



Data Sheet

Pressure transducers and instrumentation

Two ranges of silicon diaphragm gauge pressure transducers, one with a built-in reference tube and one with an integral ventilated cable.

The reference tube type allows transducers to be remotely mounted via a connecting pressure tube to the active face of the diaphragm. A second pressure connection must be made from the ambient air pressure in the region of the fluid pressure being measured, to the reference tube (and hence the non-active face of the diaphragm) on the transducer. This allows a true gauge reading to be taken (ie. the pressure above the local ambient of the fluid being measured) by the remote transducer.

The integral cable range has the reference, or non-active face of the transducer, vented to the atmosphere via a small pipe inside the cable and should be used when the transducer is mounted directly in contact with the fluid pressure being measured. Both ranges feature silicon diaphragms with a bridge of semiconductor strain gauges integrally diffused which is bonded onto a glass carrier and housed in a titanium body. Titanium is used because of its similar thermal characteristics to silicon and hence, reduced unwanted temperature effects.

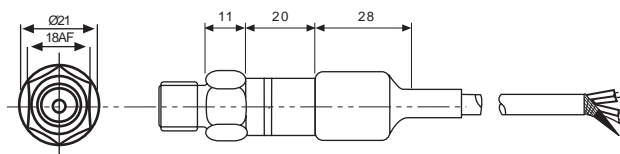
The transducers can be used with any fluid which will not attack titanium, silicon dioxide or glass.

The reference tube, or cable ventilation, can only be connected to a dry, non-corrosive non-conducting gas such as dry air.

Features

- Excellent linearity and hysteresis
- High overload capacity
- Range of 14 transducers; 7 with integral cable and boot and 7 with PTFE cable and reference tube
- 7 operating pressure ranges from 1 to 60bar
- Good thermal stability; $\pm 0.5\%$ total error band over full temperature range of 0-50°C

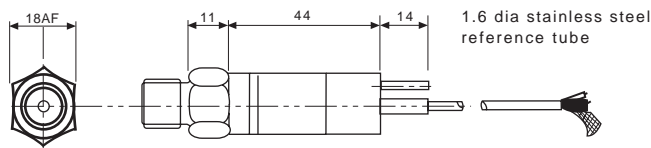
Dimensions



Integral cable type

Electrical connections

6 core shielded/vented cable	
Red	Supply positive
White	Supply negative
Yellow	Output positive
Blue	Output negative
Screen	N/C to transducer body
Any other cores not connected	



Reference tube type

Electrical connections

4 core ptfе shielded cable	
Red	Supply positive
Blue	Supply negative
Yellow	Output positive
Green	Output negative
Screen	N/C to transducer body

Technical specification

Max. overpressure _____ 4 times rated pressure
 Max. pressure on reference _____
 connection (PDCR 820 types) _____ 2 bar
 Negative pressure _____ to vacuum
 Burst pressure _____ > 10 times rated pressure
 Excitation voltage _____ 10Vdc 5mA
 Output voltage _____ 100mV (for 10V in)
 Common mode voltage _____ + 6.5V (typ) w.r.t. _____
 -Ve supply for 10V in
 Output impedance _____ 2KΩ nom.
 Minimum load impedance _____ 100kΩ for rated performance
 Resolution _____ Infinite
 Combined non-linearity, hysteresis and repeatability _____ ±0.1% B.S.L.
 (best straight line)
 Zero offset and span setting _____ ±3mV max.
 Operating temp. range _____ -20°C to +80°C
 Temperature effects _____ ±0.5% total error 0°C to +50°C
 Electrical connections _____ 1m integral lead
 _____ 6 core 810 series
 _____ 4 core 820 series
 Pressure connections _____ 1/4 in BSP 60° internal core

The RS range of pressure transducers

PDCR 810 series - ventilated cable

Pressure range	RS stock no.
0 to 1bar	646-628
0 to 2bar	646-634
0 to 3.5bar	646-640
0 to 7bar	646-656
0 to 15bar	646-662
0 to 35bar	646-678
0 to 60bar	646-684

