

Electronic Pressure Switches



- ▶ **Pressure**
 - **Electronic Pressure Switches**
 - **Mechanical Pressure Switches**
 - **Pressure Transducer**
- ▶ **Valves & Regulators**
- ▶ **Temperature**
- ▶ **Level**
- ▶ **Flow**
- ▶ **Air Suspension Valves**

Barksdale
CONTROL PRODUCTS
CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

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Electronic Pressure Switch

SW2000

Features

- ▶ Pressure control with internal stainless steel diaphragm
- ▶ High accuracy with fully adjustable deadband
- ▶ 2 solid state contacts or 1 solid state contact plus 1 4-20 mA analog output
- ▶ Built-in digital display readout
- ▶ Fully configurable via keypad
- ▶ Suitable for rapid cycling (100 times per second)
- ▶ UL/CSA approved

Applications

- ▶ OEM-applications in hydraulics and pneumatics
- ▶ Lubrication monitoring
- ▶ Machine tool industry
- ▶ Injection molding machines
- ▶ Compressor
- ▶ Apparatus engineering equipment



General Specifications*

Accuracy:	0.5% FS					
Linearity Error:	±0.5% f. s. at 77°F(25°C)					
Repeatability:	±0.1% f. s.					
Sensor Element:	Piezoresistive silicone measuring sensor					
Material:						
Wetted Parts:	304 stainless steel					
Seals:	Viton® (FKM fluorelastomer)					
Measuring Ranges (psi):	150	750	1500	3000	6000	9000
Proof Pressure (psi):	220	1100	2175	4400	9000	11,600
Process Connection:	1/4-18 NPT, 7/16-20 SAE, G1/4 M					
Electrical Connection:	Plug M 12 x 1, 4-pin					
Power Supply:	15 to 28 VDC reverse polarity protected					
Power Consumption:	approx. 50 mA (without load)					
A/D-Converter:						
Resolution:	10 bit (1,024 steps per measure. span)					
Scanning Rate:	100/s (for peak value memory)					
Time Constant:	approx. 40s					
Analog Output:						
Current Output:	4-20 mA					
Load:	max. RI = (Ub-12 V) / 20 mA RI = 600 ohm at 24 VDC					
Load Influence:	0.3% / 100 ohm					
Scanning Rate:	5 ms					
Voltage Output:	0 to 10 VDC (optional)					
Rating:	max. 10 mA, short circuit-protection					
Adjustment Range	25% to 100% f. s.					
Switching Output(s):						
Switching Function (adjustable):	Normally open / normally closed, standard-/window-mode					

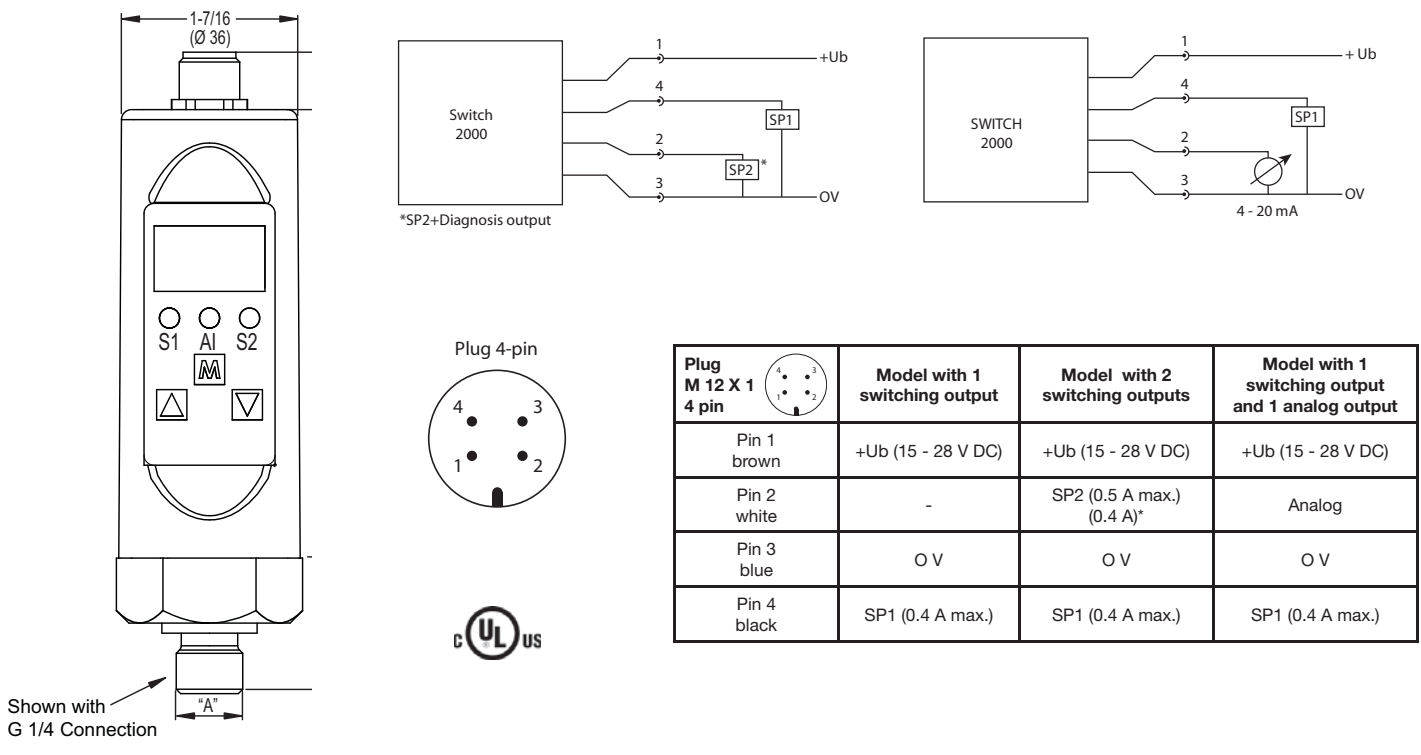
* See product configurator for additional options.

