00	608.00			

RTD Simulate Mode (0.1mA min, 0-400Ω; 0.05mA min, 400-4000Ω)

Type	Temperature coefficient	Temperature range				Total Uncertainty 10° to 30°C (50° to 86°F) for 1 year		
		°C		°F		Rdg %	Tos	
		From	To	From	To		°C	°F
Pt 50	3.85	-200.00	0.00	-328.00	32.00	0.043	0.24	0.42
		0.00	850.00	32.00	1562.00	0.043	0.24	0.42
Pt 100	3.85	-200.00	0.00	-328.00	32.00	0.04	0.16	0.28
		0.00	850.00	32.00	1562.00	0.04	0.16	0.28
Pt 100	3.92	-200.00	0.00	-328.00	32.00	0.04	0.16	0.28
Pt 200	3.85	-200.00	0.00	-328.00	32.00	0.0345	0.12	0.21
		0.00	260.00	32.00	500.00	0.0345	0.12	0.21
		260.00	850.00	500.00	1562.00	0.087	0.28	0.48
Pt 500	3.85	-200.00	-60.00	-328.00	-76.00	0.033	0.095	0.16
		-60.00	0.00	-76.00	32.00	0.078	0.23	0.39
		0.00	850.00	32.00	1562.00	0.078	0.23	0.39
Pt 1000	3.85	-200.00	-150.00	-328.00	-238.00	0.032	0.085	0.15
		-150.00	0.00	-238.00	32.00	0.0675	0.19	0.32
		0.00	260.00	32.00	500.00	0.0675	0.19	0.32
		260.00	850.00	500.00	1562.00	0.082	0.17	0.28
Cu 10	4.27	-200.00	0.00	-328.00	32.00	0.00	0.85	1.53
		0.00	260.00	32.00	500.00	0.00	0.92	1.66
D 100	6.18	-200.00	0.00	-328.00	32.00	0.038	0.16	0.28
		0.00	640.00	32.00	1184.00	0.038	0.16	0.28
Ni 100	6.72	-60.00	0.00	-76.00	32.00	0.00	0.12	0.22
		0.00	250.00	32.00	482.00	0.00	0.12	0.22
Ni 120	6.72	-80.00	0.00	-112.00	32.00	0.00	0.11	0.2
		0.00	270.00	32.00	518.00	0.00	0.11	0.2
		270.00	320.00	518.00	608.00	0.00	0.25	0.45

→ Note:

These figures relate to DPI 620 uncertainties only.

For RTD Measure and Source functions the uncertainty is given by:-

$$Urtd = T(^{\circ}C) \times ppmRdg + Tos (^{\circ}C)$$

or

$$Urtd = T(^{\circ}F) \times ppmRdg + Tos (^{\circ}F)$$

where T () is the measurement expressed in °C or °F.

Measurement resolution:

0.01 °C/F. Simulation resolution 0.1 °C/F

Excitation current:

Measure mode 0 to 400Ω 2.5mA, 400Ω to 4000Ω 0.5mA;

Simulate mode 0 to 400 Ω 5mA max, 0.4 to 2kΩ 1mA max and 2 to 4kΩ 0.5mA max.

Simulate mode pulsed excitation current minimum duration 10 ms

→ Specifications relate to DPI 620 uncertainties only

Measurement resolution 0.01 °C/F. Simulation resolution 0.1 °C/F

Cold Junction (CJ) Error (maximum)

Range: 10 to 30°C (50 to 86°F) = 0.2°C (0.4°F)

Add 0.01°C (0.02°F) CJ Error/° ambient temperature change for ranges: -10 to 10°C, 30 to 50°C (14 to 50°F, 86 to 122°F)

