pressure

JOFRA calibration

Handheld Pressure Calibrator
HPC550Ex Family

» **Ex Safety Certifications**
ATEX: II 2 G Ex ia IIB T3 Gb
(Ta=-10°C to + 45°C)
KEMA 10 ATEX 1068 X
IECEx: Ex ia IIB T3 Gb
(Ta=-10°C to +45°C)
IECEx CSA 10.0013

» **Wide pressure range**
25 mbar to 700 bar FS (0.35 to 10,000 psi)

» **High accuracy**
±0.025% of reading +0.01% F.S.

» **True field calibrator**
Fully temperature compensated

» **Single or dual sensor versions**
Chose between HPC550Ex single senror calibrator, or HPC552Ex dual sensor calibrator. A HPC552Ex might be an alternative to two separate calibrators, saving investment and cost of ownership

» **Full set of intelligent features**
Wide selection of useful functions and features. Damping, leak test, % error calculation, min/max, switch test, etc.

» **Thermometer**
High accuracy thermometer, Pt100 sensor.

» **Intrinsically Safety - Apparatus - IECEx and EU Ex standards**
JOFRA HPC550/552Ex are intended for use in explosively hazardous areas and designed to prevent ignition by electrical, sparking or heating effects.

JOFRA HPC550/552Ex calibrators feature deadweight tester accuracy in a modern digital package.

The HPC550/552Ex can be used in a very broad range of applications from simple tool type jobs to complex calibration jobs in custody transfer systems. Including potential hazardous areas in Oil, Gas and Chemical industries.

The HPC550/552Ex series has been designed to meet high accuracy pressure calibration applications and faciliate your tasks. HPC550/552Ex offers features such as user configurable information display, 15 different pressure units, transmitter supply, mA input, % error calculation, voltage measurement, serial communication, and external pressure module capability. The accuracy of the HPC550/552Ex calibrators is specified in % of reading to ensure an even better accuracy and wider applicable pressure range. The HPC is temperature compensated from 0 to 45ºC/32 to 113ºF for on-site operation. It is a truly superior pressure calibrator for laboratory and field use, bringing laboratory accuracy into the field.

The pressure calibrator of choice in potential explosive atmospheres. The intrinsically safe HPC550/552Ex calibrators complies with ATEX / IECEx certifications and are an extension of JOFRA´s well known pressure calibrator range.

HPC550/552Ex meet the needs of technicians who install, maintain, calibrate and troubleshoot equipment in petro-chemical plants, on oil platforms, in refineries, governmental bodies, commercial organizations and any location subject to the risk of potential explosion hazardous atmospheres.

ISO 9001 Manufacturer

Specification Sheet
SS-HPC550Ex

AMETEK®
TEST & CALIBRATION INSTRUMENTS

Clear graphical display
Large backlit graphical display shows current status and mode, 1, 2 or 3 measurement windows, to suit your applications and demands.

Full set of features
Perform semi-automatic pressure switch tests, leak test, % error calculation, switch in HART resistor or other calibration tasks through the outstanding functions and features of the HPC550Ex.

Intuitive menu system
Combination of “soft keys” and cursor keypad ensures easy operation.

Temperature measurement
High accuracy temperature measurement port by use of he optional Pt100 sensor. A superb instrument for easy and convenient temperature measurement.

Electrical connections
HPC calibrators are well equipped and include inputs for mA, switches and temperature measurements.

Units
15 different engineering units on pressure measurements.

Zero
To keep high accuracy, a dedicated zero button is available to provide convenient zero before test.

ON / OFF
Auto shut-off to expand battery life time (user programmable).

Pressure connections
Adapters to 1/4” NPT male and 1/4” BSP female are included as standard.

What is an Ex area?
Ex areas can be known by different names such as “Hazardous Locations”, “Hazardous Areas” “Explosive Atmospheres”, and the like and relate to areas where flammable liquids, vapours, gases or combustible dusts are likely to occur in quantities sufficient to cause a fire or explosion.

The modern day automation of industry has meant an increased need to use equipment in Ex areas. Such equipment is termed “Ex equipment”.

Where do you commonly use Ex equipment?
- Automotive refueling stations or petrol stations
- Oil refineries, rigs and processing plants
- Chemical processing plants
- Printing industries, paper and textiles
- Hospital operating theatres
- Aircraft refueling and hangars
- Surface coating industries
- Sewerage treatment plants
- Gas pipelines and distribution centers
- Woodworking areas
- Sugar refineries

What is ATEX?
The ATEX directive consists of two EU directives describing which equipment and work environment is allowed in an environment with an explosive atmosphere.