Switching Output(s) Cont.:	
Adjustment Range:	0% to 125% f. s.
Hysteresis:	0% to 125% f. s.
Switching Frequency:	max. 100 Hz
Contact Rating:	max. 500 mA, short circuit-protection
Delay:	0.0 to 9.9 s adjustable
Status Display(s):	Green LED(s)
Digital Display:	
Display Range:	3-digit 7-segment LED display, height 10 mm, (0.39 inches), red
Display Rate:	-1 to 999
	20/s
Error Display:	Orange LED display (AL).
Operating Elements:	3 easy response push buttons
Temperature Range:	
Media:	-13°F to 212°F (-25°C to +100°C)
Electronics:	14°F to 158°F (-10°C to +70°C)
Storage:	-22°F to 176°F (-30°C to +80°C)
Temperature Influence:	±0.2% f.s. /10K
Compensation Range:	14°F to 158°F (-10°C to +70°C)
Protection Class:	IP65
Dimensions (Housing):	1-7/16" X 5-1/8" (36 mm x 130 mm) (without electrical plug)
Additional Features:	7-segment LED display, microprocessor, self monitoring with error display, all parameters are configured by keypad. Tamper proof, keypad lock, rugged construction, vibration- and shockproof, long term stability, controlled
Weight:	approx. 0.4 lb (200 g)
Approvals:	c/ULus: file No. E42816

Electronic Pressure Switch

SW2000

Technical Drawings



Connection Chart

Plug M 12 X 1 4 pin	Version with switching output	Version with 1 switching output and 1 analog output
Pin 1	(15 to 28 VDC)	(15 to 28 VDC)
Pin 2	SP2 (0.4 A max.)	analog (4-20 mA)
Pin 3	0 V	0 V
Pin 4	SP1 (0.4 A max.)	SP1 (0.4 A max.)

Dimensions (in inches)

Process Connections "A"	"B"
1/4-18 NPT	2"
G 1/4	1-1/8"
7/16-20-DAE	2"

Product Configurator

Example **SW2000 -11 -N -1**

Base Model

SW2000 Solid State Pressure switch

Pressure Ranges

-01-A	0 - 15 PSIA (absolute)
-30-A	0 - 75 PSIA (absolute)
-05-A	0 - 150 PSIA (absolute)
-05	0 - 150 PSIG (gauge)
-31	0 - 750 PSIG (gauge)
-11	0 - 1500 PSIG (gauge)
-13	0 - 3000 PSIG (gauge)
-16	0 - 6000 PSIG (gauge)
-32	0 - 9000 PSIG (gauge)

Connection

-N	1/4" NPT
-P3	7/16-20 SAE
-G	G 1/4

Options

-1	Single switch plus 4-20 mA output
-2	Dual switch capability (No analog output)
-6	Single switch plus 0-10 volt output

Accessory

Order #	Description
239236	- 4 Pin, M12 Electrical mating connector

Electronic Pressure Switch

UDS7 Series

Features

- ▶ Pressure control with internal stainless steel diaphragm
- ▶ Digital display
- ▶ 2 solid state outputs and 1 analog output
- ▶ Dual switch with built-in transducer output
- ▶ High accuracy with fully adjustable deadband
- ▶ Built-in digital pressure readout
- ▶ Fully configurable via keypad
- ▶ Suitable for rapid cycling (100 times per second)
- ▶ UL/CSA approved

Applications

- ▶ Hydraulic and pneumatic systems
- ▶ Process and chemical industry
- ▶ Test bench and instrumentation
- ▶ Automation equipment



