

Data Sheet

S1 Pressure Transducer

FEATURES

- Compact and highly configurable; wide selection of pressure connections, electrical terminations and outputs
- Designed for mid-high volume OEM applications
- 17-4 PH® Stainless steel sensor element
- Field proven polysilicon thin film pressure sensor
- Ranges Vac to 10,000 psi

TYPICAL USES

- Off road vehicles
- Construction machinery
- Hydraulic and pneumatic sensing
- Performance racing
- Transportation
- Agriculture implements
- Compressor control
- HVAC/R
- Process automation and control
- Pump monitoring

SPECIFICATIONS

Reference Temperature: 72 °F ±2 °F (21 °C ±1 °C)

Accuracy Class: ±1.0% Span (±0.50% Optional):
Includes non-linearity, hysteresis, non-repeatability, zero offset and span setting errors at reference temperature.

Total Error Band Accuracy (TEB): ±1.0% of Span: From 0 °C to 85 °C (32 °F to 185 °F)
±2.0% of Span: From 85 °C to 125 °C (185 °F to 257 °F)
±2.0% of Span: From -40 °C to -20 °C (-40 °F to -4 °F)
Includes the combined effects of non-linearity (Terminal Point Method), hysteresis, non-repeatability, temperature and zero offset and span setting errors

Stability: ≤ ±0.25% of span/year

Durability: 50 million cycles

Approvals: CE/UKCA, ROHS

ENVIRONMENTAL SPECIFICATIONS

Temperature Limits: Storage: -58 °F to 257 °F (-50 °C to +125 °C)
Operating: -40 °F to 257 °F (-40 °C to +125 °C)

Humidity Effects: 0 to 100% R.H., ± .05% typical

FUNCTIONAL SPECIFICATIONS

Vibration Effects: Random vibration (20 g)
RMS; 20-2000 Hz per IEC 60068-64

Shock Effects: 100 gs, 6 ms

Drop Test: Withstands 1 meter on concrete



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Pressure Transducer



KEY BENEFITS

- Compact & rugged design
- Variety of housing and connection material options
- High EMI/RFI immunity ratings

FUNCTIONAL SPECIFICATIONS

Response Time: < 5 msec

Warm-up Time: < 20 msec

Position Effect: < ±0.015% span typical

Overpressure (F.S):	Proof	Burst
≤100 psi	2 X Range	50 X Range
≥100 to 3,000 psi	2 X Range	5 X Range
≥3,000 to 5,000 psi	1.5 X Range	4 X Range
≥5,000 to 7,500 psi	1.5 X Range	3 X Range
≥7,500 to 10,000 psi	1.2 X Range	3 X Range

ELECTRICAL SPECIFICATIONS

Insulation Withstand Voltage: 500 Vac

Insulation Resistance: >100 MOhms @ 100 Vdc

Circuit Protection: Reverse polarity and miswire protection (excludes ratiometric output)

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OUTPUT SIGNALS AVAILABLE

Voltage Output	Excitation	Supply Current
0-5 Vdc, 3 wire	9-32 Vdc	11 mA
0-10 Vdc, 3 wire	14-32 Vdc	11 mA
1-5 Vdc, 3 wire	9-32 Vdc	5 mA
1-6 Vdc, 3 wire	9-32 Vdc	5 mA
0.5-4.5 Vdc, 3 wire	9-32 Vdc	5 mA
Ratiometric Output		
0.5-4.5 Vdc, 3 wire	5 Vdc ±0.5 Vdc	5 mA
Current Output		
4-20 mA, 2 wire	9-32 Vdc	

ENVIRONMENTAL RATING

Rating: IP67, NEMA 6X	Electrical Connections Metri-Pack®, Shielded cable, Deutsch®, DT, AMP®, Econoseal®, and M12
IP65, NEMA 4X	EN 175301-803 Form A & C (DIN 43650 A & C)

WETTED COMPONENTS

Diaphragm:	17-4 PH® Stainless steel
Process Connection	Options of aluminum, brass, carbon steel or stainless steel

NON-WETTED COMPONENTS

Housing:	Options of aluminum, brass, carbon steel or stainless steel
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OPTIONAL FEATURES

Electrical Termination:	See ordering code
Process Connection Location:	See ordering code
Consult Factory For:	Pressure range options, process connection locations, approval descriptions

TruAccuracy™ What Does It Mean?

