

Technical **Datasheet**



Performance Series Diaphragm Operated Absolute Pressure Switch

Model: 207

Key **Features**

- Precision stainless steel mechanism for arduous atmospheres and high humidity.
- Set point adjustable over whole range against calibrated scale with tamperproof adjuster.
- Weatherproof and Flameproof models ATEX and IECEx
- Safety vented or blow out device as standard.
- NACE MR-01-75 compatibility.
- Hermetically sealed microswitch option.
- Sealed reference vacuum for true absolute pressure sensing.
- Ranges available up to 1000 mbar absolute (760 torr).
Static pressure up to 3 bar absolute (45 psia).



Product **applications**

The 207 Performance Series is suitable for a wide range of applications in:

- Oil & Gas
- Chemical
- Petrochemical
- Refining
- Power
- Food Industry

The choice of models available ensures that the 207 Performance Series is suitable for use in:

- Corrosive atmospheres
- Resistant to chemical attack

Series **Overview**

Designed in the mid-1970s and developed over subsequent years, the Performance Series switch range offers users the broadest range of options, the highest levels of set-point repeatability and the confidence of long term performance that a mature product such as this can prove.

The model 207 Performance Series pressure switches incorporate a sealed reference vacuum for true absolute pressure sensing.

How can we **help you?**

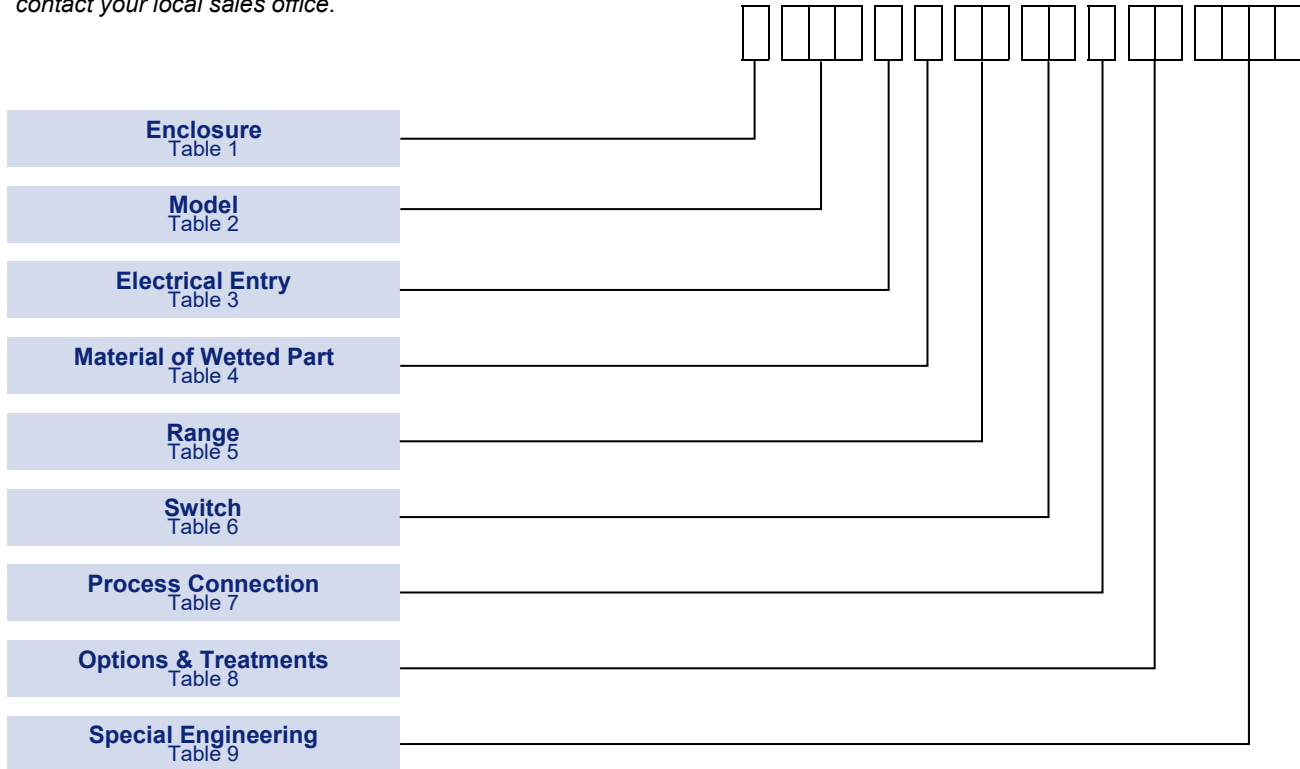
Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0) 1252 729 140

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Model: 207

How to order

Switches can be configured by selecting codes representing the desired features from the tables that follow. The chart below, describes how the model code is built up. For assistance in configuring a switch that best suits your needs, please contact your local sales office.