Thermocouple Measurement and Simulation

Type	Standard	Temperature range (range shows correct resolution)				Total Uncertainty 10° to 30°C (50° to 86°F) for 1 year	
		°C		°F		°C	°F
		From	To	From	To		
B	IEC 584	250.00	500.00	482.00	932.00	4.00	7.20
		500.00	700.00	932.00	1292.00	2.00	3.60
		700.00	1200.00	1292.00	2192.00	1.50	2.70
		1200.00	1820.00	2192.00	3308.00	1.00	1.80
E	IEC 584	-270.00	-200.00	-454.00	-328.00	2.00	3.60
		-200.00	-120.00	-328.00	-184.00	0.50	0.90
		-120.00	1000.00	-184.00	1832.00	0.25	0.45
J	IEC 584	-210.00	-140.00	-346.00	-220.00	0.50	0.90
		-140.00	1200.00	-220.00	2192.00	0.30	0.54
K	IEC 584	-270.00	-220.00	-454.00	-364.00	4.00	7.20
		-220.00	-160.00	-364.00	-256.00	1.00	1.80
		-160.00	-60.00	-256.00	-76.00	0.50	0.90
		-60.00	800.00	-76.00	1472.00	0.30	0.54
		800.00	1370.00	1472.00	2498.00	0.50	0.90
L	DIN 43710	-200.00	-100.00	-328.00	-148.00	0.40	0.72
		-100.00	900.00	-148.00	1652.00	0.25	0.45
N	IEC 584	-270.00	-200.00	-454.00	-328.00	7.00	12.60
		-200.00	-40.00	-328.00	-40.00	1.00	1.80
		-40.00	1300.00	-40.00	2372.00	0.40	0.72
R	IEC 584	-50.00	360.00	-58.00	680.00	3.00	5.40
		360.00	1760.00	680.00	3200.00	1.00	1.80
S	IEC 584	-50.00	70.00	-58.00	158.00	3.00	5.40
		70.00	320.00	158.00	608.00	1.50	2.70
		320.00	660.00	608.00	1220.00	1.10	1.98
		660.00	1740.00	1220.00	3164.00	1.00	1.80
T	IEC 584	-270.00	-230.00	-454.00	-382.00	3.00	5.40
		-230.00	-50.00	-382.00	-58.00	1.00	1.80
		-50.00	400.00	-58.00	752.00	0.30	0.54
U	DIN 43710	-200.00	-50.00	-328.00	-58.00	0.60	1.08
		-50.00	600.00	-58.00	1112.00	0.30	0.54
C		0.00	1600.00	32.00	2912.00	0.80	1.44
		1600.00	2000.00	2912.00	3632.00	1.00	1.80
		2000.00	2300.00	3632.00	4172.00	1.40	2.52
D		0.00	100.00	32.00	212.00	1.10	1.98
		100.00	270.00	212.00	518.00	0.80	1.44
		270.00	1200.00	518.00	2192.00	0.60	1.08
		1200.00	1800.00	2192.00	3272.00	0.80	1.44

PM 620 Pressure Modules

Features

- Fully interchangeable with no need for set-up or calibration
- Simple screw fit - hand tight no tools required
- Ranges from 25 mbar to 1000 bar (10 inH₂O to 15000 psi)
- Accuracy from 0.005% FS

The PM 620 is the latest development in digital output sensor technology incorporating a number of key innovations to allow pressure re-ranging of compatible equipment. A simple screw fit makes both the pressure and electrical connections without the need for tools, sealing tape, cables or plugs and digital characterisation allows interchangeability without set-up or calibration. The modules can be changed in a few seconds to re-range an instrument at a fraction of the cost of a new one. The pressure modules can be used in conjunction with the relevant pneumatic or hydraulic pressure station and the DPI 620 multifunction calibrator to form an integrated pressure calibrator for test and calibration of pressure instruments including transmitters, transducers, switches, gauges, indicators and recorders. Alternatively, the modules can be combined with the pressure station by a module carrier, which adds a dual channel pressure measurement capability that can be re-ranged in seconds.

Pressure ranges are available from 25 mbar to 1000 bar (10 inH₂O to 15000 psi) with a total measurement uncertainty, including operation over 0 to 50°C (32 to 122°F) for one year.

MC 620 Module Carrier

Features

- 2 independent pressure channels
- Simple to re-range
- No tools or setup – just a simple screw fit
- Pressure protection

The MC 620 module carrier attaches the head of the DPI 620 to provide two independent pressure measurement channels. These can be fitted with any PM 620 pressure module from 25 mbar to 1000 bar (10 inH₂O to 15000 psi). A simple screw fit means no tools are required and ensures both a high integrity pressure seal and a reliable digital interface.

