

10 AMP ELECTRONIC PRESSURE AND TEMPERATURE SWITCHES



FEATURES

- Solid-State Switch – 10A @ 280 VAC
- Programmable Set Point and Deadband
- IAW® Self Diagnostics
- 60-Second Set Up
- Large Process Display
- Min/Max Peak-Hold Memory
- Plugged Port Detection
- cUL^{us} Listed





One Series 4-Wire

One Series 4-Wire

OVERVIEW

The One Series 4-Wire is an updated addition to the popular One Series electronic switch family. With available gauge pressure and RTD temperature sensors, this solid-state switch is specifically designed for critical alarm and shutdown applications in harsh and hazardous locations. The fully programmable set point and deadband (hysteresis) provide an accurate and highly repeatable solid-state relay output suitable for high cycle-rate switching of up to 280 VAC at 10 amperes and is conveniently powered by 115 VAC housed in a compact single enclosure.

Advanced programmable features include Offset and Span adjustments, Manual Reset, Switch Delay and Plugged Port Detection. When enabled, these advanced features add unsurpassed control over varying process conditions – the perfect solution to those troublesome switch applications that require intelligent decision-making instrumentation. Imagine an electronic switch that can monitor your process and switch in a mere 50 milliseconds, while detecting and reporting a clogged sensor condition. If the application demands it, the electronics can be programmed to require Manual Reset (user intervention) and dampen the switch reaction for up to 2 seconds, eliminating nuisance trips. All of these features are easy to activate and are included with the One Series 4-Wire, eliminating a complicated and costly PLC or DCS to implement them.

Applications include pump control, compressor protection, lube oil monitoring and safety interlocks. The One Series 4-Wire is suitable for applications wherever an easy-to-use and self-diagnostic switch is required to provide powerful features and peace of mind that it will work at that critical moment.

APPROVALS



Class I, Div. 2, Groups A, B, C, D; Class II, Div. 2, Groups F, G
Class III; Enclosure Type 4X
Class I, Zone 2, Group IIC T4A

SPECIFICATIONS (At room temperature unless otherwise noted.)

- POWER INPUT:** 90-130 VAC @ 15 mA
- SWITCH OUTPUT:** Solid State Relay: 24-280 VAC @ 10A max. ($T_{AMBIENT} \leq 100^{\circ} F (38^{\circ} C)$)
Derate at 1A per $10^{\circ} F (5.5^{\circ} C)$ for temperatures above $100^{\circ} F (38^{\circ} C)$
- AMBIENT TEMPERATURE RANGE:** -40 to $158^{\circ} F (-40 \text{ to } 70^{\circ} C)$
- ACCURACY:** 0.5% of full range span
- REPEATABILITY:** 0.1% of full range span
- SWITCH RESPONSE TIME:** 50 mS maximum (with Delay off)
- ENCLOSURE:** Enclosure Type 4X/IP66, epoxy-coated aluminum, UV-resistant polycarbonate faceplate
- ELECTRICAL CONDUIT:** 1/2" NPT (female)
- WIRING TERMINATIONS:** 4-position internal terminal block for 14-22 AWG wiring
- DISPLAY:** 4-digit x 0.5" LCD for process variable, status, faults, health and adjustable parameters
- SET POINT & DEADBAND:** 100% adjustable over the sensor range
- SENSORS:**
 - Gauge Pressure** – 316 stainless steel, welded diaphragm, 1/2" NPT (female) process connection, micro-machined piezo-resistive strain gauge silicon element, 0.25ml silicone oil fill. Media temperature: -40 to $257^{\circ} F (-40 \text{ to } 125^{\circ} C)$
 - Temperature** – 304 stainless steel 0.25" OD sheath containing a 100 ohm 4-wire platinum RTD element available with epoxy fill (local low temp) or powder fill (remote high temp). Media temperature: -50 to $1000^{\circ} F (-45 \text{ to } 538^{\circ} C)$