NOTE: Options shaded in the following tables are the most common options and are available on the quickest lead-times and at the lowest cost.

NOTE: Only the most common options are shown in this data sheet. Should you require a feature that is not shown, please contact your local sales office for further details.

Technical Specification

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Accuracy:	Set point repeatability ± 1% of span at 20°C / 68°F ambient. Scale accuracy ± 3% of full scale.
Storage Temperature:	-25 to +60°C / -13 to +140°F
Ambient Temperature:	-25 to +60°C / -13 to +140°F Special build is also available for temperatures down to -60°C (-76°F)
Maximum Process Temperature:	Subject to appropriate installation practice the component parts will withstand up to +60°C (+140°F). For higher temperature refer to SPECIAL ENGINEERING.
Enclosure classification:	IP66 / NEMA 4X / Flameproof Ex d
Switch output:	SPDT or DPDT snap action microswitch (standard) Hermetically sealed (optional)
Electrical rating:	See Table 6
Process Connection:	Rc 1/4 (BSP), 1/4 NPT Internal
Approximate weight:	Enclosures: “W & N” 3.0kg/6.6lb; “A & O” 4.0kg/8.8lb; “H” 4.5kg/10.0lb; “K” 9.3kg/20.5lb.

Enclosure

FINISH

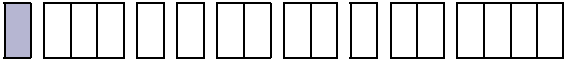
All enclosures except Type A are finished in light grey epoxy resin paint. Special finishes to order.




INTRINSIC SAFETY

Because of the low voltages and currency of I.S. circuits, we recommend using gold and/or sealed contacts.


Temperatures in Table 1 refer to limitations for certified enclosures.

See **TECHNICAL SPECIFICATION**

TABLE 1 

ENCLOSURE TYPES	Code
Weatherproof Enclosures	
General Purpose The basic enclosure is pressure die-cast in zinc alloy, offering weather protection not less than NEMA 4 + 13/IP66.	W
For Aggressive Atmospheres Investment cast enclosure in austenitic stainless steel with weather protection not less than NEMA 4X + 13/IP66.	A
Flameproof Enclosures Category 2 (Zone 1)	
ATEX Ex db IIC T6 (-60 to +40°C), T4 (-60 to +80°C) II 2 G D Gravity die-cast enclosure in aluminium-silicon alloy. Suitable for outdoor use, IP66 / NEMA 4.  II 2 G D	H
IECEX Ex db IIC	
ATEX Ex db IIC T6 (-60 to +40°C), T4 (-60 to +80°C) II 2 G D As Code H, but sand cast in high quality grey iron.  II 2 G D	K
IECEX Ex db IIC	
Exn Enclosures Category 3 (Zone 2).	
Type of Protection Exn II T6 (-25 to +60°C), T4 (-25 TO +80°C) II 3 G D As code 'W' but Exn. Weatherproof to NEMA 4/IP66. Limited switching facility (see Table 6).  II 3 G D	N
As 'N' but with investment cast enclosure in austenitic stainless steel as 'A'.	O

Models

TABLE 2 

	Code
Absolute Pressure Switch	207

Electrical Entry


Adaptors are available for other popular thread sizes.

Enclosures 'W' and 'N'

Standard option code 1(22mm dia) is provided with a nylon 22/20 reducer and fibre washer suitable for a standard M20 cable gland and back nut. Option code 0 elbow adaptor is factory fitted. Adaptor kits may also be provided retrospectively to fit at site if required. Ask for details. See diagrams for dimensions.

'W' and 'N' SAFETY NOTE

If a metal cable gland is site fitted it must either be earthed locally or an earth/gland plate must be used to connect the body of the gland at the enclosure earthing point. Earth/gland plates can be provided either factory fitted or in kit form for site assembly. Ask for details.