ATEX derives its name from the French title of the 94/9/EC directive: Appareils destinés à être utilisés en ATmosphères EXplosibles.

Where does ATEX apply? All the 24 member countries of the European Union, plus Norway, Iceland and Liechtenstein, are subject to the directives.

What is IECEx?
The objective of the IECEx System is to facilitate international trade in equipment and services for use in explosive atmospheres, while maintaining the required level of safety, to offer:

- International confidence in the product assessment process
- HPC Ex family is certified by CSA, stating IECEx being the certification of the future for America
- Maintaining International Confidence in equipment and services covered by IECEx Certification

FUNCTIONAL SPECIFICATIONS

Pressure: compound ranges

bar ..... -0.96 to 1 or 2
bar ..... -0.82 to 7, 20 or 35

psi ..... -14 to 15 or 30
psi ..... -12 to 100, 300 or 500

Pressure: gauge ranges

bar ..... 70, 200, 350 or 700
psi ..... 1,000, 3,000, 5,000 or 10,000

Pressure: absolute ranges

bar ..... 0.025 to 1.1 or 2
bar ..... 0.07 to 7 or 20

psi ..... 0.35 to 16 or 30
psi ..... 1 to 100 or 300

Pressure: differential ranges (HPC550Ex only)

mbar ..... ±25, ±70 or ±350
psi ..... ±0.35, ±1 or ±5

Engineering units (built-in)

User selectable ..... 15 units
(bar, mbar, MPa, kPa, inHg@0°C, mmHg@0°C, kg/cm^2, mmH$_2$O@4°C, mmH$_2$O@20°C, psi, inH$_2$O@4°C, inH$_2$O@20°C, inH$_2$O@60°F, cmH$_2$O@4°C, cmH$_2$O@20°C)

Pressure accuracy ambient temp. (18 to 28°C/65 to 82°F)

±25 mbar / 0.35 psi ..... ±0.10% F.S.
±70, 350 mbar / 1, 5 psi ..... ±0.05% F.S.

700 bar / 10k psi ..... ±0.025% RDG + 0.015% F.S.
All other pressure ranges ..... ±0.025% RDG + 0.01% F.S.
Vacuum ..... ±0.025% F.S.
F.S. (full scale) is the numerical value of the positive pressure range.

Accuracy includes hysteresis, nonlinearity, repeatability and reference standard uncertainty, 1 Year typical long-term stability, operated inside the rated temperature span and pressure range.

For optimal performance “zero” the unit for gauge/differential measurements or enter the reference pressure for absolute measurements.

Pressure accuracy ambient temp. (0 to 45°C/32 to 113°F)

±25 mbar / 0.35 psi ..... ±0.15% F.S.
±70, 350 mbar / 1, 5 psi ..... ±0.10% F.S.

700 bar / 10k psi ..... ±0.04% RDG + 0.015% F.S.
All other pressure ranges ..... ±0.04% RDG + 0.01% F.S.
Vacuum ..... ±0.05% F.S.
F.S. (full scale) is the numerical value of the positive pressure range.
Temperature effect -10 to 0°C / 14 to 32°F ±0.005% F.S./°C.

Accuracy includes hysteresis, nonlinearity, repeatability and reference standard uncertainty, 1 Year typical long-term stability, operated inside the rated temperature span and pressure range.

For optimal performance “zero” the unit for gauge/differential measurements or enter the reference pressure for absolute measurements.

Display

LCD ..... Graphical (with light)
Display resolution ..... 5 digits
Display update ..... 3 times per second

Ex Certifications

ATEX ..... II 2 Ex ia IIB T3 Gb (Ta=-10ºC to +45ºC)
..... KEMA 10 ATEX 1068 X
IECEx ..... Ex ia IIB T3 Gb (Ta=-10ºC to +45ºC)
..... IECEx CSA 10.0013

Input / output (18 to 28°C/65 to 82°F)

mA range ..... 0 to 24 mA
mA accuracy ..... ±0.015% RDG + 2 µA
RTD range (ohms) ..... 84 to 140 Ω
RTD accuracy ..... ±0.015% RDG + 0.02 Ω
RTD range (temperature) ..... -40 to 155ºC/-40 to 311ºF
RTD accuracy @ 0ºC/32ºF (temperature) ..... ±0.10ºC/0.18ºF
HART® resistor ..... 250 Ω
Peak hold capture ..... 50 milliseconds
Switch test input ..... 5V (<1mA)
Temperature effect outside 18 to 28°C/65 to 82°F ±0.001% F.S./°C.