The pressure connection to the device under test is a simple finger tight system with interchangeable adaptors. This tool-less connection method is quick to use and provides a high integrity seal. The same system is used on the interconnecting hose and adaptor accessories, such that the only connection requiring tools and seals/sealing tape is the final connection to the device under test.

The carrier is also designed for pressure safety and will automatically seal if a module is not fitted or if the user attempts to remove it.

MC 620 Specification

Maximum pressure	400 bar (5800 psi) pneumatic 1000 bar (15000 psi) hydraulic
Pressure media	Compatible with stainless steel and nitrile seals
Pressure safety	Pressure equipment directive class SEP
Size and weight	80 mm x 100 mm x 110 mm, 640 g



PM 620 Specification

Maximum intermittent pressure	2 x FS
Maximum working pressure	110% FS
Sealing	IP 65 (protected against dust and jets of water)
Operating temperature	-10 to 50°C (14 to 122°F)
Storage temperature	-20 to 70°C (-4 to 158°F)
Humidity	0 to 90% RH non condensing
Shock and vibration	BS EN 61010:2001; Def stan 66-31, 8.4 cat III), 1 m Drop Tested
EMC	BS EN 61326-1:2006
Electrical safety	BS EN 61010:2001
Pressure safety	Pressure equipment directive class SEP
Approval	CE marked
Size and weight	L. 56 mm, Dia. 44 mm, 106 g maximum

Gauge Ranges (referenced to atmosphere)

		Media	NLH&R 20°C ±2°C (68°F ± 4°F) 24 hr	NLH&R 0° to 50°C (32° to 122°F) 24 hr	Total uncertainty 0° to 50°C (32° to 122°F) for 1 year
			Gauge	Gauge	Gauge
bar	psi		%FS	%FS	%FS
±0.025	±10 inH ₂ O	①	0.090	0.090	0.100
±0.07	±1	①	0.025	0.030	0.047
±0.2	±3	①	0.020	0.027	0.045
±0.35	±5	②	0.020	0.025	0.044
±0.7	±10	②	0.015	0.020	0.041
±1	-14.5 to 15	②	0.015	0.020	0.041
-1 to 2	-14.5 to 30	②	0.015	0.020	0.025
-1 to 3.5	-14.5 to 50	②	0.010	0.020	0.025
-1 to 7	-14.5 to 100	②	0.010	0.020	0.025
-1 to 10	-14.5 to 150	②	0.005	0.020	0.025
-1 to 20	-14.5 to 300	②	0.005	0.020	0.025
0 to 35	0 to 500	②	0.005	0.020	0.025
0 to 70	0 to 1000	②	0.005	0.020	0.025
0 to 100	0 to 1500	②	0.005	0.020	0.025
0 to 135	0 to 2000	②	0.005	0.020	0.025
0 to 200	0 to 3000	②	0.005	0.020	0.025

- ← NLH&R Non-linearity, hysteresis and repeatability
- ① Compatible with non-corrosive gas/fluid
 - ② Compatible with stainless steel
 - * The reading can be referenced to ambient air pressure via a software feature of the DPI 620 allowing the same module switched between absolute and sealed gauge measurement
- DPI 620 pressure resolution: adjustable 4 to 7 digits



Absolute Ranges (referenced to vacuum)

		Media	NLH&R 20°C ±2°C (68°F ± 4°F) 24 hr	NLH&R 20°C ±2°C (68°F ± 4°F) 24 hr	NLH&R 0° to 50°C (32° to 122°F) 24 hr	NLH&R 0° to 50°C (32° to 122°F) 24 hr	Total uncertainty 0° to 50°C (32° to 122°F) for 1 year	
			Absolute	*Sealed Gauge	Absolute	*Sealed Gauge	Absolute	*Sealed Gauge
bar	psi		%FS	%FS	%FS	%FS	%FS	%FS
0 to 0.35	0 to 5	②	0.030		0.050		0.080	
0 to 1.2	0 to 35 inHg	②	0.020		0.036		0.070	
0 to 2	0 to 30	②	0.015		0.036		0.052	
0 to 3.5	0 to 50	②	0.015		0.036		0.050	
0 to 7	0 to 100	②	0.015		0.036		0.050	
0 to 10	0 to 150	②	0.015	0.005	0.030	0.020	0.047	0.025
0 to 20	0 to 300	②	0.015	0.005	0.030	0.020	0.047	0.025
0 to 35	0 to 500	②	0.015	0.005	0.030	0.020	0.047	0.025
0 to 70	0 to 1000	②	0.015	0.005	0.030	0.020	0.047	0.025
0 to 100	0 to 1500	②	0.015	0.005	0.030	0.020	0.046	0.025
0 to 135	0 to 2000	②	0.015	0.005	0.030	0.020	0.046	0.025
0 to 200	0 to 3000	②	0.015	0.005	0.030	0.020	0.046	0.025
0 to 350	0 to 5000	②	0.015	0.005	0.033	0.020	0.049	0.025
0 to 700	0 to 10000	②	0.015	0.005	0.033	0.020	0.049	0.025
0 to 1000	0 to 15000	②	0.015	0.005	0.033	0.020	0.049	0.025