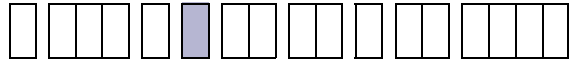
TABLE 3 

	Code
Enclosures W & N: Clearance for 20mm (3/4 in) outside dia conduit.	1
Enclosures H, K, A & O: M20 x 1.5 ISO thread (direct).	0
Enclosures H & K: M20 x 1.5 ISO thread, dual entry.	5
Enclosures H & K: 3/4-NPT INT.	3
Enclosures H & K: 3/4-NPT INT dual entry.	6
Enclosure W: M20 x 1.5 elbow adaptor.	0
Enclosure N: M20 x 1.5 straight adaptor (Approved).	0

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Material of Wetted Parts

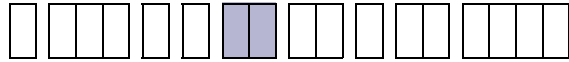
TABLE 4



	Code
316 stainless steel, PTFE seal	F

Setting Ranges

TABLE 5



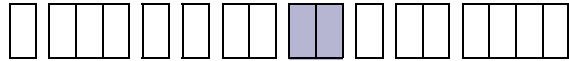
P_{max} = maximum working pressure

All ranges have maximum working pressure (P_{max}) 3 bar/45 psi absolute.

P_{max}		RANGE			Code
psi (A)	bar (A)	torr	Code	mbar (A)	
45	3	0 to 120	AG	0 to 160	A8
45	3	0 to 400	AF	0 to 500	A5
45	3	0 to 760	AE	0 to 1000	A1

Switch Options

TABLE 6



A much wider variety of switching options can be engineered to customers' requirements including heavy DC, manual latching, pneumatic output etc. Please consult our engineers for further information.

Model 207 and variant 3000 only								
CSA RATING (RESISTIVE) § see note	IEC947-5-1 / EN 60947-5-1 RATING						Contact	Code
	Designation & Utilisation Category	Rated operational current I_e (A) at rated operational voltage U_e	U_i	U_{imp}	VA Rating			
					Make	Break		
5 Amps @ 110/250V AC Light Duty for AC only	AC14 D300 DC13 R300	0.6/0.3A @ 120/240 V AC 0.22/0.1A @ 125/250V DC	250V	0.8kV	432 28	72 28	SPDT † DPDT †	00 01
5 Amps @ 110/250V AC & 2 Amps @ 30V DC General purpose precision	AC14 D300 DC13 R300	0.6/0.3A @ 120/240 V AC 0.22/0.1A @ 125/250V DC	250V	0.8kV	432 28	72 28	SPDT DPDT	02 03
1 Amp @ 125V AC & § 100mA @ 30V DC Gold Alloy contacts for low voltage switching	1A @ 125 VAC RESISTIVE (IEC 1058-1 / EN 61058-1)						SPDT DPDT	04 05
§ 5 Amps @ 110/250V AC & 5 Amps @ 30V DC Environmentally sealed	AC14 D300 DC13 R300	0.6/0.3A @ 120/240 V AC 0.22/0.1A @ 125/250V DC	250V	0.5kV	432 28	72 28	SPDT* DPDT*	08 09
§ 1 Amp @ 30V AC & 30V DC Environmentally sealed with gold contacts	AC14 E150	0.3A @ 120 V AC	125V	0.5kV	216	36	SPDT* DPDT*	0G 0H
5 Amps @ 250V AC & 2 Amps @ 30V DC Hermetically sealed. Gold plated silver contacts	AC14 D300 DC13 R300	0.6/0.3A @ 120/240 V AC 0.22/0.1A @ 125/250V DC	250V	0.5kV	432 28	72 28	SPDT DPDT	H2 H3 [†] H6 [‡]
Variant 2000 (Cannot be supplied with enclosure Code N/O)								
5 Amps @ 110/250V AC Light Duty for AC only	AC14 D300	0.6/0.3A @ 120/240 V AC	250V	0.8kV	432	72	SPDT	0C
5 Amps @ 110/250V AC & 2 Amps @ 30 V DC Adjustable	AC14 D300 DC13 R300	0.6/0.3A @ 120/240 V AC 0.22/0.1A @ 125/250V DC	250V	0.8kV	432 28	72 28	SPDT	0D

† 2 Single pole, double throw, simultaneous falling under pressure
‡ 2 Single pole, double throw, simultaneous rising under pressure

The electrical rating is dependent on the microswitch fitted to the instrument. The electrical ratings defined by each approval that the microswitch complies with and is shown on the product nameplate, ie CSA, or IEC. It should be noted that the instrument must be used within the electrical rating specified from the approval you require. This table lists the actual IEC ratings against the Designation & Utilisation Category marked on the nameplates. In the absence of any verification by CSA the microswitch § manufacturer's rating is stated in **italics and bold**. **If in doubt seek guidance from the factory.**

NOTE: For low energy circuits e.g. 30V and up to 100mA, we recommend using gold alloy contact switches.
 U_i = rated insulation voltage U_{imp} = rated impulse to withstand voltage across contacts.

