



# Electric Alarm Contacts

## 4 1/2" Indicating Pressure Switches

### Inductive Proximity Sensor • Type CP 4000

#### Accessories, Electric

#### CP 4000 Inductive Proximity Sensors for Use with 4 1/2" Gauges Factory Mutual Approved

The WIKAI indicating pressure switches combine local pressure indication with alarm and control capabilities into a single economical, reliable and compact system. Superior to conventional gauge and switch connections, WIKAI indicating pressure switches are extremely reliable, have low hysteresis, resist corrosion and have easy set point adjustments. Ideally suited for alarm and control functions on hydraulic, pneumatic and general industrial machinery and equipment as well as on process industry installations, including chemical, petrochemical plants, oil refineries, electric power plants, pulp and paper mills and wastewater treatment plants.

**CP 4000 Inductive Proximity Sensors <FM>** feature one or two non-contact proximity sensors in place of mechanical contacts and provide a higher degree of reliability and operating safety. The system consists of a sensing head, containing two axial coils with an air gap, a metallic control flag and a switching amplifier. The sensing head is carried by the set pointer, while the control flag is coupled to the gauge pointer by a special adaptor. Movement of the control flag in and out of the air gap causes an impedance change in the transistor oscillator circuit formed by the two coils which in turn triggers the switching amplifier. When the flag is inside the slot, circuit impedance is high and the contact relay is de-energized. Conversely, when the flag is outside the slot, the relay is energized. Technical specifications are in Table 1.

**Control Units for CP 4000** The switching amplifier and control relay are housed in a separate control unit. Depending on the type of control unit used, inductive proximity sensor systems can be furnished in the following versions: standard, for non-hazardous locations; intrinsically safe for hazardous locations; intrinsically safe with fail-safe circuitry. Control Units are FM approved for use in Division I, Classes I and II, Groups A through G hazardous locations. The control units must be located outside the hazardous area. (See Table 2).

**Fail Safe Circuitry** The type SN inductive proximity sensor together with control unit Type 904.17 is self monitoring and its function is superimposed on the regular control function. Should any fault occur in the sensing head, the control wiring or the control unit (such as short or open circuit, power failure or component failure), the output relay is automatically de-energized.



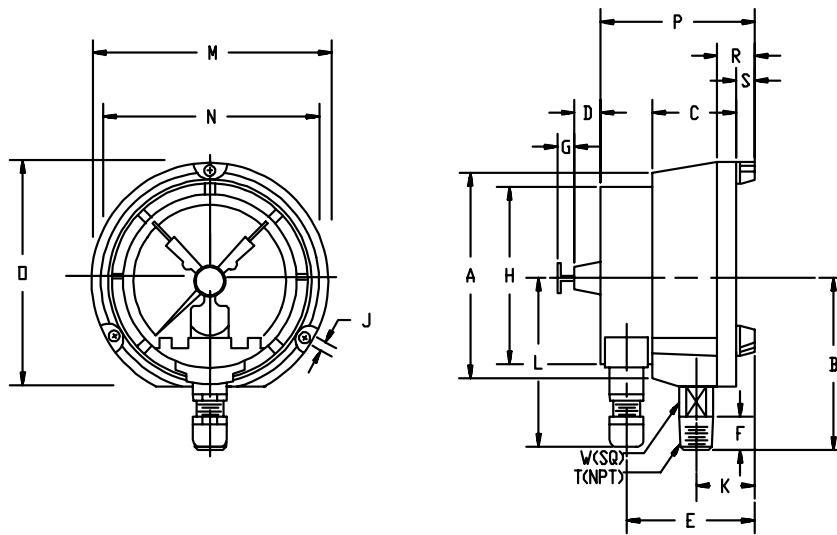
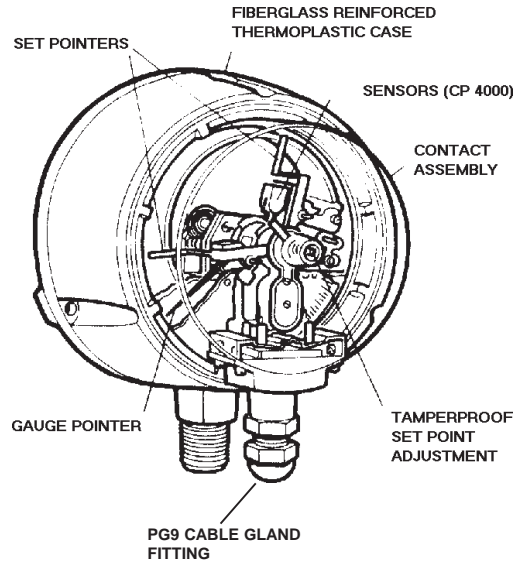
#### Indicating Pressure Switch Ordering Information