Ashcroft's TruAccuracy™ specification is exclusively based on terminal point methodology instead of statistically derived schemes like 'best fit straight line'.

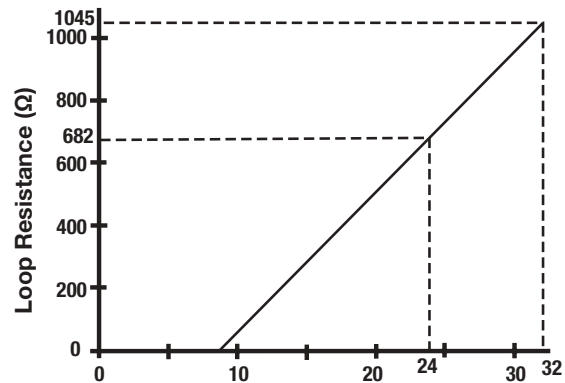
TruAccuracy™ means the Ashcroft S1 has standard span accuracy of ±1.00% with option to purchase as ±0.50% out of the box. Zero and span setting errors are already included in the standard ±1.00% or optional ±0.50% of span accuracy spec

The S1 is ready to be installed with no additional calibration adjustments required.

A unit from another manufacturer advertised as ±0.25% best fit straight line may actually be a ±1.25% to ±2.25% device. Using best fit straight line method, the accuracy spec does not include zero and span setting errors, which can be as much as ±1.00% each.

POWER SUPPLY & LOAD RESISTANCE

Power Supply Voltage vs. Loop Resistance (4-20 mA ONLY)



$$V_{\text{MIN}} = 9V + [0.022A * x (R_L)]$$

(*includes a 10% safety factor)

$$R_L = R_S + R_W$$

R_L = Loop Resistance (Ohms)

R_S = Sense Resistance (Ohms)

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S1 Pressure Transducer

ORDERING CODE	Example:	S1	7	S	0	MEK	42	GN	60#	XTU
Model		S1								
S1 - Pressure Transducer		S1								
Accuracy										
5 - ± 0.50% span										
7 - ± 1.00% span			7							
Fitting Material										
A - Aluminum (max pressure range 3000 psi)										
B - Brass (max pressure range 4000 psi)										
C - Low carbon steel (max pressure range 10,000 psi)										
S - 304 Stainless steel (max pressure range 10,000 psi)				S						
Fitting Finish										
B - Anodized Blue (Only available with A fitting material - Aluminum)										
Z - Zinc Chromate (Only available with C fitting material - Low carbon steel)										
C - Custom										
0 - No Plating					0					
Pressure Connection Size										
FGA - G ¼ A - Female										
FS7 - 7/16-20 UNF-2B Female (¼ in. SAE) Flare Internal Thread w/Schrader Depressor										
F02 - ¼ NPT - Female										
MB1 - M10x1.25 Banjo - Single										
MEK - 7/16 20 SAE #4 - Male						MEK				
MEV - 9/16-18 SAE #6 Male w/Buna-N O-ring										
MGA - G ¼ A - Male										
MG1 - G ¼ B - Male										
MG2 - G ¼ B - Male										
M01 - ½ NPT - Male										
M02 - ¼ NPT - Male										
M45 - 7/16-20 Flare 45°										
M76 - 7/16-20 Flare 37°										
Output Signal										
05 - 0-5 Vdc										
10 - 0-10 Vdc										
15 - 1-5 Vdc										
16 - 1-6 Vdc										
42 - 4-20 mA							42			
RM - 0.5 - 4.5 Vdc Ratio metric to 5 Vdc supply										
45 - 0.5 - 4.5 Vdc Non-Ratio metric to 9-32 Vdc supply										
Electrical Termination										
EN 175301-803 Form C (DIN 43650, Form C)										
DC - No mating connector										
EN 175301-803 Form A (DIN 43650, Form A)										
DA - No mating connector										
M12 - 4 Pin with molded thread										
EW - M12 with Pin 3 as Common (no mating connector)										
RW - M12 with Pin 4 as Common (no mating connector)										
M12 - 4 Pin with metal thread										
EX - M12 with Pin 3 as Common (no mating connector)										
RX - M12 with Pin 4 as Common (no mating connector)										
Shielded cable with PVC jacket and 24 AWG leads										
FA - 1 Foot										
FB - 1 Meter										
FC - 10 Feet										
FD - 5 Meters										
FE - 20 Feet										
Metri-Pack®										
GN - No mating connection								GN		
AMP® Econoseal®										
JN - No mating connection										
Deutsch® DT Series DT04-3P										
DT - Without mating connector										
Deutsch® DT Series DT04-4P										
DU - Without mating connector										
Deutsch® DTM Series DTM04-3P										
DS - Without mating connector										
Pressure Ranges (see range table on page 4)										
60# - 60 psi									60#	
Option (if including an option(s) must include an "X")										X
TU - Throttle Plug										TU