PDCR 820 series - reference tube

Pressure range	RS stock no.
0 to 1bar	646-690
0 to 2bar	646-707
0 to 3.5bar	646-713
0 to 7bar	646-729
0 to 15bar	646-735
0 to 35bar	646-741
0 to 60bar	646-757

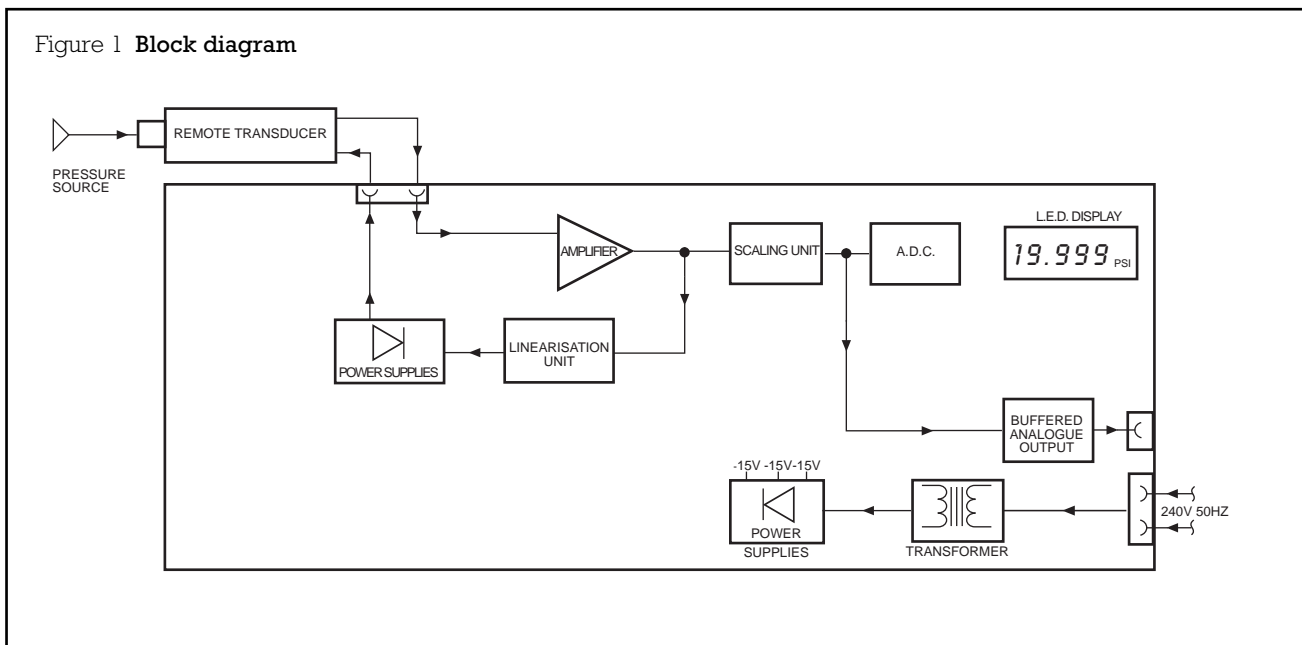
**Panel mounting digital pressure indicator
 DPI 260 (RS stock no. 646-763)**

The digital pressure indicator will measure and indicate pressure to an accuracy of ±0.1% full scale. The indicator utilises the PDCR 810 or 820 series pressure transducers. The compact, self contained, unit incorporates an extremely stable polarising supply, signal conditioning and amplifier system which does not degrade the transducer specification. The indicator is housed in a rugged ABS case designed to fit a DIN (92 x 45mm) panel cut-out.

Features

- Excellent linearity and hysteresis
- 7.5mm seven segment display
- Front panel zero and span adjustment
- Self contained strain gauge indicator
- Field ranging/scaling by internal switches
- Analogue output: 0-2V.

Figure 1 **Block diagram**



Specification

Readout

±19999.

Display

7.5mm seven segment L.E.D.

Display overload

Settable anywhere between 1999 and 19999 to give 1 and flashing 0000.

Resolution

0.005% F.S. maximum.

Response

333msec to full scale on digital display and BCD output.