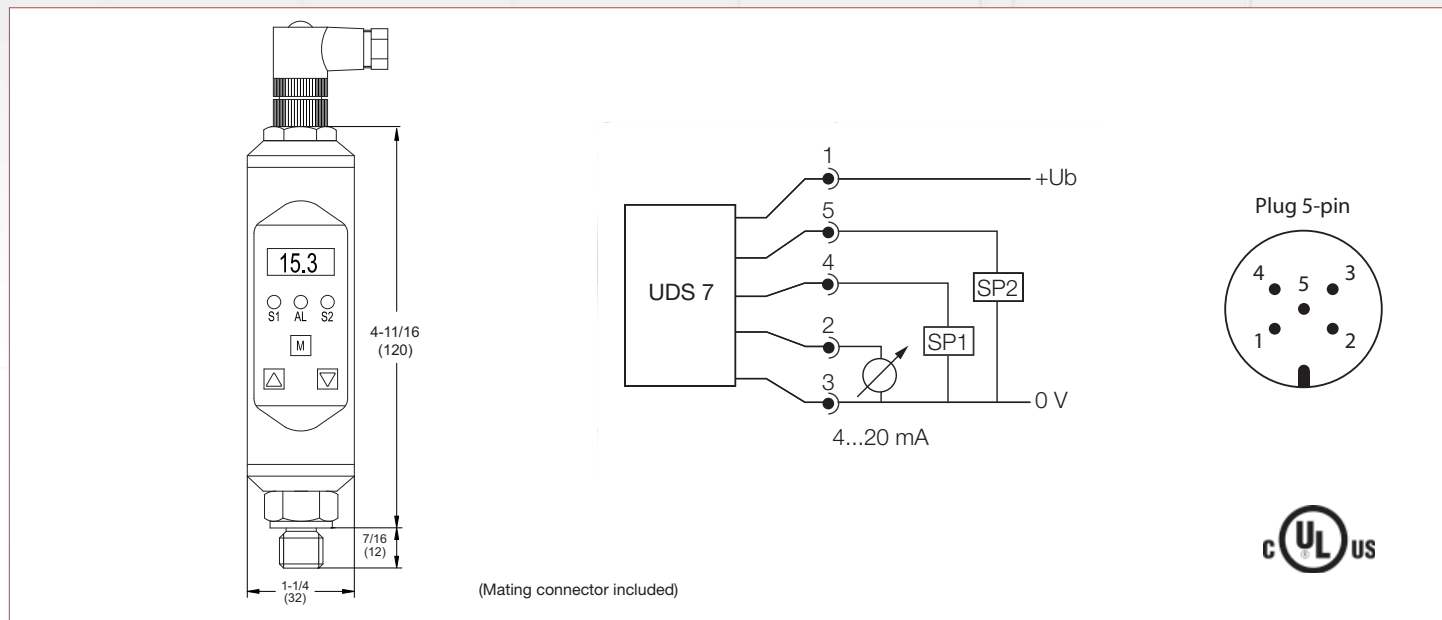
General Specifications*

Accuracy:	0.5% FS					
Linearity Error:	±0.5% f. s. at 77°F (25°C)					
Repeatability:	±0.1% f. s.					
Sensor Element:	Piezoresistive measuring cell					
Material: Wetted Parts: Seal:	Stainless steel 304 FKM (fluorelastomer)					
Measuring Ranges:	0 - 15 psi to 0 - 150 psi, absolute pressure 0 - 150 psi to 0 - 9000 psi, gauge					
Pressure Ranges (psi):	150	750	1500	3000	6000	9000
Proof Pressure (psi):	220	1100	2175	4400	9000	11,600
Process connection:	1/4 -18 NPT 7/16 - 20 SAE, G1/4 male with rotatable fitting only					
Electrical Connection:	Plug M 12 x 1, 5-pin					
Power Supply:	15 to 28 VDC					
Power Consumption:	Approx. 40 mA at 24 VDC (without load)					
A/D-Converter: Resolution: Scanning Rate:	12 bit (4096 steps per measure span) 100/s (for peak value memory)					
Analog Output: Current Output: Load: Load Influence: Voltage Output: Rating: Adjustment Range:	4 - 20 mA max. RI = (12 V) / 20 mA RI = 600 ohm at 24 V DC 0.3% / 100 ohm 0 to 10 V DC (optional) max. 10 mA, short circuit-proof 0% to 125% f. s.					

* See product configurator for additional options.