Specify: switch type; contact or sensor (e.g. CP4000)

Wetted parts material  
Pressure range and connection size  
Dry or liquid filled case  
Control/switching unit (Table 2)  
Contact arrangement (e.g. normally closed-normally open) Table 3 (see price sheet for example).

#### Features and Benefits

- Continuous local indication of pressure.
- Accurate indication of actual and set point pressure.
- Easy, precise and tamper resistant set point adjustment over the entire scale.
- Excellent reliability and repeatability due to negligible contact wear.
- Small deadband (typically 1% to 3%)
- Set point ranges include VAC 30" Hg, compound to 200 psi and pressures to 20,000 psi.
- Compact design for minimal space requirement.
- Corrosion and impact resistant housing.
- Reduced installation cost due to elimination of pressure manifold and shut off valve needed for separate pressure connection.
- FM approval for use in hazardous locations with control unit types 904.15, 904.16 or 904.17.
- High installation flexibility through ability to retrofit WIKAI series 4 1/2" gauges in the field without removal from service.
- Minimal stocking requirements through use of the same contact assembly for all pressure ranges.
- Available with wetted parts of brass, stainless steel or Monel<sup>®</sup> for most process media.
- Suitable for use with diaphragm seals for corrosive, viscous or high temperature media.



Supplied with PG9 Electrical cable gland

Indicating Pressure Switches	KEY	A*	B*	C	D	E	F*	G	H	J	K
	mm		129	103	69.5	12.7	98.5	19.0	14.0	102.6	5.60
in		4.50	4.06	2.74	0.50	3.87	0.75	0.55	4.04	0.22	1.50
	KEY	L	M	N	O	P	R	S	T	W	
mm		98.0	148	137	141	113.6	25.0	12.5	--	22	
in		3.85	5.83	5.39	5.55	4.47	0.98	0.49	1/2"	0.87	

A\* Nominal Size

B\* Gauges with 1/4"NPT connection - dimension changes to 97mm/3.81in.

F\* Gauges with 1/4"NPT connection - dimension changes to 13mm/.51in.

# TABLE 1

CONTACT TYPE	INDUCTIVE PROXIMITY				
	Non-Hazardous		Hazardous Environment <FM>		
Control Unit #	904.25	904.26	904.15	904.16	904.17 Fail Safe
	MSR010-1	MSR020-1	WE77/EX-1	WE77/EX-2	WE77/EX-SH-03
Indicating Pressure Range	0/30 to 0/20,000 psi				
Set Point Pressure Range	5-20,000 psi				
Momentary Pressure	130%				
Indicating Accuracy	±1.0% of full scale				
Operating Voltage	110 VAC/60 Hz				
Contact Rating	220, 5A, 1100VA		250 VAC, 4A, 500 VA		30V, 1.6A
Switching Frequency (Max)	20 Hz		10 Hz		0.5 Hz
<b>Control Circuit</b>					
Voltage	---		8VDC		8 VDC
Current	---		8mA		10mA
Switching Point	---		1.2mA-2.1mA		1.5mA-3.0mA
Control Wire Resistance (Max)	---		100 ohms		---
Allowable Ext. Inductance	---		31 mH/7.6 mH		32mH
Allowable Ext. Capacitance	---		609nF/539nF		804nF
Ambient Temperature Range	-10° to 140°F		-10° to 140°F		-10° to 140°F