The PV 621, 622 and 623 Pressure Stations

Features

- A uniquely capable, re-rangeable and self contained pressure test system
- Advanced pressure generation
 - 95% vacuum to 20 bar (300 psi) pneumatic
 - 95% vacuum to 100 bar (1500 psi) pneumatic
 - 0 to 1000 bar (15000 psi) hydraulic
- Stand alone replacements for hand pumps
- Bench top use as comparators

There are three pressure generation stations: the PV 621, a pneumatic pressure generator for pressures 95% vacuum to 20 bar (300 psi); the PV 622, a pneumatic pressure generator for pressures 95% vacuum to 100 bar (1500 psi); and the PV 623, a hydraulic pressure generator for pressures up to 1000 bar (15000 psi). Each pressure station is designed for stand-alone operation as a pressure generator and can replace conventional hand pumps to provide greater efficiency and ease of use. They can also be used on the workbench as a comparators.

The PV 621 has a conventional hand pump, volume adjuster and pressure/vacuum selector, but will generate pressure with half the effort of conventional systems.

The PV 622 100 bar (1500 psi) pneumatic station represents a five-fold increase in capability and solves the transportation and health and safety issues of using gas bottles and regulators as a pressure source in field locations. It features an innovative dual stage system incorporating a hand pump to generate pressure and a screw press to intensify the pressure. For a typical 4" gauge mounted on the station, 100 bar (1500 psi) can be achieved in just

one cycle, but the process can be repeated as many times as required for higher volume systems. The screw press converts to a precision volume adjuster allowing the test pressure to be increased or decreased as required.

The PV 623 solves many of the problems associated with hydraulic pressure generation by generating pressure to 1000 bar (15000 psi) and providing a stable pressure within 1 minute. In conventional systems priming to remove air is wasteful and messy and pressure stability is only achieved after several minutes. This instability is the result of thermal change, seen as a large pressure leak, which can render the device unusable for calibration for 10 minutes per pressure test.

Operation of the PV 623 is simple. The screw press is rotated anti-clockwise to fill the screw press with hydraulic fluid from an internal reservoir. The screw press is then rotated clockwise to fill the test device and compress the hydraulic fluid. For larger volume systems the process can be repeated, a non-return valve prevents pressure loss on the refill cycle. When the test pressure has been reached the screw press converts to a precision volume adjuster for making fine adjustments.

Combining any of the pressure stations with a PM 620 pressure module and the DPI 620 calibrator creates a uniquely capable, self-contained pressure calibrator.

PV 621, 622 and 623 Specification

Maximum pressure	PV 621 20 bar (300 psi) pneumatic PV 622 100 bar (1500 psi) pneumatic PV 623 1000 bar (15000 psi) hydraulic
Pressure media	PV 621 and PV 622 non-corrosive gases, PV 623 de-mineralized water or mineral oil (ISO viscosity grade < 22)
Operating temperature	-10° to 50°C (14° to 122°F) For water +4 to +50°C (39 to 122°F)
Storage temperature	-20 to 70°C (-4 to 158°F) (must be empty of water)
Shock and vibration	BS EN 61010:2001; Def stan 66-31, 8.4 cat III, 1 m drop tested
Pressure safety	Pressure equipment directive class SEP
Size and weight	450 mm x 280 mm x 235 mm, PV 621 2.65 kg, PV 622 3.30 kg, PV 623 3.75 kg





Ordering Information

Please order the following model numbers and part numbers as separate line items.