Switching Output(s): Adjustment Range: Hysteresis: Switching Frequency: Delay: Contact Rating: Status Display(s):	0 to 125% f. s. 0 to 125% f. s. max. 100 Hz 0.0 to 9.9 s - adjustable max. 400 mA, short circuit-proof LED(s) green
Digital Display: Display Range: Display Rate: Delay: Brightness:	4-digit dot matrix display, height 5 mm, green -999 to 999 5/s 0.0 - 9.9 adjustable 20 - 100% adjustable
Error Display:	LED red and alphanumeric display
Operating Elements:	3 easy response push buttons
Temperature Range: Media: Electronics: Storage:	-13°F to 212°F (-25°C to +100°C) 14°F to 158°F (-10°C to +70°C) -22°F to 178°F (-30°C to +80°C)
Temperature Influence:	±0.2% f.s. /10K
Protection Class:	IP65
Compensation Range:	14°F to 158°F (-10°C to +70°C)
Approvals:	UL, CE
Dimensions (Housing):	1.2 x 4.7 inch (32 X 120 mm) (without electrical plug)
Additional Features:	Alphanumeric 4-digit dot-matrix display, microprocessor-controlled, self monitoring with error display, scalable analog output, all parameters are configured by keypad.
Shipping Weight:	approx. 0.8 lb. (350 g)

Technical Drawings



Product Configurator

Example	UDS7	-05	-N	-3	-E
Base Model	UDS7				
Pressure Range		-01-A 0-15 PSIA (absolute) -30-A 0-75 PSIG (absolute) -05-A 0-150 PSIG (absolute) -05 0-150 PSIG -31 0-750 PSIG -11 0-1500 PSIG -13 0-3000 PSIG -16 0-6000 PSIG -32 0-9000 PSIG			
Process Connection			-N 1/4 NPT -P3 7/16-20 SAE -G 1/4		
Output				-3 Dual switch plus 4-20 mA output -6 Dual switch plus 0-10 VDC output	
Optional					-E EPDM seal

Connection Chart

Plug M 12 X 1 5 pin	Model with 2 switching outputs and 1 analog output
Pin 1	+Ub (18 - 32 V DC)
Pin 2	Analog 4 - 20 mA/ 0 - 10 V DC
Pin 3	0 V
Pin 4	SP1 0.5 A max.
Pin 5	SP2 0.5 A max.

Accessories

Order #	Description
239263	- 5 Pin, M12 electrical mating connector

Explosion Proof Electronic Pressure Switch

UDS7-BX

Features

- ▶ ATEX Certified Construction
- ▶ Dual seal protection
- ▶ Adjustable set point delay - up to 9.9 seconds
- ▶ 2 set points and 1 analog output
- ▶ High accuracy with fully adjustable deadband
- ▶ Digital readout
- ▶ Fully configurable via keypad
- ▶ Suitable for rapid cycling (100 times per second)
- ▶ NEMA 4, 7, 9 & IP65

Applications

- ▶ Oil & gas pipelines
- ▶ Refineries
- ▶ Petrochemical plants
- ▶ Pulp and paper mills
- ▶ Coal and oil fired power plants
- ▶ Cement plants
- ▶ Gas transfers for fuel systems



General Specifications*

Accuracy:	±0.5% FSO at 77°F (25°C) TYP
Linearity:	±0.5% FSO at 77°F (25°C)
Repeatability:	±0.1% FSO at 77°F (25°C)
Sensor Element:	Piezoresistive measuring cell
Wetted Parts:	316 and 17-4 PH stainless Steel
Proof Pressure:	2X rated pressure or 13,000 psi (884 bar), whichever is less
Process connection:	1/4-18 NPT Female
Electrical Connection:	Internal screw terminal strip via conduit connection 3/4" -14 NTPF
Power Supply (V_s):	18 to 28 VDC
Power Consumption:	Approx. 40 mA at 24 VDC (without load)
A/D-Converter:	
Resolution:	12 bit (4096 steps per measure span)
Scanning Rate:	100/s (for peak value memory)
Analog Output:	
Current Output:	4 - 20 mA
Load:	max. $R_{Loop} = (V_s - 12) / .020A$
Load Influence:	0.3% / 100 ohm
Voltage Output:	0 to 10 V DC (optional)
Rating:	max. 10 mA, short circuit-proof
Adjustment Range:	0% to 125% FSO
Switching Output(s):	
Adjustment Range:	0 to 125% FSO
Deadband:	0 to 125% FSO
Switching Frequency:	max. 100 Hz
Delay:	0.0 to 9.9 s - adjustable
Contact Rating:	max. 400 mA, short circuit-proof
Status Display(s):	LED(s) green