Media compatibility

Nickel plated brass and 316 stainless steel

Environmental

Operating temperature ..... -10 to 45°C/14 to 122°F
Storage temperature ..... -20 to 60°C/-4 to 140°F
Ingress protection rating IP54

Pressure connection

All calibrators ..... 1/8” BSP female
Adapters to 1/4” NPT male and 1/4” BSP female are included as standard.

Pressure overload

Overload alarm ..... “OL” in display at approx. +20% F.S.

Power supply

Battery ..... 4 x 1.5 VDC Alkaline
Battery type ..... AA, LR6, MN1500, AM3
Battery lifetime ..... Typically more than 35 hours
Low battery indicator ..... Yes

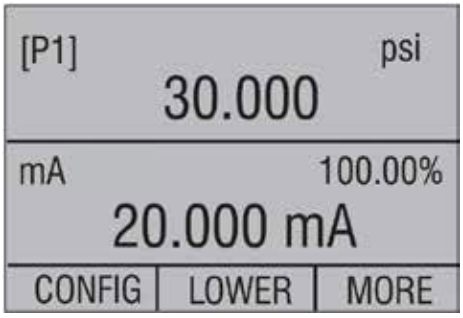
Instrument dimensions (LxWxH)

Calibrator ..... 201x99x50 mm / 7.9x3.9x2.0 in
HPC550 weight (incl. battery) ..... 635 g / 22.4 oz
HPC552 weight (incl. battery) ..... 665 g / 23.5 oz
Calibrator, shipping ..... 243x180x80 mm/ 9.6x7.1x3.1 in
Calibrator weight, shipping ..... 1.1 kg / 39.5 oz

Miscellaneous

Compliance: EN 60079-0 : 2009, EN 600079-11 : 2007 & CISPR 11, Edition 5.0 - 2009 Class “B”

Function / Feature	HPC550	HPC552
Single sensor high accuracy pressure calibrator	✓	×
Dual sensor high accuracy pressure calibrator	×	✓
mA measurement	✓	✓
Voltage measurement	×	×
24 VDC transmitter supply	×	×
High speed pressure switch test	✓	✓
Temperature measurement with external RTD sensor	✓	✓
JOFRA APM pressure module connection	×	×
RS232 communication - Service and maintenance only (not to be used in hazardous areas)	✓	✓
On-line calculation of sensor error %	✓	✓
Automatic leak test timer function	✓	✓
High speed min./max. hold	✓	✓
Delta / sum calculation on pressure measurements (HPC552Ex)	✓	✓
Display contrast adjustment	✓	✓
Instrument setup lock	✓	✓
Storage of 5 setups	✓	✓
Setup of automatic off timer	✓	✓
Setup of number of display windows / measurement channels	✓	✓
Setup of temperature sensor RTD type	✓	✓
Select display high or low resolution	✓	✓
Setup of backlight timer	✓	✓
HART resistor on/off	✓	✓
Normal or dampened display update rate	✓	✓



JOFRA HPC Ex features a custom set up display, 1, 2 or 3 lines / measurement chancels, easy to configure for the individual task

This table shows the resolutions that can be obtained by the HPC calibrators throughout all engineering units.