Position effect

Negligible.

Excitation voltages

5 or 10 Volts into 350 ohm bridge minimum.

Input signal range

10 to 200mV nominal for 19999 maximum display.

Zero suppression/elevation

Capable of ± 19999 switch settable internally.

Zero and sensitivity control

Front panel trim adjustments.

Operating temperature range

0°C to 50°C.

Temperature performance

Sensitivity temperature coefficient <0.005% of reading/°C.

Zero offset temperature coefficient <0.003% F.S./°C.

(ref. to 50mV input - 5V common mode)

Zero suppression temperature coefficient 0.005% of reading/°C.

Long term stability

Zero offset <0.02% F.S. per year.

Sensitivity <0.02% F.S. per year.

Power supplies

110V or 240V, 50-400Hz at 3VA max.

Link selectable.

Dimensions

96mm (wide) x 48mm (high) x 175mm (deep).

Weight

500gms. nominal.

Analogue output specification

Output 0-2V

Zero rationalisation <±0.3% F.S.

Bandwidth 2kHz

In-band noise <0.02% F.S. pk-pk

Zero offset temperature coefficient <0.001% F.S./°C.

Zero suppression temperature coefficient <0.005% of reading/°C.

Electrical connection

Connector supplied with remote transducer and 1 metre of cable.

Pin 1 Supply positive

Pin 2 Output positive

Pin 3 Output negative

Pin 4 Supply negative

Pin 5 Screen

Pin 6 Sense

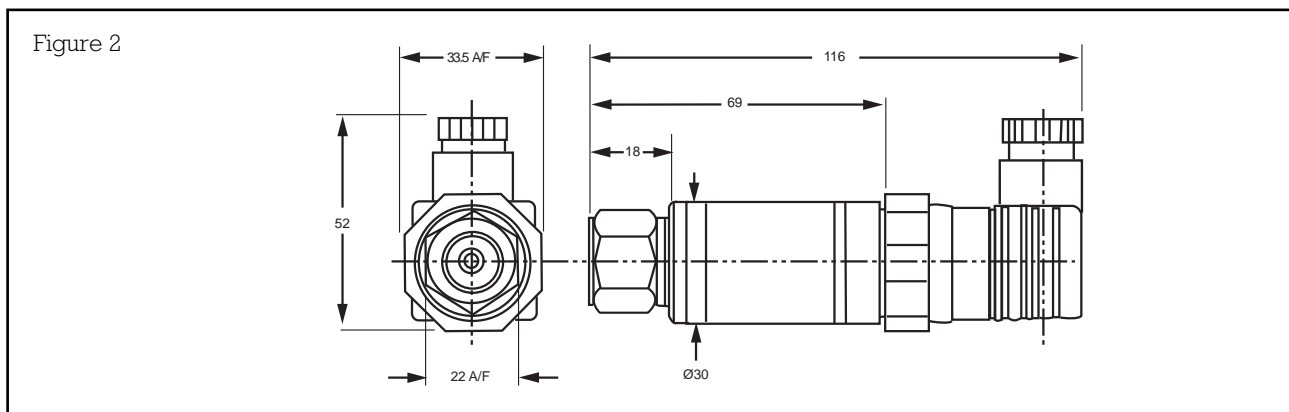
Accuracy

Combined non-linearity, hysteresis and repeatability.

±0.1% F.S. for 70mbar to 60bar

±0.15% F.S. for 60bar to 700bar

Industrial Pressure Transmitters PTX 1400



BASEEFA Apparatus Certificate Ex97D2058

Approval category: EEx ia IIC T4 zone 0

Two-wire, 4-20 mA pressure sensors designed for continuous monitoring in hazardous areas such as gas/petrochemical and process control environments.

- +/-0.15% typical accuracy
- Zero and span adjustment of +/-5%
- Absolute and Gauge referenced pressure ranges
- 4 to 20mA output proportional to applied pressure
- Compatible with hostile media
- All stainless steel construction
- Electron beam welded wetted parts
- Built-in protection from: power supply fluctuations; reverse polarity; voltage spike, RFI
- Intrinsically safe, should be used with a galvanic isolation barrier such as **RS** stock no. 259-6682.
- IP65 rated.

