

## 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



S1  
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)

Continued on page 2

# Data Sheet

## S1 Pressure Transducer

### 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'.

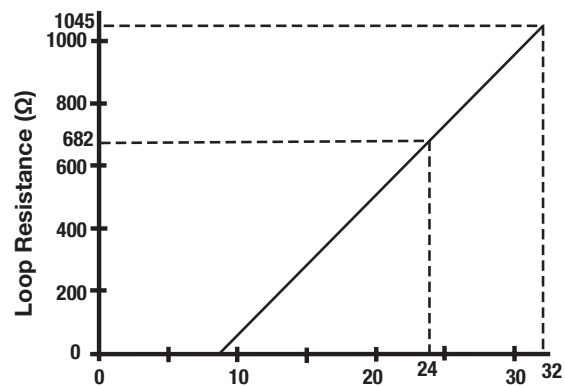
TruAccuracy™ means the Ashcroft S1 has standard span accuracy of ±1.00% with option to purchase as ±0.50% out of the box. Zero and span setting errors are already included in the standard ±1.00% or optional ±0.50% of span accuracy spec

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)

# Data Sheet

## S1 Pressure Transducer

ORDERING CODE	Example:	S1	7	S	0	MEK	42	GN	60#	XTU
<b>Model</b>										
S1 - Pressure Transducer		S1								
<b>Accuracy</b>										
5 - ± 0.50% span										
7 - ± 1.00% span			7							
<b>Fitting Material</b>										
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						
<b>Fitting Finish</b>										
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					
<b>Pressure Connection Size</b>										
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°										
<b>Output Signal</b>										
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										
<b>Electrical Termination</b>										
<b>EN 175301-803 Form C (DIN 43650, Form C)</b>										
DC - No mating connector										
<b>EN 175301-803 Form A (DIN 43650, Form A)</b>										
DA - No mating connector										
<b>M12 - 4 Pin with molded thread</b>										
EW - M12 with Pin 3 as Common (no mating connector)										
RW - M12 with Pin 4 as Common (no mating connector)										
<b>M12 - 4 Pin with metal thread</b>										
EX - M12 with Pin 3 as Common (no mating connector)										
RX - M12 with Pin 4 as Common (no mating connector)										
<b>Shielded cable with PVC jacket and 24 AWG leads</b>										
FA - 1 Foot										
FB - 1 Meter										
FC - 10 Feet										
FD - 5 Meters										
FE - 20 Feet										
<b>Metri-Pack®</b>										
GN - No mating connection								GN		
<b>AMP® Econoseal®</b>										
JN - No mating connection										
<b>Deutsch® DT Series DT04-3P</b>										
DT - Without mating connector										
<b>Deutsch® DT Series DT04-4P</b>										
DU - Without mating connector										
<b>Deutsch® DTM Series DTM04-3P</b>										
DS - Without mating connector										
<b>Pressure Ranges (see range table on page 4)</b>										
60# - 60 psi									60#	
<b>Option (if including an option(s) must include an "X")</b>										
TU - Throttle Plug										X TU

# S1 Pressure Transducer

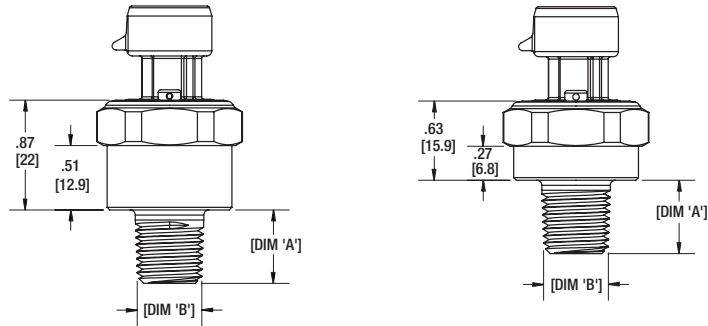
## S1 RANGE TABLE

	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	⅜-27 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

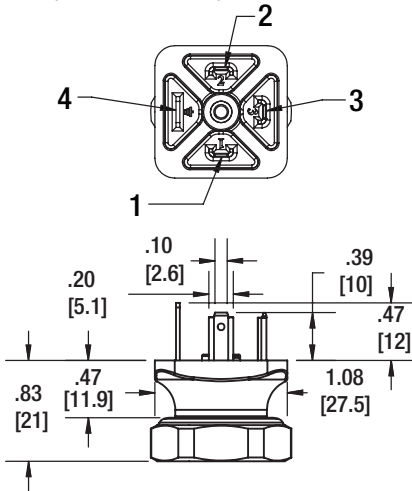
# Data Sheet

## S1 Pressure Transducer

**DIMENSIONS** are identified in inches and [millimeters]

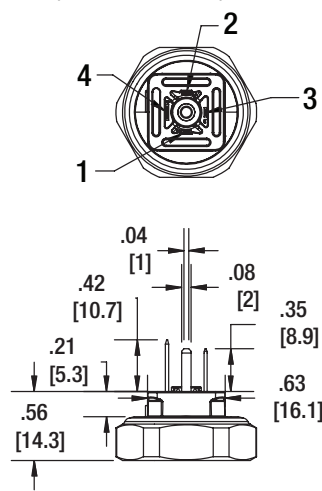
For reference only, consult Ashcroft for specific dimensional drawings.