HPC550Ex/HPC552Ex Ranges and Overpressure Ratings													
BAR													
Range (bar)	25mbar	70mbar	350mbar	1	1.1	2	7	20	35	70	200	350	700
Burst pressure (bar)	200mbar	650mbar	1	6	6	6	70	133	133	700	700	700	1000
Proof pressure (bar)	70mbar	200mbar	650mbar	4	4	4	13	40	70	200	400	700	1000
Static pressure (bar)	70mbar	7	7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PSI													
Range (psi)	0.4	1	5	15	16	30	100	300	500	1000	3000	5000	10000
Burst pressure (psi)	3	10	15	90	90	90	1000	2000	2000	10000	10000	10000	15000
Proof pressure (psi)	1	3	10	30	30	60	200	600	1000	3000	6000	10000	15000
Static pressure (psi)	1	100	100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
HPC550Ex/HPC552Ex Resolutions													
psi	0.4000	1.0000	5.0000	15.000	16.000	30.000	100.00	300.00	500.00	1000.00	3000.00	5000.00	10000.00
bar	0.0276	0.0689	0.3447	1.0342	1.1032	2.0684	6.8948	20.684	34.474	68.948	206.84	344.74	689.48
mbar	27.579	68.948	344.74	1034.2	1103.2	2068.4	6894.8	20684	34474	68948	n/a	n/a	n/a
kPa	2.7579	6.8948	34.474	103.42	110.32	206.84	689.48	2068.4	3447.4	6894.8	20684	34474	68948
MPa	0.0028	0.0069	0.0345	0.1034	0.1103	0.2068	0.6895	2.0684	3.4474	6.8948	20.684	34.474	68.948
kg/cm^2	0.0281	0.0703	0.3515	1.0546	1.1249	2.1092	7.0307	21.092	35.153	70.307	210.92	351.53	703.07
cmH_2O@4°C	28.124	70.309	351.54	1054.6	1124.9	2109.3	7030.9	21093	35154	70309	n/a	n/a	n/a
cmH_2O@20°C	28.173	70.434	352.17	1056.5	1126.9	2113.0	7043.4	21130	35217	70434	n/a	n/a	n/a
mmH_2O@4°C	281.24	703.09	3515.4	10546	11249	21093	70309	n/a	n/a	n/a	n/a	n/a	n/a
mmH_2O@20°C	281.73	704.34	3521.7	10565	11269	21130	70434	n/a	n/a	n/a	n/a	n/a	n/a
inH_2O@4°C	11.072	27.681	138.40	415.21	442.89	830.42	2768.1	8304.2	13840	27681	83042	n/a	n/a
inH_2O@20°C	11.092	27.730	138.65	415.95	443.68	831.89	2773.0	8318.9	13865	27730	83189	n/a	n/a
inH_2O@60°F	11.083	27.708	138.54	415.61	443.32	831.23	2770.8	8312.3	13854	27708	83123	n/a	n/a
mmHg@0°C	20.686	51.715	258.58	775.73	827.44	1551.5	5171.5	15515	25858	51715	n/a	n/a	n/a
inHg@0°C	0.8144	2.0360	10.108	30.540	32.576	61.081	203.60	610.81	1018.0	2036.0	6108.1	10180	20360

Proof pressure - maximum allowable pressure without a shift in calibration.

Burst pressure - sensor damaged or destroyed, some risk of personal injury.

Static pressure - differential units only. Maximum allowed common mode pressure between both points.

Compound ranges - the data for the 1 bar range also applies to the -1 to +1 bar compound range, the data for the 2 bar range also applies to the -1 to +2 bar compound range.

Absolute ranges - the data for the 1.1, 2, 7 and 20 bar ranges also applies to the absolute pressure versions of those ranges.

STANDARD DELIVERY (HPC Calibrator)

- HPC550Ex or HPC552Ex calibrator
- Traceable calibration certificate (NIST) with pressure and vacuum performance
- 4 x 1.5 volt batteries
- Test leads: red and black
- User manual

ORDERING INFORMATION

Order number						Description
HPC						Type
	550					Model
						Pressure range
		25MD				±25 mbar / 0.35 psi differential
		70MD				±70 mbar / 1 psi differential
		350MD				±350 mbar / 5 psi differential
		001A				0.025 to 1.1 bar / 16 psi absolute
		001C				-0.96 to 1 bar / 15 psi gauge/compound
		002A				0.025 to 2 bar / 30 psi absolute
		002C				-0.96 to 2 bar / 30 psi gauge/compound
		007A				0.070 to 7 bar / 100 psi absolute
		007C				-0.82 to 7 bar / 100 psi gauge/compound
		020A				0.070 to 20 bar / 290 psi absolute
		020C				-0.82 to 20 bar / 290 psi gauge/compound
		035C				-0.82 to 35 bar / 500 psi gauge/compound
		070G				0 to 70 bar / 1,000 psi gauge
		200G				0 to 200 bar / 2,900 psi gauge
		350G				0 to 350 bar / 5,000 psi gauge
		700G				0 to 700 bar / 10,000 psi gauge
						Calibration certificate
			G			NIST traceable calibration certificate
						Accessories (Optional)
				C		Soft case (Not to be used in hazardous areas)
				T		Temperature sensor Pt100
						Pressure system
					IND	Calibrator only
						Sample order number
HPC	550	035C	G	CT	IND	HPC550, -0.82 to 35 bar, NIST traceable certificate, soft case, temperature sensor, calibrator only