S1 Pressure Transducer

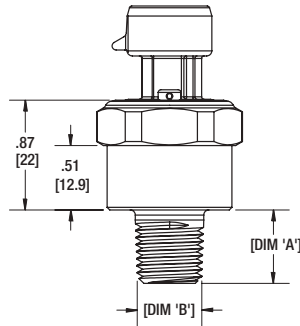
S1 RANGE TABLE

	Range	Code
Compound	0 psi/-14.7 psi	VAC#
	15 psi/-14.7 psi	V&15#
	30 psi/-14.7 psi	V&30#
	45 psi/-14.7 psi	V&45#
	60 psi/-14.7 psi	V&60#
	75 psi/-14.7 psi	V&75#
	100 psi/-14.7 psi	V&100#
	150 psi/-14.7 psi	V&150#
	200 psi/-14.7 psi	V&200#
	300 psi/-14.7 psi	V&300#
Positive Pressure	15 psi	15#
	30 psi	30#
	45 psi	45#
	50 psi	50#
	60 psi	60#
	75 psi	75#
	100 psi	100#
	150 psi	150#
	200 psi	200#
	250 psi	250#
	300 psi	300#
	400 psi	400#
	500 psi	500#
	650 psi	650#
	750 psi	750#
	1,000 psi	1000#
	1,500 psi	1500#
	2,000 psi	2000#
2,500 psi	2500#	
3,000 psi	3000#	
4,000 psi	4000#	
5,000 psi	5000#	
6,000 psi	6000#	
7,500 psi	7500#	
10,000 psi	10000#	

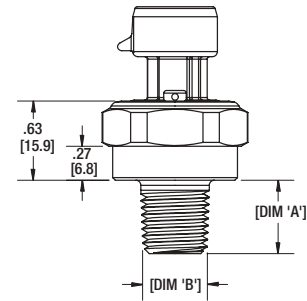
ksc, bar, kPa, and mPa ranges also available

DIMENSIONS are identified in inches and [millimeters]

For reference only, consult Ashcroft for specific dimensional drawings.



LOW PRESSURE
(RANGES LESS THAN 100 PSI)



HIGH PRESSURE
(RANGES GREATER THAN
OR EQUAL TO 100 PSI)

PRESSURE CONNECTION GENERAL DIMENSIONS

Pressure Connection Code	Thread	Dimension A in [mm]	Dimension B in [mm]
FGA	G ¼ A - Female	.78 [19.7]	.87 [22.1]
FS7	7/16-20 UNF-2B Schrader - Female	.75 [19.2]	.75 [19.1]
F02	¼-18 NPT - Female	.68 [17.3]	.75 [19.1]
MB1	M10x1.25 Banjo - Single	.79 [20.0]	.39 [9.9]
MEK	7/16-20 UNF-2B SAE #4 - Male	.43 [11.0]	.44 [11.2]
MEV	9/16-18 UNF-2A SAE #6 - Male	.47 [12.0]	.56 [14.2]
MGA	G ¼ A - Male	.58 [14.7]	.52 [13.2]
MG1	G ⅜ B - Male	.39 [10.0]	.38 [9.7]
MG2	G ¼ B - Male	.59 [15.0]	.52 [13.2]
M01	1/8-27 NPT - Male	.47 [12.0]	.42 [10.7]
M02	¼-18 NPT - Male	.58 [14.7]	.53 [13.5]
M45	7/16-20 Flare 45°	.55 [14.0]	.44 [11.2]
M76	7/16-20 Flare 37°	.55 [14.0]	.55 [14.0]