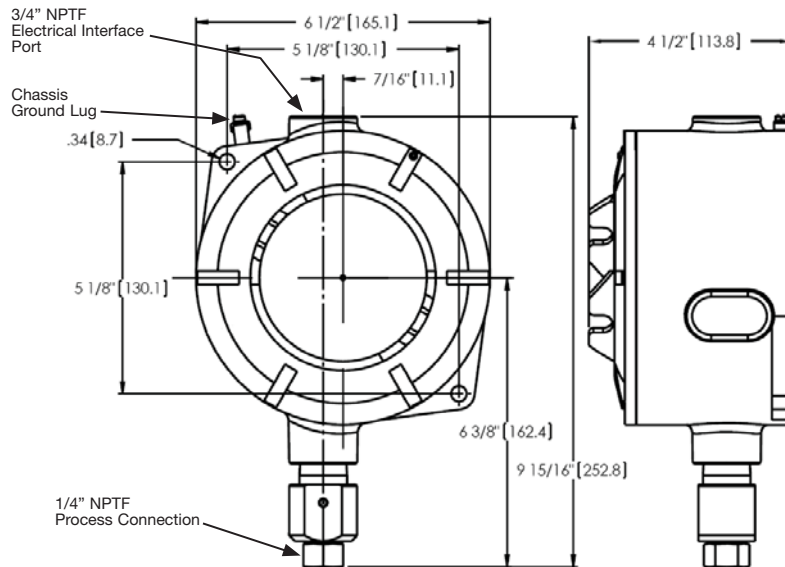
Digital Display:	4-digit dot matrix display, height 5 mm, green
Display Range:	-999 to 9999
Display Rate:	5/s
Delay:	0.0 - 9.9 adjustable
Brightness:	20 - 100% adjustable
Error Display:	LED red and alphanumeric display
Operating Elements:	3 easy response push buttons
Temperature Range:	
Media:	-13°F to 212°F (-25°C to +100°C)
Electronics:	14°F to 158°F (-10°C to +70°C)
Storage:	-22°F to 178°F (-30°C to +80°C)
Temperature Influence:	±0.2% FSO /10K
Protection Class:	NEMA 4, 7, 9 & IP65
Compensation Range:	14°F to 158°F (-10°C to +70°C)
Approvals:	CE0081 ISSEp 09 ATEX 0 35X Ex d II 2 GD Ex d II C T6 Ex 4D A21 IP65 T80°C -40°C
Additional Features:	Alphanumeric 4-digit dot-matrix display, microprocessor-controlled, special "Watchdog" feature monitors and displays errors, scalable analog output, all parameters are configured by keypad.
Shipping Weight:	approx. 9.3 lb.

* See product configurator for additional options.

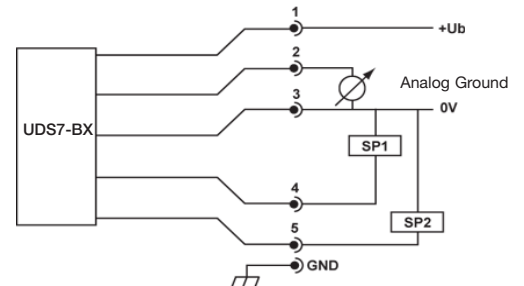
Explosion Proof Electronic Pressure Switch

UDS7-BX

Technical Drawings



Wiring Connections



Connection Chart

Terminal Connection 6-Position	Description
Pin 1	Voltage (Ub): 18-28 VDC
Pin 2	Analog 4 - 20 mA or 0 - 10 V DC
Pin 3	Common (-)
Pin 4	SP1: 0.4 A Max
Pin 5	SP2: 0.4 A Max
Pin 6	Internal Ground

Product Configurator

Example UDS7-BX -05 -3 -ZXXY

Base Model

UDS7-BX

Pressure Range

-08	0-500 PSIG (0-34.5 BAR)
-19	0-600 PSIG (0-41.4 BAR)
-10	0-1000 PSIG (0-69 BAR)
-11	0-1500 PSIG (0-104 BAR)
-12	0-2000 PSIG (0-138 BAR)
-13	0-3000 PSIG (0-207 BAR)
-14	0-4000 PSIG (0-276 BAR)
-15	0-5000 PSIG (0-345 BAR)
-16	0-6000 PSIG (0-414 BAR)
-17	0-7500 PSIG (0-517 BAR)
-18	0-10000 PSIG (0-689 BAR)

Optional

-ZXXY	Special Pressure Ranges*
-Q	Custom Modification (Consult Factory)

Output

-3	Dual switch plus 4-20 mA output
-6	Dual switch plus 0-10 VDC output

*Add suffix ZXXY for special pressure range calibration. XX = significant digits. Y = number of trailing zeros. Example: 130 psi calibration: add -Z131.

Multiple Output Electronic Switch

UDS3 Series

Features

- ▶ Pressure control with internal stainless steel diaphragm
- ▶ 4 switching outputs and 1 analog output
- ▶ High accuracy with fully adjustable deadband
- ▶ Easy-to-read LCD display with scalable bar graph
- ▶ Capable of switching both AC and DC loads
- ▶ Fully configurable via keypad
- ▶ UL/CSA approved

Applications

- ▶ OEM-applications in hydraulics and pneumatics
- ▶ Test bench
- ▶ Industrial machinery