Model DPI 620

Advanced modular calibrator

Model DPI 620 CE

Advanced modular calibrator with Windows CE

The DPI 620/CE are supplied with a rechargeable lithium polymer battery P/N IO620-BATTERY, universal mains adaptor/charger P/N IO620-PSU, IO620-AC 300 VAC true rms measurement probe, test leads, calibration certificate, quick reference guide and CD with multilingual user manuals.

Model MC 620

Pressure module carrier

Supplied with G 1/8 female and 1/8 NPT female adaptors (2 of each).

Model PM 620 "pressure range" and "type"

Pressure module. Supplied with calibration certificate.

Eg. PM 620 20 bar (300 psi) gauge

Model PV 621

Pneumatic pressure station 20 bar (300 psi)

Model PV 622

Pneumatic pressure station 100 bar (1500 psi)

Model PV 623

Hydraulic pressure station 1000 bar (15000 psi)

The PV 621, 622 and 623 are supplied with G1/8 female and 1/8 NPT female adaptors, carry strap, quick reference guide and CD with multilingual user manual. In addition the PV 623 includes a plastic bottle for hydraulic fluid.

DPI 620 Multifunction Calibrator and HART Communicator Accessories

Intecal Basic (P/N 781-016-B)

Developed to meet the growing demand on industry to comply with quality systems and calibration documentation. Device test procedures are created in a Windows® based application and are allocated to work orders for transfer to the DPI 620. The procedures configure the DPI 620 parameters, automatically manage As Found and As Left calibrations and report the results with Pass/Fail status. Results are uploaded to the PC for archiving and to print calibration certificates.

Intecal Advanced (P/N 781-016-A)

Builds on the concept of Intecal Basic supporting both portable calibrators and on-line workshop instruments. Intecal is simple-to-use calibration management software, which enables a high productivity of scheduling, calibration and documentation.

Intecal Field Calibration Manager (P/N IO620-FIELD-CAL)

This software module adds the general features of Intecal calibration management software to the DPI 620 allowing new device records and procedures to be created in the field while giving access to full historical data and trend analysis. It works seamlessly with the documenting capability of the DPI 620 to automate field calibration and it can operate independently of a PC as a stand-alone calibrator and instrument database or it can fully integrate with the PC master database of Intecal Calibration Management Software. This module is ideal for field service technicians who spend extended periods away from the head office or for those who need full database access when out on the plant. Complete sections of the Intecal database, containing all the device details, procedures and historical records for multiple work locations, can be transferred to the DPI 620 or split between multiple DPI 620s for larger teams. This transfer of data and the eventual synchronizing of the master database can be achieved in a number of ways; SD memory card, USB memory stick, USB cable and via WiFi connectivity to the internet and remote networks. A demonstration version of Field Calibration Manager is provided in all new DPI 620s. It is limited to 5 device records but can be fully enabled by purchasing IO620-FIELD-CAL.

For more information on Intecal and a 30 day free trial visit www.gesensing.com

Replacement AC voltage measurement probe (P/N IO620-AC)

Attaches to the DPI 620 30 V sockets to provide 300 VAC true rms measurement. IO620-AC is supplied as standard with all new DPI 620/CE.

Carrying case (P/N IO620-CASE-1)

A protective fabric carrying case with belt loop, shoulder strap and large pocket for test leads and accessories.

System carrying case (P/N IO620-CASE-2)

A protective fabric carrying case for system components including the DPI 620, MC 620, PM 620 modules, test leads, hose and adaptors.

Spare/replacement lithium polymer rechargeable battery (P/N IO620-BATTERY)

Spare/replacement battery for the DPI 620/CE. IO620-BATTERY is supplied as standard with all new DPI 620/CE.

Battery charging station (P/N IO620-CHARGER)

This external battery charger allows a spare battery to be charged independently of the DPI 620 for minimum instrument down time. Power is provided by the standard mains adaptor. A complete charge cycle takes approximately 4 hours. Simultaneously, the DPI 620 can be connected via a USB cable to provide a top-up charge (full charge in 12 hours).

Spare/replacement mains adaptor (P/N IO620-PSU)

A spare/replacement universal mains adaptor for use with DPI 620 and IO620-CHARGER. Input voltage 100 to 240 VAC 50/60 Hz. Mains socket adaptors are provided. IO620-PSU is supplied as standard with all new DPI 620/CE.