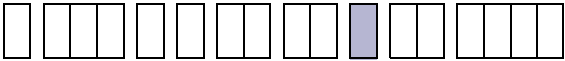
*Suitable for use with Exn Enclosures (see Table 1).
 † Not available on variant 3000.

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Process Connection

Other thread specifications and sizes are available without using adaptors.


Adaptors are available for applications where their use is permitted.

TABLE 7 

	Code
Rc 1/4 (1/4 BSP tr INT) to ISO 7/1	A
1/4-18 NPT INTERNAL	F

Options & Treatments

Combinations available, apply for details.


TABLE 8 

	Code
Tropicalisation High humidity atmospheres	01
Marine and Offshore Saline atmosphere or salt spray	02
Ammonia Process (wetted) parts and construction suitable for atmospheric ammonia	03
Oxygen Service 2: Process (wetted) parts are cleaned for oxygen	04
Oxygen Service 3: Process and non-process parts are cleaned for use with oxygen	05
Stainless Steel Pipe Mounting Bracket Permits local 2" pipe work to be utilized for mounting the instrument	10
Tagging - Variety of tagging methods are available	APPLY FOR DETAILS
Applies when - no option is required and selection is made from special engineering	00

Special Engineering

Last 4 digits of model code only used when special engineering is required.

In addition, the 207 can be adapted to adjustable switching differential (see Table 10B)

TABLE 9 

	Code
Please consult Delta sales engineering for special requirements.	TBA
Special microswitch, giving adjustable switching differential. Limited span. See Table 6, switch codes 0C or 0D.	2000
Secondary mechanism, giving adjustable switching differential. Wide span. See Table 6, switch codes 02, 03, 04, 05	3000

Performance Data

TABLE 10

Table 10A

Due to manufacturing tolerances the figures quoted in these tables are for guidance only and are typical for weatherproof models.

Flameproof models may be up to 2 times higher depending on the range. Should the differential be critical for specific applications our engineers should be consulted prior to ordering.

STANDARD FORM: FIXED SWITCHING DIFFERENTIAL								
Switch Mode	SPDT				DPDT			
	00	02	04	08/0G H2	01	03	05	09/0H H3/H6
torr	8	17	8	52	15	32	15	73
mbar	11	22	11	68	20	42	20	97

Table 10B

VARIANTS 2000/3000: ADJUSTABLE SWITCHING DIFFERENTIAL								
Switch Mode	Variant 2000				Variant 3000			
	SPDT only				SPDT		DPDT	
	0C		0D		02 or 04		03 or 05	
	From	To	From	To	From	To	From	To
torr	19	53	53	188	113	375	113	375
mbar	25	70	70	250	150	500	150	500

Electrical Connections

Terminal Block

Cable entry is to a non-pinching terminal block made of a non-hygroscopic thermosetting plastic, suitable for cables up to 2.5mm²/14AWG.

Earthing/Grounding

An earthing stud is provided inside all weatherproof enclosures, adjacent to the entry. External earthing is standard on flameproof versions. Safety note see Table 3.

Dielectric Strength

The electrical assembly is capable of withstanding *2kV between live parts and earth/ground and 500V between open contacts.

* 1.2kV for micro switch Codes H2, H3 and H6. Refer to Table 6.

Electrical Entry

Standard options are listed in Table 3. Other threads can be accommodated by adaptors. Dual entry available, see Table 3.

Optional Extras

Mounting Position/Location/Installation

Vertical as shown, IN DIMENSIONS, taking care to avoid siting in locations that transmit excessive shock or vibration. For further advice contact our engineers.

Pollution degree (EN60947-5-1)

All products are suitable for use in pollution degree 3. For extreme conditions where condensation may readily form, then sealed contacts should be used. See Table 6 Codes 08/09, 0G/0H, H2/H3/H6.

Electrical Isolation

These products are not suitable for electrical isolation. Always isolate circuit separately to carry out any electrical work.

Approvals

EUROPEAN DIRECTIVES



Low voltage Directive (LVD) 2014/35/EU.
Compliant to LVD

Pressure Equipment Directive (PED) 97/23/EC:

This product has a process connection size ≤DN25 and is therefore categorised as sound engineering practice under Cat 3.3

ATEX APPROVALS



FLAMEPROOF:

Certificate No. BAS01ATEX2426X
EN 60079-0, EN 60079-1, EN 60079-31

For Zone 1 models (**Enclosure code H/K, see Table 1**)

Ex	II 2 GD	Ex db IIC T4 (Tamb -60°C to +80°C) Gb
		Ex tb IIIC T135°C (Tamb -60°C to +80°C) Db IP66
Ex	II 2 GD	Ex db IIC T6 (Tamb -60°C to +40°C) Gb
		Ex tb IIIC T85°C (Tamb -60°C to +40°C) Db IP66