General Specifications*

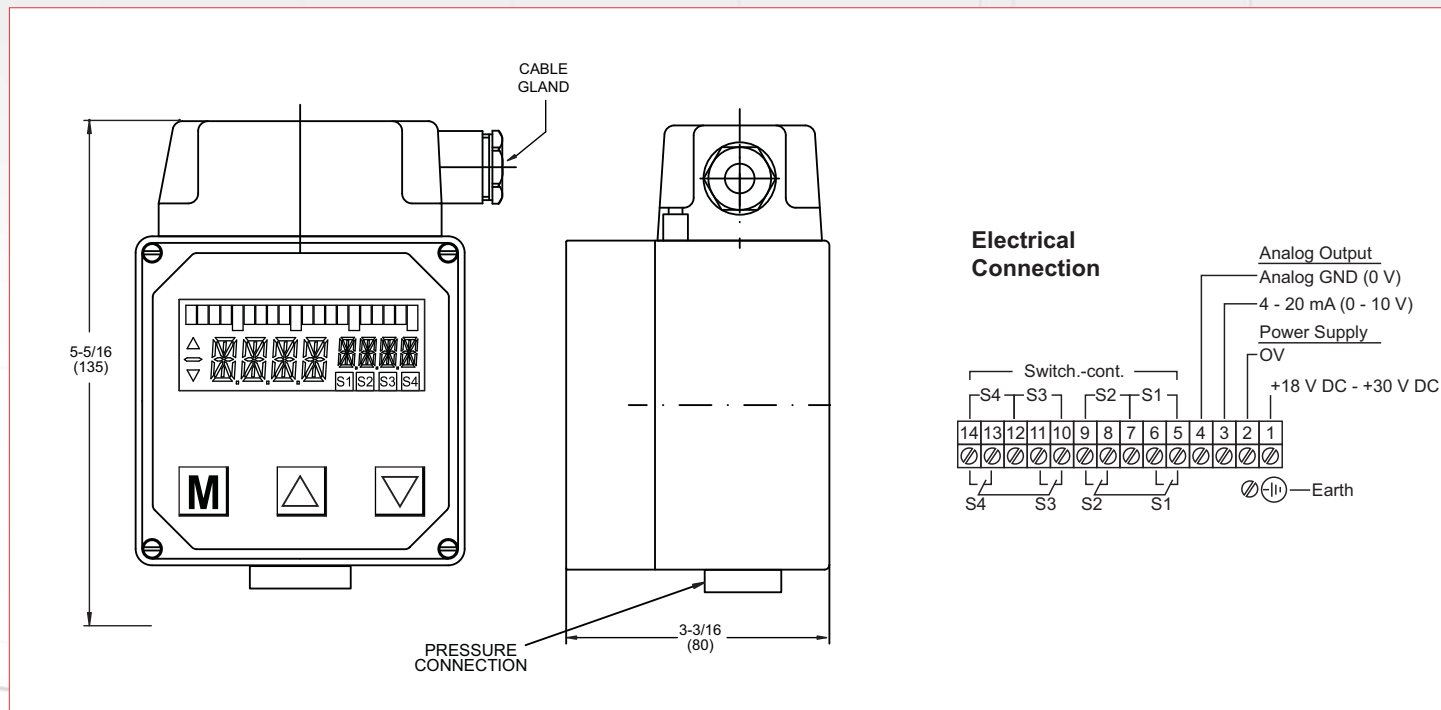
Accuracy:	0.5% f. s.					
Linearity Error:	±0.5% f. s. at 77°F (25°C)					
Repeatability:	±0.1% f. s.					
Sensor Element:	Piezoresistive silicon measuring cell					
Wetted Parts:						
Housing:	304 stainless steel					
Seals:	Cast aluminum FKM					
Keypad:	Polyester film					
Measuring Ranges:	0 - 9,000 psi, gauge					
Pressure Ranges (psi):	150	750	1500	3000	6000	9000
Proof Pressure (psi):	220	1100	2175	4400	9000	11,600
Process Connection:	1/4" NPT F Option : G1/4 F, bottom entry					
Electrical Connection:	Plug-in, terminal strip with 14 slots for 1.5 mm ² , 14 AWG slots					
Power Supply:	18 - 32 VDC, reversed polarity protected					
A/D-Converter:						
Resolution:	12 bit (4096 steps per span)					
Scanning Rate:	1000 / s					
Time Constant:	Approx. 40s					
Analog Output:						
Current Output:	4-20 mA					
Load:	max. RI = (Ub-12 V) / 20 mA RI= 600 Ohm at Ub = 24 VDC					
Load Influence:	0.3% / 100 Ohm					
Scanning Rate:	1 ms					
Voltage Output:	0 - 10 VDC					
Rating:	max. 10 mA, short circuit-proof					
Adjustment Range	25% to 100% f. s.					
Switching Output(s):						
Switching Function:	Normally open / normally closed, analog output, standard-/windows-mode					
Contact Rating:	max. 120 VDC / 250 V AC max. 12 W / 1250 VA					
Switching Output(s) Cont.:						
Cycles:	1 million @ 24 VDC/2A					
Switching Rate:	max. 20 / s					
Delay:	0.0 to 9.9 s adjustable					
Operation Time:	1 mS					
Status Display:	S1 to S4 on LCD display					
Digital Display:						
Height:	8-digit 14-segment LCD display					
Bargraph:	0.5 in. (green)					
Trend Arrows:	20-segments					
Display Range:	Last value change					
Display Rate:	-9999 to 9999					
Display Unit:	4 / s					
Operating Elements:	bar / psi / psi x 10 / hPa / mbar / °C / °F					
Operating Elements:	Keypad with easy response push buttons					
Temperature Range:						
Media:	-13° to 212°F (-25°C to +100°C)					
Electronics:	14° to 158°F (-10°C to + 70°C)					
Storage:	-22° to 176°F (-30°C to + 80°C)					
Temperature Influence:	±0.2% f. s. /10K					
Compensation Range:	14° to 158°F (-10°C to +70°C)					
Power Consumption:	appr. 350 mA at Ub = 24 V DC (without load)					
Protection Class:	IP65					
Dimensions (Housing):	3.9 (W) X 5.3 (H) X 3.1 (D) inches [100 (W) X 135 (H) X 80 (D) mm]					
Cable Gland:	1 x PG 13.5 side entry = standard					
Additional Features:	8-digit 14-segment LCD display with bargraph and trend indication, microcontroller, self monitoring, all parameters are configured by keypad, selective keypad lock, high accuracy, quick scanning rate (1 ms).					
Weight:	Approx. 2 lb					