Technical specification

Over press. _____ 1 bar for 100 and 250mbar ranges
 Supply volt. _____ 9 to 30V d.c. (pin 1 +ve, pin 2 -ve)
 Voltage spike prot. _____ withstand 600V to ENV 50142
 Zero offset/span setting _____ +/-0.5% / +/-5%
 Long term stabil. _____ +/- 0.2%
 Combined non-linearity _____ +/-0.15% typ. +/- 0.25% max.
 hysteresis and repeat.
 Operating temp. _____ -20°C to +80°C
 Weight _____ 200g
 Press. connection _____ G 1/4 female (BSP Parallel)
 Elect. connection _____ DIN 43650 plug with fee mating socket.

Transducer pressure range

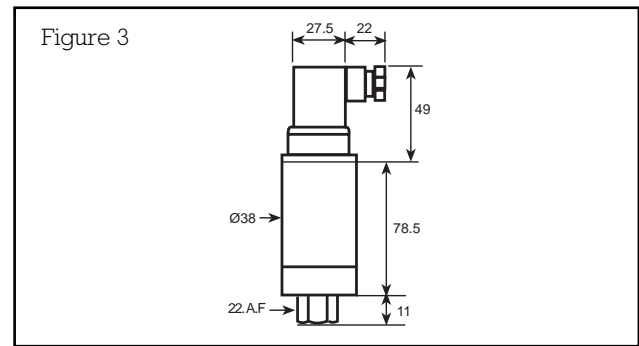
800-1200mbar absolute	313-4140
-1-1.6 bar gauge	313-4156
250mbar gauge	313-4162
0-1 bar absolute	313-4178
0-1 bar gauge	313-4184
0-4 bar gauge	313-4190
0-6 bar gauge	313-4207
0-10 bar gauge	313-4213
0-16 bar gauge	313-4229
0-25 bar gauge	313-4235
0-100 bar gauge	313-4241
0-250 bar gauge	313-4257
0-600 bar gauge	313-4263

Explanation

Absolute pressure is pressure measured with reference to vacuum pressure. An example of absolute pressure measurement is barometric measurement of atmospheric pressure.

Gauge pressure is pressure measured with reference to atmospheric pressure. It can be viewed as a form of differential pressure. An example of gauge pressure measurement is measurement of tyre pressure.

250mBar - 400Bar LS Pressure Transmitters



BASEEFA Apparatus Certificate No.: Ex892251x
 Approval category: EEx ia IIC T4

Two-wire, 4-20 mA pressure sensors designed for continuous monitoring in hazardous areas such as gas/petrochemical and process control environments.

- Gauge style pressure measurement only
- Robust stainless steel body with encapsulated electronic and silicon technology sensing element.
- Suitable for use in Zone 'O' Gas Group IIC, Temperature Class T4
- G 1/4 BSP pressure connection and DIN 43650 electrical connector (supplied)
- Supplied with instruction leaflet with product and copy certificates available on request.
- Should be used with a galvanic isolation barrier such as stock number **RS** 259 6682
- IP65 rated
- Available with RS Servicepoint Calibration

Technical specification

Maximum overpressure

250m bar _____ 2 bar
 1.6 bar to 25 bar _____ 3 x pressure
 60 bar to 400 bar _____ 2 x pressure
 Supply voltage _____ 9-30V d.c.
 Output current _____ 4-20mA

Combined non-linearity

hysteresis and repeatability _____ ±10.15% FS
 Zero offset and span _____ ±5% site adjustable
 Long term stability _____ 0.1%, FS p/a
 Operating temp. _____ -20°C to +80°C
 Process media temp. range _____ -30°C to +120°C
 Temperature effects _____ ±0.5% 9-10 to +50°C
 RFI protection _____ Conforms with IT 8839 (10kHz to 500Mhz)

Range

	Uncalibrated	RS Servicepoint Calibrated
250m bar	285-289	229-6512
1.6 bar	285-295	229-6528
4 bar	285-302	229-6534
10 bar	285-318	229-6540
25 bar	285-324	229-6562
60 bar	285-330	229-6578
160 bar	285-346	229-6584
400 bar	285-352	229-6590

Galvanic isolation barrier for intrinsically safe pressure transmitters

Analogue Input (Smart) **RS** Stock no. 259-6682



P.T.B. Cert. No Ex-94.C.2326

Approval category EExia 11a, 11b, 11c

The unit is designed to power both 2-wire standard and SMART 4-20A transmitters in the hazardous area, transferring the output signal to the safe area.