USB cable (P/N IO620-USB-PC)

Connects the DPI 620 to a PC.

IDOS to USB converter (P/N IO620-IDOS-USB)

Allows connection of an IDOS universal pressure module to the DPI 620. IO620-USB-PC is also required to connect the converter to the DPI 620 USB port.

USB to RS 232 cable (P/N IO620-USB-RS232)

Connects the DPI 620 to an RS 232 interface.

PV 621, 622, 623 and MC 620 Accessories

Pressure relief valve

When fitted to a PV 62X pressure station protects the PM 620 pressure module and the device under test from overpressure.

Relief Valve Table					
Part number	For use with	Factory setting		Adjustable range	
		bar	psi	bar	psi
IO620-PRV-P1	PV 621 PV 622	1	15	0.2 to 1	3 to 15
IO620-PRV-P2	PV 621 PV 622	5	100	3 to 7	45 to 100
IO620-PRV-P3	PV 621 PV 622	30	435	16 to 32	230 to 460
IO620-PRV-P4	PV 622	60	870	30 to 60	435 to 870
IO620-PRV-P5	PV 622	100	1500	60 to 100	870 to 1500
IO620-PRV-P6	PV 621 PV 622	3	45	1.1 to 3	16 to 45
IO620-PRV-P7	PV 621 PV 622	12	170	6.1 to 12	90 to 170
IO620-PRV-P8	PV 621 PV 622	18	260	12.1 to 18	175 to 260
IO620-PRV-H1	PV 623	50	725	10 to 50	145 to 725
IO620-PRV-H2	PV 623	200	3000	50 to 200	725 to 2900
IO620-PRV-H3	PV 623	400	6000	200 to 400	2900 to 5800
IO620-PRV-H4	PV 623	700	10000	300 to 700	4350 to 10000
IO620-PRV-H5	PV 623	1000	15000	600 to 1000	8700 to 15000

Pressure station carrying case (P/N IO620-CASE-3)

A protective fabric carrying case with shoulder strap and large pocket for accessories. Also accommodates the assemble system including the DPI 620 and PM 620.

Modular system transit case (P/N IO620-CASE-4)

A rigid transit case with wheels and an extendable handle. Accommodates two PV 62X pressure stations, DPI 620, MC 620 and PM 620 modules, with ample storage space for accessories. Size: 736 mm x 554 mm x 267 mm. Weight: 8,5 kg empty

Pneumatic hose kit

A high pressure pneumatic hose rated to 400 bar (5800 psi). Tool less quick fit to the PV 621, PV 622 and MC 620 pressure ports. Terminated with a quick fit connector compatible with the test point adaptors supplied with the PV 62X, MC 620 and the adaptor sets.

P/N IO620-HOSE-P1: 1 metre pneumatic hose kit

P/N IO620-HOSE-P2: 2 metre pneumatic hose kit

DPI 620 Hydraulic hose kit

A high pressure hydraulic hose rated to 1000 bar (15000 psi). Tool less quick fit to the PV 621, PV 622 and MC 620 pressure ports. Terminated with a quick fit connector compatible with the test point adaptors supplied with the PV 62X, MC 620 and the adaptor sets.

P/N IO620-HOSE-H1: 1 metre hydraulic hose kit

P/N IO620-HOSE-H2: 2 metre hydraulic hose kit

Pressure adaptor set

A set of test point adaptors to connect the tool less quick fit PV 62X, MC 620 and the extension hoses to the device under test.

P/N IO620-BSP: G1/8 male and G1/4 male, G3/8 female, G3/8 female and G1/2 female

P/N IO620-NPT: 1/8" male and 1/4" male, 1/4" female, 3/8" female, and 1/2" female

P/N IO620-MET: 14 mm and 20 mm female

Comparator adaptor (P/N IO620-COMP)

Allows the PV 62X pressure station to be used as a comparator. The adaptor connects to the stations pressure port and provides two outlet ports for making gauge comparisons.. Compatible with the test point adaptors supplied with the PV 62X and the adaptors sets.

Blanking plug (P/N IO620-BLANK)

Allows the PV 621 and 622 to be used as pressure generators independently of the DPI 620 and PM 620 by blanking the PV 62X pressure module port. Not required for the DPI 623 as the port is self-sealing.