* See product configurator for additional options.

Multiple Output Electronic Switch

UDS3 Series

Technical Drawings



Product Configurator

Example	UDS3	-05	-N	-4
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Base Model

UDS3

Pressure Ranges

-05	0 - 150 PSIG (gauge)
-31	0-750 PSIG (gauge)
-11	0-1500 PSIG (gauge)
-13	0-3000 PSIG (gauge)
-16	0-6000 PSIG (gauge)
-32	0-9000 PSIG (gauge)

Options

-4	Four switches only (no analog output)
-5	Four switches plus 4-20 mA output
-6	Four switches plus 0-10 VDC output

Process Connection

-N	1/4 NPT
-G	G1/4

Accessory

Order #	Description
239263	- 5 Pin, M12 Electrical mating connector

Electronic Trip Amplifier

UAS3 Series

Features

- ▶ Integrated trip amplifier
- ▶ 12-bit analog-digital converter
- ▶ For pressure, temperature, level and flow
- ▶ Monitors and controls any sensor with analog output
- ▶ Ideal companion to our 400-series pressure transducers
- ▶ Four switchpoints in a single, compact unit
- ▶ Easy-to-read LCD display with scalable bar graph
- ▶ UL/CSA approved

Applications

- ▶ OEM-applications in hydraulics and pneumatics
- ▶ Test bench
- ▶ Industrial machinery

General Specifications*

Accuracy:	0.2% f. s.
Linearity Error:	±0.2% f. s. at 77°F (25°C)
Repeatability:	±0.01% f. s.
Material: Housing (Electronics): Seal (Housing): Keypad:	Cast aluminum Neoprene® Polyester film
Measuring Ranges:	(free scalable): -9999 to +9999
Measuring Principle:	Amplifier with 12 Bit A/D-converter
Electrical Connection:	Plug-in, terminal strip with 14 slots for 1.5mm ² , 14 AWG slots
Sensor Connection:	Plug 3-pin acc. to DIN 43650 / meter including electrical plug with molded cable
Cable Gland:	1 x PG 13.5 side entry - standard
Power Supply:	18 - 30 VDC, reversed polarity protected
Power Consumption:	appr. 350 mA at Ub = 24 VDC (without load)
A/D-Converter: Resolution: Scanning Rate:	12 bit (4096 steps per measuring span) 1000 / s
Analog Inputs: Current Input: Voltage Input: Resistance Input: Temperature:	4 - 20 mA 0 - 10 VDC 0.5 - 100 kOhm PT100 element acc. to IEC751
Analog Output: Current Output: Load: Load Influence: Scanning Rate:	4-20 mA max. RI = (Ub-12 V) / 20 mA RI = 600 Ohm at Ub = 24 VDC 0.3% / 100 Ohm 1 ms

* See product configurator for additional options.