KFD2-STC1-Ex1 - Smart Transmitter/Power Supply

Single channel

Input EEx ia IIC Class 1, Div1, Groups A-G

d.c. 24V Nominal power supply

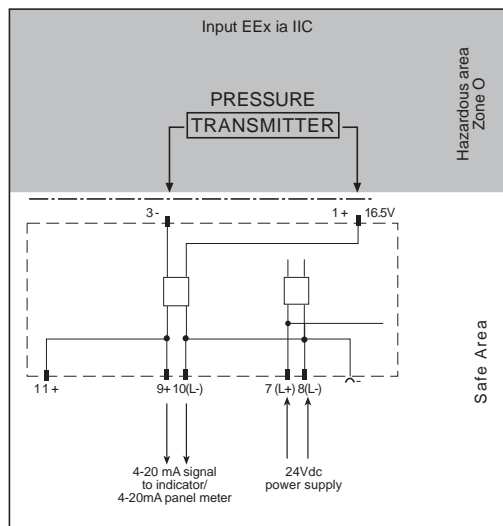
SMART compatible

EMC in acc. with NAMUR NE 21

As an output signal, 20mA are available, digital information is generated by a processing system, field device or hand-held terminal and bi-directionally transferred by the barrier. This allows the operator to interrogate and reprogram the transmitter from the safe area, using non-certified communication equipment. These operations can be carried out in the hazardous area using suitably certified equipment. Hand-held terminals can be connected. In order to interface a hand-held terminal as easily as possible, these barriers come equipped with KF-STP-BU and KF-STP-GN terminals containing access holes for test probes.

Connections

Figure 4



Front View



Technical specification

Power supply _____ Power rail or terminals
 7(L+) 8(L-) 19(L-)
 Nominal voltage _____ d.c. 20V 35V
 Ripple _____ Within supply tolerance
 Max. power consumption _____ ≈ 1.2W
 Field circuit (intrinsically safe)
 Input signal _____ 4mA 20mA
 Available voltage at 20mA _____ d.c. 16.5V
 Voltage _____ $U = 19.65 - (16.5 \times 10^3 \times R^2)$
 Details of Certificate of _____ BASEEFA No
 Conformity _____ EX-94.C.32326
 Voltage U_0 _____ d.c. 28V
 Current I_0 _____ 93mA
 Power P_0 _____ 660mW
 Permissible circuit values _____ (EEx ia)
 Ignition protection class, category
 Explosion group _____ IIA/IIB/IIC
 *Max. external capacitance _____ 1.016µF/0.366µF/0.106µF
 *Max. external inductance _____ 33.6mH/12.6mH/4.2mH
 Fail-safe maximum voltage U_{rms}
 Power supply _____ 250V rms
 Output (not intrinsically safe)
 Output signal _____ 4mA 20mA
 Load _____ ≤500 Ohm (Current output)
 _____ load of communicator in
 safe area ≥200 Ohm
 Ripple _____ ≥72µA
 Fail-safe maximum voltage u_{rms} _____ 250Vrms
 Transfer characteristics
 Transfer error at 20°C (68F) _____ ≥ 10µA incl. calibration,
 linearity, hysteresis, load
 and nominal voltage
 Temperature drift per channel _____ ≥ 20p.p.m./K
 Frequency range
 (Load = 250 Ohm)
 Hazardous area to safe area
 Bandwidth at 1mA - signal _____ 0Hz 12kHz (-1dB)
 Safe area to hazardous area _____ 0Hz 30kHz (-6dB)
 Bandwidth at 1mA - signal _____ 1Hz 12kHz (-1dB)
 _____ 1Hz 30kHz (-6dB)
 Rise time/fall time _____ 40µs/40µs
 Conformity to standard
 Isolation co-ordination _____ to EN 50 178
 Galvanic isolation _____ to EN 50 178
 Climatical condition _____ to IEC 721
 EMC _____ to EN 50 081-2, EN 50
 0.82-2, NAMUR NE 21
 Weight _____ ≈ 150g (≈5.3oz)
 Ambient temperature _____ -20°C +60°C
 Max. wire size _____ 2.5mm(14 awg)