NOTE 1: DIM 'B' MEASURED TO THREAD OD

NOTE 2: DIMENSIONS IN [] ARE MILLIMETERS

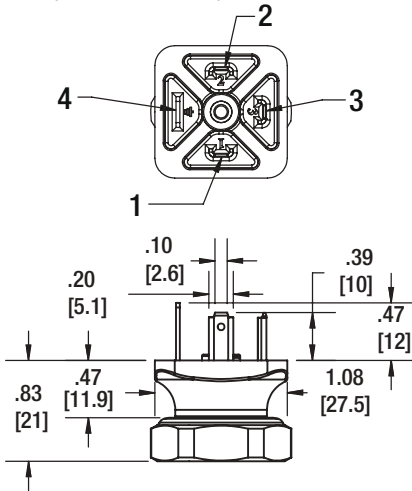
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DIMENSIONS are identified in inches and [millimeters]

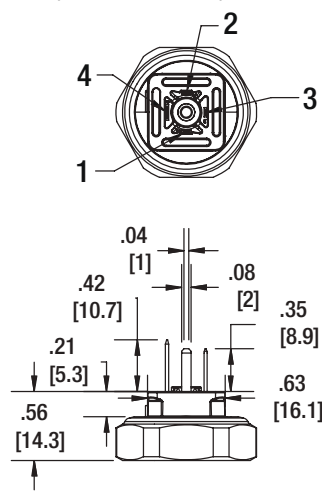
For reference only, consult Ashcroft for specific dimensional drawings.

DA - EN17530-803 Form A
(DIN 43650 Form A)



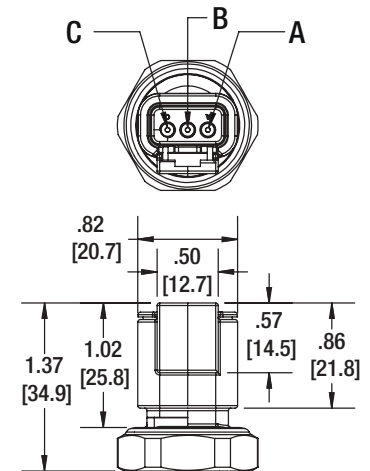
Din Form A		
Pin #	Voltage Function	Current Function
1	V+	V+
2	V- (Common)	V-
3	Output	V-
4	Ground	Ground

DC - EN17530-803 Form C
(DIN 43650 Form C)



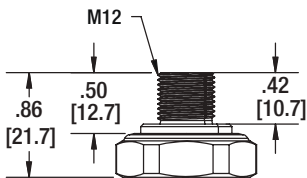
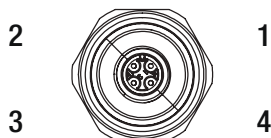
Din Form C		
Pin #	Voltage Function	Current Function
1	V+	V+
2	V- (Common)	V-
3	Output	V-
4	Ground	Ground

DS - Deutsch® DTM04-3P



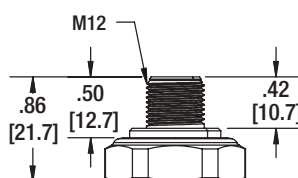
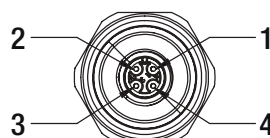
Deutsch® DTM04-3P		
Pin #	Voltage Function	Current Function
A	V+	V+
B	V- (Common)	V-
C	Output	V-

EW - M12 (4 Pin) Molded Thread
(Pin 3 Common)



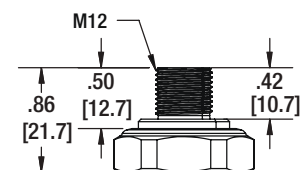
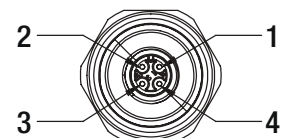
M12-4P Plastic Pin-out Type 1		
Pin #	Voltage Function	Current Function
1	V+	V+
2	Ground	Ground
3	V- (Common)	V-
4	Output	V-

EX - M12 (4 Pin) Metal Thread
(Pin 3 Common)



M12-4P Metal Pin-out Type 1		
Pin #	Voltage Function	Current Function
1	V+	V+
2	Ground	Ground
3	V- (Common)	V-
4	Output	V-

RW - M12 (4 Pin) Molded Thread
(Pin 4 Common)



M12-4P Plastic Pin-out Type 2		
Pin #	Voltage Function	Current Function
1	V+	V+
2	Output	V-
3	Ground	Ground
4	V- (Common)	V-