GLOBAL CERTIFICATION



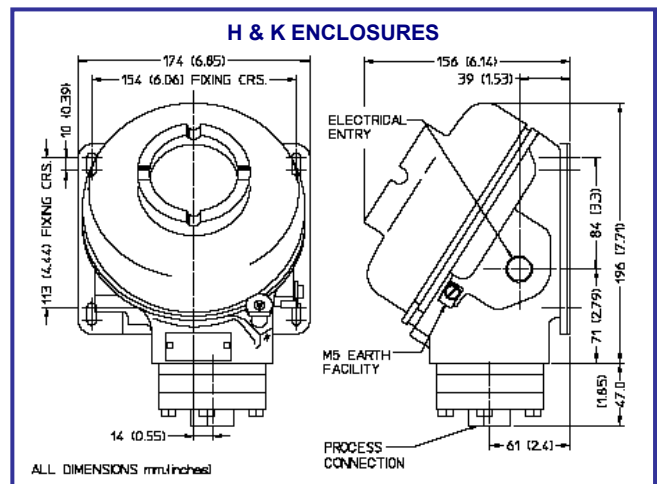
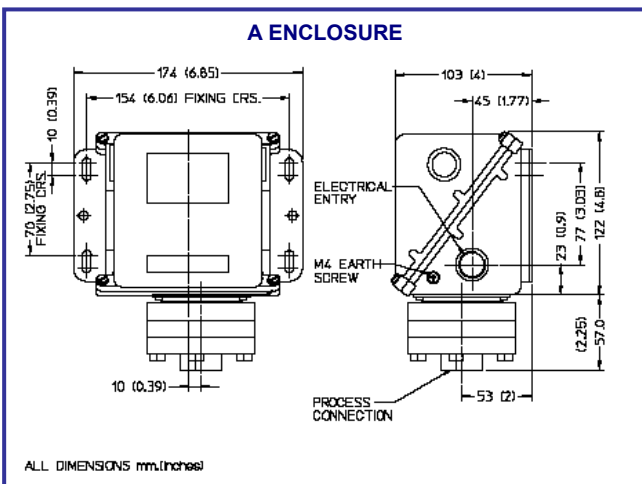
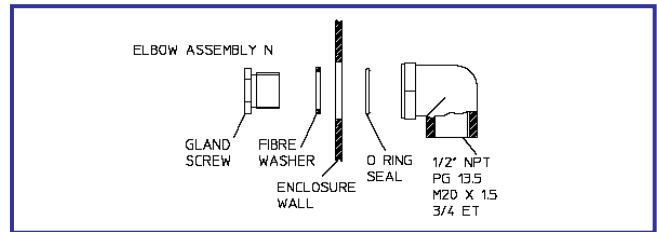
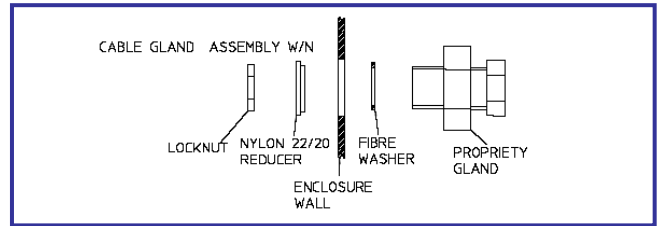
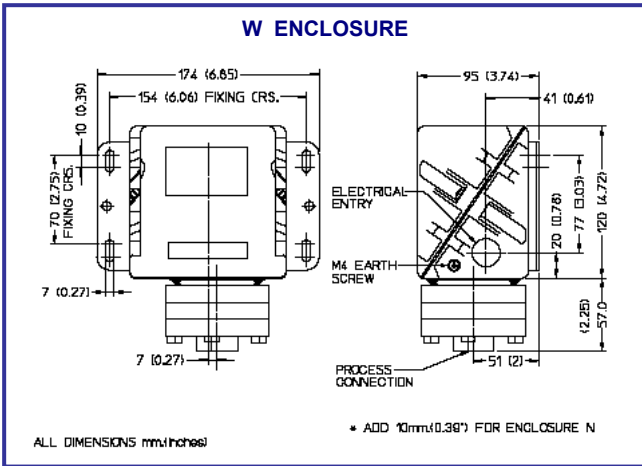
IECEX Certified

Ex db IIC T4 (Tamb -60°C to +80°C) Gb
Ex db IIC T6 (Tamb -60°C to +40°C) Gb

Certificate No. IECEX ITS 04.0006X
IEC 60079-0, EN 60079-1

Dimensions

All dimensions mm (inches)



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