*Note: Particular attention should be paid to the transmitter and cable capacitances; combined they must not exceed the limits quoted above for explosion groups 11A, 11B and 11C

Druck DPI705, Handheld Portable Pressure Indicators

Easy to use rugged hand held portable pressure indicators, designed to offer accurate and reliable pressure measurement. An absolute pressure measurement version is also available.

- 0.1% accuracy
- Large 13mm 5 digit LCD display
- 16 selectable pressure units
- Ambient temperature indication in °C or °F
- Automatic 60 second leak test mode
- Averaging filter for unstable pressure measurement
- Min/max peak hold
- Manual tare facility
- Zero pressure correction
- Adjustable audio/visual high pressure alarm
- Auto power off
- Each instrument is supplied complete with 3 off AA alkaline batteries, users guide and soft carry pouch.

Technical specification

Pressure ranges _____ 200mbar differential
 _____ 2bar gauge
 _____ 2bar absolute
 _____ 20bar gauge
 Overpressure _____ Display flashes at 110% x FS*
 Safe to 2 x FS

Accuracy:
 combined non-linearity, _____ +/-0.1% FS
 hysteresis and repeatability _____
 Temperature effects: Span _____ +/- 0.02% rdg/°C
 Zero ≤ 1 bar (absolute only) _____ +/-0.5% FS/°C
 >1bar (absolute only) _____ +/-0.2% FS/°C
 Pressure connections _____ G1/8 and 6mm OD hose
 Pressure units _____ Mpa, kPa, Pa, mbar, bar, psi, mmHg,
 Mhg, inHg, hPa, kgf/cm², mH₂O "H₂O @ 20°C,
 "H₂O @ 4°C

* FS = Full scale

Range

	Uncalibrated	Calibrated
Differential		
DPI705-200mbar gauge	312-0494	315-9010
DPI705-2bar absolute	312-0517	315-9026
DPI705-2bar gauge	312-0539	316-1215
DPI705-20bar	312-0523	315-9032

DPI 705-IS Indicator, Pressure, Intrinsically Safe



BASEEFA Certificate no: Ex 98E 2332

A compact and rugged range of digital pressure indicators designed for all pressure measurement and approved for use in hazardous areas.

- Intrinsically Safe (EEx ia IIC T4)
- 16 pressure units
- Leak testing
- High accuracy (0.1% full scale)
- Ambient temperature measurement
- Zero/display tare
- Peak value hold
- Alarm setting
- Auto-off
- Transient filter
- Hinged fold away stand for bench use or hanging
- Supplied with 3 x AA Alkaline cells and carry case with belt loop

Technical specification

Pressure ranges _____ 200mbar differential
 _____ 2 bar gauge
 _____ 2 bar absolute
 _____ 20 bar gauge
 Overpressure __ Display flashes at 110% x FS safe to 2 x FS*

Accuracy:
 Combined non-linearity _____ ±0.1% FS
 hysteresis and repeatability _____
 Temperature effects: span _____ ±0.02% rdg/°C
 Zero < 1 bar (absolute only) _____ ±0.05% FS/°C
 1 bar (absolute only) _____ ±0.02% FS/°C
 Pressure connections _____ G1/8 and 6mm OD hose
 Pressure units _____ MPa, kPa, Pa, mar, psi, mmHg,
 Mhg, inHg, hPa, kgf/cm², mH₂O
 inH₂O @ 20°, inH₂O @ 4°C