DPI 104 Gauge adaptor (P/N IO620-104 ADAPT)

Allows a DPI 104 digital pressure gauge to be connected to the PV 62X pressure module port in place of DPI 620 and PM 620 to provide a simple low cost pressure calibrator.

Supporting Services

GE Sensing provides Services to enhance, support and complement the AMC product range. Our highly trained staff can support you, no matter where you are in the world.

Pressure measurement training

GE Sensing's training and education program offers comprehensive standard and customized curricula focusing on operation, application, maintenance and technology. For AMC users we recommend the 3 day Principles of Automated Pressure Calibration Training course. This is regularly delivered and classes can be held at various locations, your local facility or through on-line delivery. Quality training enables your engineers & technicians to optimize your business' performance.

Nationally accredited calibration

New product is supplied with factory calibration certificates with measurements traceable back to international standards. For applications where initial nationally accredited calibration certificates are required or periodic re-calibration is desired GE sensing can provide the solution.

Extended warranty terms

New product is supplied with an industry benchmarked initial warranty. For peace of mind, improved cost predictability and increased assurance, extend coverage on your equipment by up to 5 years term.

Multi-year calibration and repair services agreements Available for controllers & calibrators, multi-year service agreements increase cost predictability by providing fixed rates for extended periods. With larger scope undertakings customized plans can be adapted to your needs.

Rental

GE's rental program offers a simple, quick and affordable solution for unexpected measurement need. Rentals allow customers to be fully operational when challenges that are not foreseen arise. Assisting our customers in meeting peak demands, unexpected situations, evaluations and also to minimise downtime of important processes a wide range of measurement, test and calibration equipment is available on a short-term rental basis ... from pressure indicators to portable calibrators and sophisticated air data test systems. The rental fleet is available from inventory,

Factory tested & calibrated with a minimum rental period only 1 week. With larger scope undertakings any product can be made available for rental.

Maintenance

Should your equipment need maintenance our global repair facilities are happy to serve. Work is conducted by trained approved technicians, using controlled original equipment parts and procedures so restoring the product to design condition. This is particularly important for the performance expectations and advanced features incorporated in the AMC range. Should you wish to conduct your own maintenance a number of spares kits are available to facilitate this.

Services Ordering Information

Please order the following as separate line items.

Calibration

IO620-CAL-ELEC

DPI 620 Multifunction calibrator accredited calibration.

IO620-CAL-PRESS

PM 620 Pressure module accredited calibration.

Extended Warranty

Extend your instruments manufacturer's warranty to 2, 3, 4 or 5 years.

WARRANTY- *

Where * = 2, 3, 4 or 5 to indicate your required extended warranty period (eg: WARRANTY-3)

Calibration and Repair Contracts

Three levels of calibration and repair service contracts are available.

Bronze – Accredited calibration only (pre and post adjustment results given)

Silver – Accredited calibration and Level A repair

Gold – Accredited calibration and Level A and Level B repair

Available in yearly intervals up to 5 years.

CALREP-BRONZE- *

CALREP-SILVER- *

CALREP-GOLD- *

Where * = 1, 2, 3, 4 or 5 to indicate your required calibration and repair contract period (eg: CALREP-SILVER-3)

Note:

Level A repair covers, valves, seals and fittings

Level B repair covers, main PCA and manifold (where applicable)

About US

GE has united the technological innovation and experience of industry leaders in the design and manufacture of advanced sensing and measurement solutions into one world-class business—GE Sensing & Inspection Technologies.

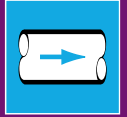
GE's sensing products measure temperature, pressure, liquid level, moisture and humidity, gas concentration, and flow rate for applications ranging from environmental, medical, and pharmaceutical to automotive, aerospace, chemical, and petrochemical.

From high-quality hand-held and portable field calibrators to stand-alone measurement instruments and systems, GE Sensing provides end-to-end solutions that can help you monitor, protect, and control your critical processes and applications.

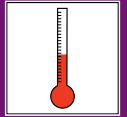
Pressure



Flow



Temperature



Gas



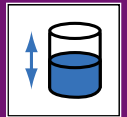
Moisture



Humidity



Level



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GE imagination at work

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