Analog Output (Cont.): Voltage Output: Rating: Adjustment Range:	0 - 10 V DC max. 10 mA, short circuit-proof 25% to 100% f. s.
Switching Output(s): Contact Rating: Cycles: Switching Rate: Delay: Operation Time: Status Display:	max. 120 VDC / 250 VAC max. 120 W / 1250 VA 1 million at 24 VDC / 2 A max. 20 / s 0 - 9.9 s adjustable 1 mS S1 to S4 on LCD display
Digital Display: Bar Graph: Display Range: Display Rate: Display Unit:	8-digit 14-segment LCD display, height 1/2 in (12 mm) 20-segment -9999 to +9999 (scalable) 4/S psi / bar / kPa / °C / °F
Operating Elements:	Keypad with easy response push buttons
Temperature Range: Electronics: Storage:	14° to 158°F (-10 °C to + 70 °C) -22° to 176° F (-30°C to + 80°C)
Temperature Influence:	±0.05% f. s. / 10K
Compensation Range:	14° to 158°F (-10° to +70°C)
Protection Class:	IP65
Dimensions (Housing):	3-15/16 W X 5-5/16 H X 3-3/16 D (100 W X 135 H X 80 D)
Additional Features:	8-digit 14-segment LCD display with bargraph and trend indication, microcontroller-controlled, self monitoring, all parameters are configured by keypad, selective keypad lock, high accuracy, quick scanning rate (1 ms).
Weight:	appr. 2 lb (1080 g)

Barksdale

CONTROL PRODUCTS

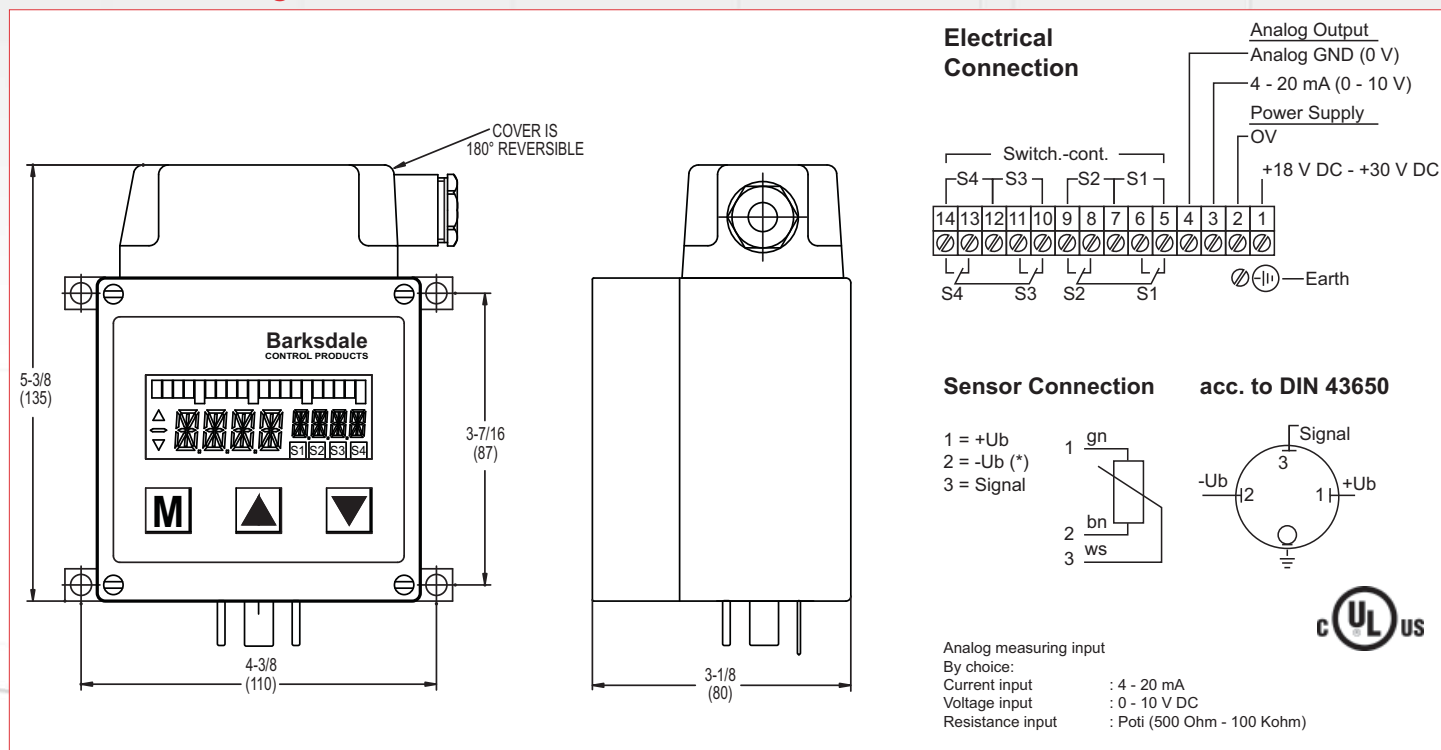
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CRANE

Electronic Trip Amplifier

UAS3 Series

Technical Drawings



Product Configurator

Example	UAS3	-5	-6
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Base Model

UAS3

Input Options

-5	4-20 mA analog input
-6	0-10 VDC analog input

Output Options

-4	Four switchpoints with no analog output
-5	Four switchpoints with 4-20 mA analog output
-6	Four switchpoints with 0-10 VDC analog output



Global Presence

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