* FS = Full scale

Range

	Uncalibrated	Calibrated
DPI705 I/S 200 mbar	339-0378	339-4106
DPI705 I/S bar gauge	339-0390	339-4112
DPI705 I/S 2 bar absolute	339-0384	
DPI705 I/S 20 bar	339-0407	339-4128

Calibrator, Pressure, Intrinsically Safe, DPI 610/IS



BASEEFA Certificate No: Ex 99E2002X

- A rugged, highly versatile, portable pressure calibrator approved for use in hazardous areas-Intrinsically safe (EEx ia IIC T4).
- Provides a task driven user interface which facilitates easy set-up of calibration, switch testing, leak testing, 4 to 20mA simulation, relief valve testing, data logging and ambient temperature recording modes.
- Precision accuracy (0.025% full scale)
- Built-in pressure/vacuum pump (-850mbar to +20 bar)
- Current and voltage measurement
- Pressure and current displayed simultaneously
- Data storage and RS 232 interface

Technical specification

Pressure

Range	Overpressure	Pressure port
0-2 bar	4 bar	
0-7 bar	14 bar	G 1/8 (female)
0-20 bar	35 bar	

Inputs	Range	Accuracy	Resolution
Voltage	+/-50Vd.c.	+/-0.05% rdg +/-0.004% FS	100 μ V
Current	+/- 55mA	+/-0.05% rdg +/-0.004% FS	0.001mA
Temp.	-10 to 40°C	+/-1 °C	0.1°C

Outputs

Current	0 to 24 mA	+/-0.1%	
		+/- 5%	0.001mA
		+/-0.05% rdg +/- 0.1% FS	

Range

Type

DPI10 I/S 2bar	339-0413
DPI610 I/S 7bar	339-0429
DPI610 I/S 20bar	339-0435

DPI 603 Druck Pressure Calibrator

A cost effective rugged portable instrument for calibration and service of pressure instrumentation. The instrument features the capability to generate pressures up to 20 bar and measure to an accuracy of $\pm 0.075\%$ FS. If the device under test is a pressure sensor the instrument also measures the current or voltage output and display it together with the pressure reading. An energising voltage of 24V d.c. is provided for powering the device under test if necessary. A fixed current output of 12mA is also provided for loop verification and this can be used in a sink or source mode.

- 24 pressure units
- Dual display of pressure and electrical readout
- Loop verification
- Pressure switch testing
- Supplied with user handbook, user guide, carrying case, shoulder strap, electrical leads and probes and a blanking plug for the pressure port.

Technical specification

Pressure range _____ 0-2 bar
 _____ 0-10 bar
 _____ 0-20 bar

Pressure media _____ compatible with most common fluids

Display _____ 5 digit, 13.6mm LCD digits
 _____ with additional 16 text characters

Resolution _____ 0.005% FS maximum

Accuracy _____ $\pm 0.075\%$ FS

Electrical ranges _____ 0-50V d.c.
 _____ 0-55mA

Electrical outputs _____ 24V nominal fixed, 25mA max

Loop check _____ 12mA nominal fixed, source or sink

Operating temp. range _____ -10°C to +50°C

Calibrated temp. range _____ 0°C to +40°C

Pressure connection _____ G $\frac{1}{8}$ female

Environmental sealing _____ IP65

Batteries _____ 4 x size D cells zinc carbide

Range

	Uncalibrated	Calibrated
2 bar	215-0826	215-7158
10 bar	215-0832	215-7142
20 bar	213-0844	215-7120

Calibrator Dirt/Moisture Trap

RS stock no. 225-0049

Dirt/moisture trap designed for use with the Druck range of portable pressure calibrators. Regulator use will help ensure only clean dry gas enters the calibrator, thereby preventing contamination of the pneumatic system and reducing calibrator downtime for maintenance.

- 1/8 BSPF (parallel) male to 1/8 BSPF (parallel) female pressure connections for in line connection to the calibrator pressure port.
- Dismantles to empty collected deposits
- Suitable for Druck portable pneumatic pressure field calibrators DPI601, DPI610 AND DPI603 series
- Stainless steel/acrylic construction
- Max. working pressure 35 bar

Note: Must only be used in an upright position and is designed for pneumatic systems only.

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