ORDERING INFORMATION

Order number							Description
HPC							Type
	552						Model
		Port 1	Port 2				Pressure range (Port 1 - lowest pressure, Port 2 - highest pressure)
		001A	001A				0.025 to 1.1 bar / 16 psi absolute
		001C	001C				-0.96 to 1 bar / 15 psi gauge/compound
		002A	002A				0.025 to 2 bar /30 psi absolute
		002C	002C				-0.96 to 2 bar / 30 psi gauge/compound
		007A	007A				0.070 to 7 bar / 100 psi absolute
		007C	007C				-0.82 to 7 bar / 100 psi gauge/compound
		020A	020A				0.070 to 20 bar / 290 psi absolute
		020C	020C				-0.82 to 20 bar / 290 psi gauge/compound
		035C	035C				-0.82 to 35 bar / 500 psi gauge/compound
		070G	070G				0 to 70 bar / 1,000 psi gauge
		200G	200G				0 to 200 bar / 2,900 psi gauge
		350G	350G				0 to 350 bar / 5,000 psi gauge
		700G	700G				0 to 700 bar / 10,000 psi gauge
							Calibration certificate
				G			NIST traceable calibration certificate
							Accessories (Optional)
					C		Soft case (Not to be used in hazardous areas)
					T		Temperature sensor Pt100
							Pressure system
						IND	Calibrator only
							Sample order number
HPC	552	035C	350G	G	CT	IND	HPC552, port 1: -0.82 to 35 bar, port 2: 0 to 350 bar, NIST traceable certificate, soft case, temperature sensor, calibrator only

ACCESSORIES

Useful soft case - Option C

Not to be used in hazardous areas!

The HPC550Ex can be delivered with a soft case as an option. The handy soft case is designed for protection during transport. The soft case has separate compartments for HPC550Ex (w/Velcro strap), test leads, test hoses, temperature probe, and JOFRA APM pressure module. A shoulder strap ensures convenient transportation when climbing ladders, etc. and the handy strap on the back makes it possible to hang the instrument on a valve, ladder etc. The manual and calibration documents fit into a pocket on the front of the soft case.

Temperature sensor - Option T

To utilize the thermometer utility of the HPC550Ex family, a ruggedized handheld temperature sensor is available. The sensor comes as a ready-to-use probe with handle and coiled cable with LEMO connector for HPC550Ex and HPC552Ex. The sensor is built with a high accuracy Pt100 element, accuracy ±0.05°C / ±0.27°F. Sensor dimensions, without handle and cable, ø 4x200 mm/stainless steel.

AMETEK Test & Calibration Instruments
A business unit of AMETEK Measurement & Calibration Technologies Division offering the following industry leading brands for test and calibration instrumentation.

JOFRA Calibration Instruments
Temperature Calibrators
Portable dry-block calibrators, precision thermometers and liquid baths. Temperature ranges from -90°C(-130°F) to 1205°C(2200°F). Temperature sensors for industrial and marine use.
Pressure Calibrators
Convenient electronic systems ranging from -25 mbar to 1000 bar - fully temperature-compensated for problem-free and accurate field use.
Signal Instruments
Process signal measurement and simulation for easy control loop calibration and measurement tasks.

M&G Pressure Testers & Pumps
Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading. Pressure generators delivering up to 1,000 bar.

Lloyd Instruments
Materials testing machines and software from Lloyd Instruments guarantees expert materials testing solutions. The comprehensive program also covers Texture Analysers to perform rapid, general food testing and detailed texture analysis on a diverse range of foods and cosmetics.

Davenport Polymer Test Equipment
Allows measurement and characterization of moisture-sensitive PET polymers and polymer density.

Chatillon Force Measurement
The hand held force gauges and motorized testers have earned their reputation for quality, reliability and accuracy and they represent the de facto standard for force measurement.

Newage Testing Instruments
Hardness testers, durometers, optical systems and software for data acquisition and analysis.

AMETEK®
TEST & CALIBRATION INSTRUMENTS

Contact:
Industrial Process Measurement, Inc.
3910 Park Avenue, Unit 7
Edison, NJ 08820
732-632-6400
support@instrumentation2000.com
http://www.instrumentation2000.com

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