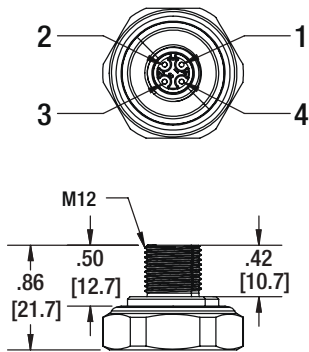
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DIMENSIONS are identified in inches and [millimeters]

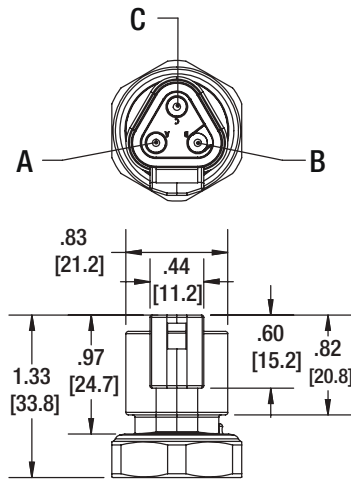
For reference only, consult Ashcroft for specific dimensional drawings.

RX - M12 (4 Pin) Metal Thread
(Pin 4 Common)



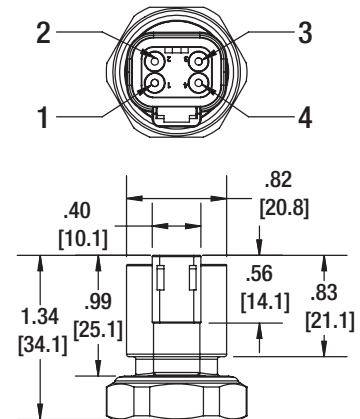
M12-4P Metal Pin-out Type 2		
Pin #	Voltage Function	Current Function
1	V+	V+
2	Output	V-
3	Ground	Ground
4	V- (Common)	V-

DT - Deutsch® DT04-3P



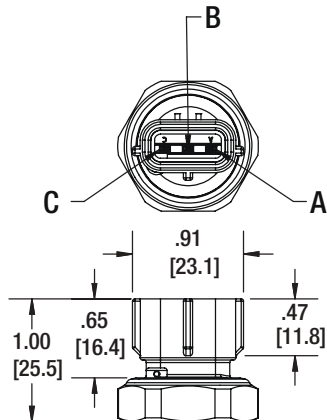
Deutsch® DT04-3P		
Pin #	Voltage Function	Current Function
A	V+	V+
B	V- (Common)	V-
C	Output	V-

DU - Deutsch® DT04-4P



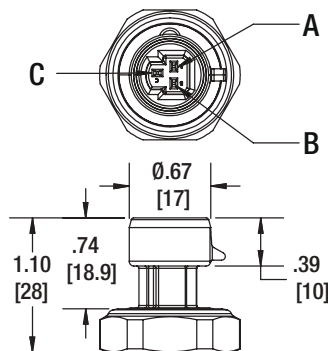
Deutsch® DT04-4P		
Pin #	Voltage Function	Current Function
1	V- (Common)	V-
2	V+	V+
3	Ground	Ground
4	Output	V-

JN - AMP® Econoseal®



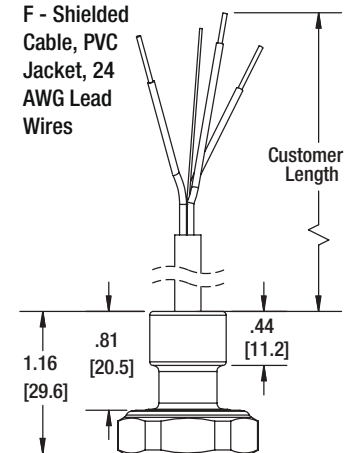
AMP® Econoseal®		
Pin #	Voltage Function	Current Function
A	V+	V+
B	V- (Common)	V-
C	Output	V-

GN - Metri-Pack®



Metri-Pack®		
Pin #	Voltage Function	Current Function
A	V- (Common)	V-
B	V+	V+
C	Output	V-

F - Shielded Cable, PVC Jacket, 24 AWG Lead Wires



Shielded Cable		
Pin #	Voltage Function	Current Function
Red	V+	V+
Black	Common	V-
White	Output	n/a
Drain	n/a	n/a