FEATURES

Set Point & Deadband

100% adjustable ON/OFF switching over entire sensor range

Digital Display

Provides programming, status and process variable information

Self Diagnostics

IAW® (I Am Working) watchdog monitor provides constant health status

Min/Max Memory

Continuously records the highest and lowest process variable

Adjustable Offset & Span

Field calibration capability

Switch Latch

Manual reset switch setting; requires local intervention

Plugged Port Detection

Indicates when a clogged sensor condition exists; automatically resets

Switch Delay

Provides a programmable nuisance trip filter

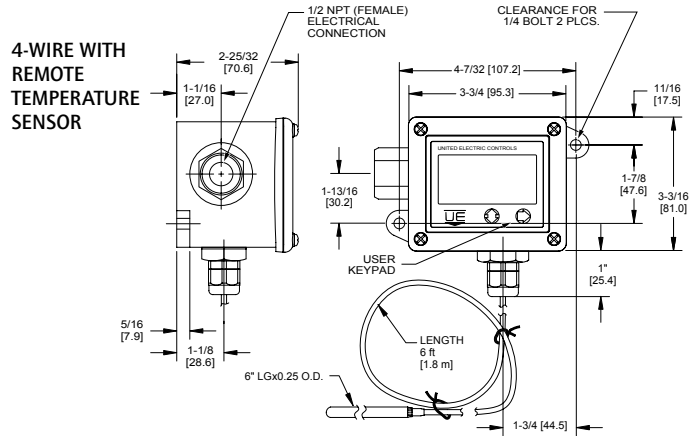
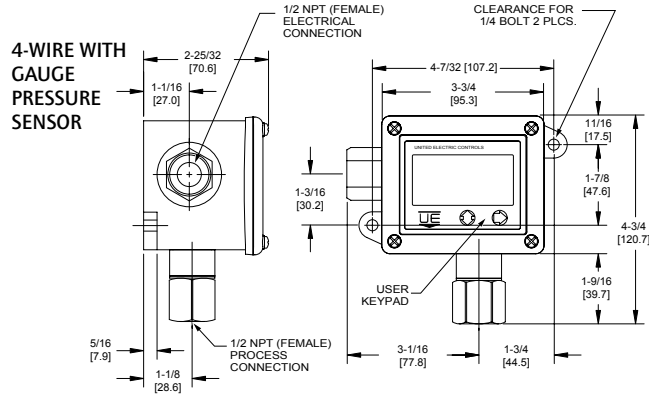
Tamper Protection

Settings changes revert if not properly saved

60-Second programming

Intuitive & fast programming of basic features, advanced features default off

DIMENSIONAL DRAWINGS



HOW TO ORDER

ONE SERIES 4-WIRE ELECTRONIC SWITCH User adjustable, digital indicating, 4-Wire configuration. Build a part number by selecting appropriate code for each feature category. Example: **4W3A01P10-M276**

4W3A01
4-Wire
Electronic Switch
90-130 VAC

P
Sensor
Type
Pressure

10
Range
Configuration
0-5 psi

M276
Option
Codes
Units-mbar

MODEL	DESCRIPTION
4W3A01	90-130 VAC Power Input
SENSOR TYPE	<p>P Pressure, gage, 316L stainless steel welded diaphragm, 1/2" NPT (female)</p> <p>T Temperature, 100 ohm RTD, 304 stainless steel sheath, 0.25" OD</p>

SENSOR RANGE AND CONFIGURATION

PRESSURE	Ranges		Maximum Over Range*	
	psi	(mbar)/bar	psi	(mbar)/bar
10	0-5	(0-344,7)	10	(689)
11	0-15	(0-1034)	30	(2068)
12	0-30	(0-2068)	60	(4137)
13	0-50	(0-3447)	100	(6895)
14	0-100	(0-6895)	200	13,8
15	0-300	0-20,68	600	41,4
16	0-500	0-34,47	1000	68,9
17	0-1000	0-68,95	2000	137,9
18	0-3000	0-206,8	6000	413,7
19	0-4500	0-310,3	9000	620,5