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



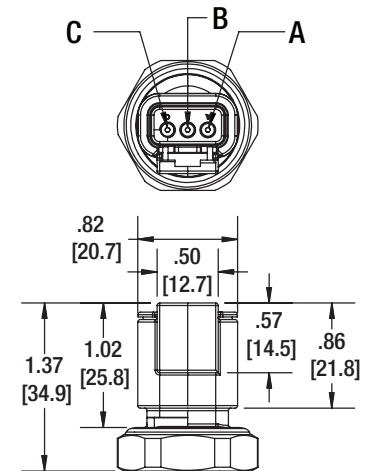
Din Form A		
Pin #	Voltage Function	Current Function
1	V+	V+
2	V- (Common)	V-
3	Output	V-
4	Ground	Ground

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



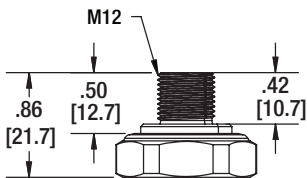
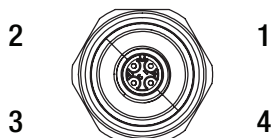
Din Form C		
Pin #	Voltage Function	Current Function
1	V+	V+
2	V- (Common)	V-
3	Output	V-
4	Ground	Ground

DS - Deutsch® DTM04-3P



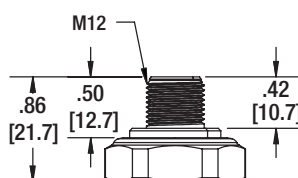
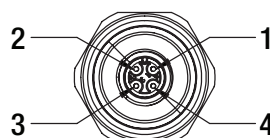
Deutsch® DTM04-3P		
Pin #	Voltage Function	Current Function
A	V+	V+
B	V- (Common)	V-
C	Output	V-

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



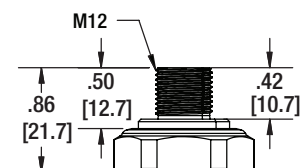
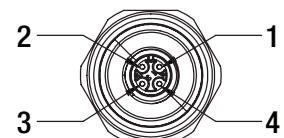
M12-4P Plastic Pin-out Type 1		
Pin #	Voltage Function	Current Function
1	V+	V+
2	Ground	Ground
3	V- (Common)	V-
4	Output	V-

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-

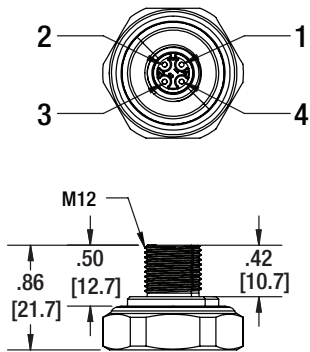
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**DIMENSIONS** are identified in inches and [millimeters]

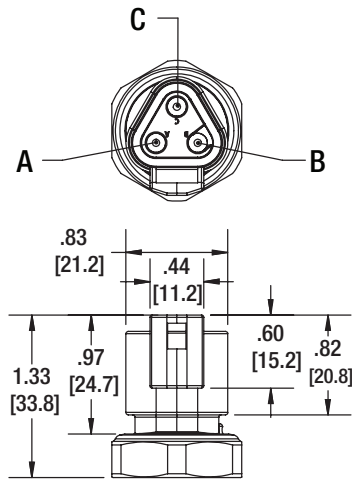
For reference only, consult Ashcroft for specific dimensional drawings.

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



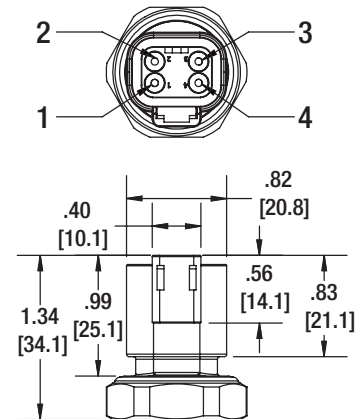
M12-4P Metal Pin-out Type 2		
Pin #	Voltage Function	Current Function
1	V+	V+
2	Output	V-
3	Ground	Ground
4	V- (Common)	V-

**DT - Deutsch® DT04-3P**



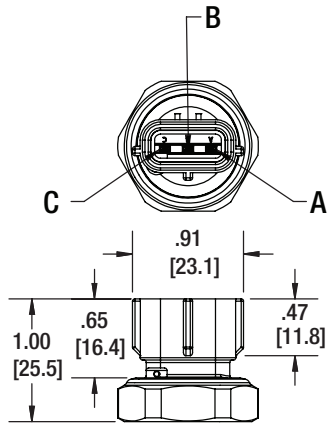
Deutsch® DT04-3P		
Pin #	Voltage Function	Current Function
A	V+	V+
B	V- (Common)	V-
C	Output	V-

**DU - Deutsch® DT04-4P**



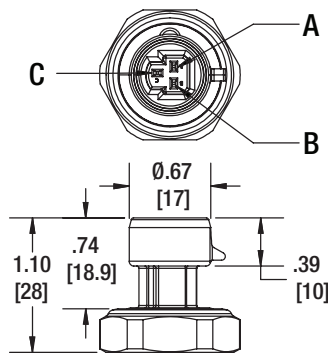
Deutsch® DT04-4P		
Pin #	Voltage Function	Current Function
1	V- (Common)	V-
2	V+	V+
3	Ground	Ground
4	Output	V-

**JN - AMP® Econoseal®**



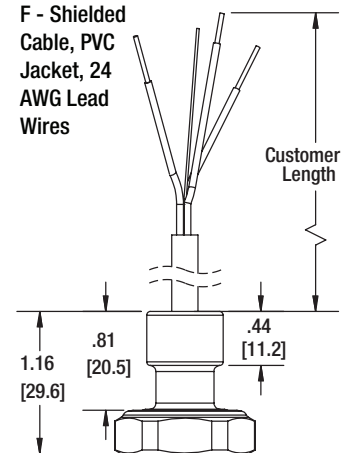
AMP® Econoseal®		
Pin #	Voltage Function	Current Function
A	V+	V+
B	V- (Common)	V-
C	Output	V-

**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