TEMPERATURE (For Thermowell information, please consult factory)

L1	Local mount sensor, 4" probe length, -50 to 450°F (-45 to 232°C) [PF73- 1/2" NPT compression fitting required]
L2	Local mount sensor, 6" probe length, -50 to 450°F (-45 to 232°C) [PF73- 1/2" NPT compression fitting required]
L3	Local mount sensor, 10" probe length, -50 to 450°F (-45 to 232°C) [PF73- 1/2" NPT compression fitting required]
R1	Remote mount sensor, 6" probe length, 6' Teflon extension wire, -50 to 450°F (-45 to 232°C) [SA6213-348- 1/2" union connector required]
RC	Remote mount sensor, 6" probe length, up to 30' Teflon extension wire, -50 to 450°F (-45 to 232°C) [SA6213-348- 1/2" union connector required]
H1	Remote mount sensor, 2.5" probe length, 6' MI extension wire, -50 to 1000°F (-45 to 538°C) [SA6213-348- 1/2" union connector required]
HC	Remote mount sensor, 2.5" probe length, up to 30' extension wire, -50 to 1000°F (-45 to 538°C) [SA6213-348- 1/2" union connector required]

OPTION CODES

HL1	Hazardous location certificate	M277	Display units, kPa or MPa
M041	Secondary pressure barrier, pressure models only	M278	Display units, kg/cm2
M042	Miscellaneous settings (consult factory)	M319	Diaphragm seal
M201	Factory set parameters (set point, deadband, switch operating mode)	M407	PED CE category IV compliance
M270	Display units, degrees C for temperature	M444	Paper tag
M276	Display units, bar or mbar	M446	Stainless steel tag
		M550	Oxygen cleaning service

*The value at which the sensor may experience irreversible damage.

RECOMMENDED PRACTICES AND WARNINGS

United Electric Controls Company recommends careful consideration of the following factors when specifying and installing UE pressure and temperature units. Before installing a unit, the Installation and Maintenance instructions provided with unit must be read and understood.

- To avoid damaging unit, proof pressure and maximum temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to maximum pressure or temperature is acceptable on a limited basis (i.e., start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at maximum pressure or temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- The adjustable range must be selected so that incorrect, inadvertent or malicious setting at any range point cannot result in an unsafe system condition.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. When applicable, orient unit so that moisture does not enter the enclosure via the electrical connection. When appropriate, this entry point should be sealed to prevent moisture entry.
- Unit must not be altered or modified after shipment. Consult UE if modification is necessary.
- Monitor operation to observe warning signs of possible damage to unit, such as drift in set point or faulty display. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- For all applications, a factory set unit should be tested before use.
- Electrical ratings stated in literature and on nameplate must not be exceeded. Overload on a switch can cause damage, even on the first cycle. Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Do not mount unit in ambient temp. exceeding published limits.

LIMITED WARRANTY

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Watertown, Massachusetts. INCOTERMS); provided, however, that this warranty applies only to equipment found to be so defective within a period of 36 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF SELLER'S LIABILITY

SELLER'S LIABILITY TO BUYER FOR ANY LOSS OR CLAIM, INCLUDING LIABILITY INCURRED IN CONNECTION WITH (I) BREACH OF ANY WARRANTY WHATSOEVER, EXPRESSED OR IMPLIED, (II) A BREACH OF CONTRACT, (III) A NEGLIGENT ACT OR ACTS (OR NEGLIGENT FAILURE TO ACT) COMMITTED BY SELLER, OR (IV) AN ACT FOR WHICH STRICT LIABILITY WILL BE INPUTTED TO SELLER, IS LIMITED TO THE "LIMITED WARRANTY" OF REPAIR AND/OR REPLACEMENT AS SO STATED IN OUR WARRANTY OF PRODUCT. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF A LIKE GENERAL NATURE, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR PRODUCTION, OR LOSS OR EXPENSES OF ANY NATURE INCURRED BY THE BUYER OR ANY THIRD PARTY.

UE specifications subject to change without notice.

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