# TABLE 2

CONTACT TYPE	CONTROL SYSTEM	AREA OF INSTALLATION	NUMBER OF CONTACTS	CONTROL UNIT TYPE <sup>1</sup>
Inductive Proximity	Standard	Non-Hazardous	1	904.25
Inductive Proximity	Standard	Non-Hazardous	2	904.26
Inductive Proximity	Intrinsically Safe	Hazardous	1	904.15
Inductive Proximity	Intrinsically Safe	Hazardous	2	904.16
Inductive Proximity Type SN	Intrinsically Safe with Fail-Safe Control	Hazardous	1	904.17
Inductive Proximity Type SN	Intrinsically Safe with Fail-Safe Control	Hazardous	2	904.17 <sup>2</sup>

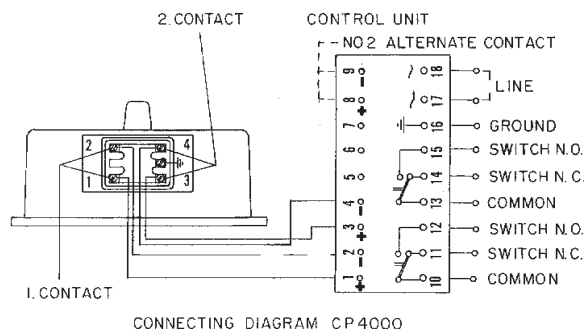
# TABLE 3

Contact Arrangement	
Function	Type Number
N.O.	838.1
N.C.	838.2
N.O., N.O.	838.11
N.O., N.C.	838.12
N.C., N.O.	838.21
N.C., N.C.	838.22

<sup>1</sup> Type 904 control units are combination power supply, switching modules for panel or relay rack mount. 904.15 & 904.25 units are 1.57" (40mm) wide, 2.76" (70mm) high and 4.33" (110mm) deep with mounting holes on 1.18" (30mm) horizontal & 2.36" (60mm) vertical centers. The wider 904.16/.17 and 904.26 units are 2.35" (60mm) wide with 1.96" (50mm) horizontal mounting centers. Minimum mounting screw clearance is .19" (4.8mm).

<sup>2</sup> Requires 2 units, one per contact.

## Typical Wiring Diagram



## Control Unit Designation (required for inductive-proximity contacts)

Type	Identification No.	Terminal Configuration	Connect To:
904.25	MSR-010-1 Control Unit for nonhazardous applications - for one inductive contact -with built-in power supply unit 24VDC		L-N supply voltage 11 CP terminal #1 14 CP terminal #2 42 LOAD common 41 LOAD cont. N.C. 43 LOAD cont. N.O. 81-82 Power Supply 24VDC
904.26	MSR-020-1 Control Unit for nonhazardous applications - for two inductive contact -with built-in power supply unit 24VDC		L-N supply voltage 11 CP terminal #1 14 CP terminal #2 21 CP terminal #3 24 CP terminal #4 42/52 LOAD common 41/51 LOAD cont. N.C. 43/53 LOAD cont. N.O. 81-82 Power Supply 24VDC
904.15	01666S - WE77EX1 Control Unit for hazardous applications - for one inductive contact (intrinsically safe) - factory mutual approved NOTE: Change bridge 3-4 to 4-5 to reverse LOAD relay grade.		1 CP terminal #2 2 CP terminal #1 4 LED relais energized 7 LOAD common 8 LOAD cont. N.C. 9 LOAD cont. N.O. 10 Ground 11-12 Supply Voltage
904.16	01669S - WE77EX2 Control Unit for hazardous applications - for two inductive contact (intrinsically safe) - factory mutual approved NOTE: Change bridge 3-4 and 7-8 to 4-5 and 6-7 respectively to reverse local relay.		1 CP terminal #2 2 CP terminal #1 4 LED relais 1 energized 7 LED relais 2 energized 8 CP terminal #3 9 CP terminal #4 10/13 LOAD common 11/14 LOAD cont. N.C. 12/15 LOAD cont. N.O. 16 Ground 17-18 Supply Voltage
904.17	09051 - WE77EX-SH-03 Control Unit for hazardous applications (Intrinsically fail-safe requirement) - for one inductive fail-safe contact (SN) - dual output relays		1 CP terminal #2 2 CP terminal #1 7 LED relais energized 10/13 LOAD common 11/14 LOAD cont. N.C. 12/15 LOAD cont. N.O. 16 Ground 17-18 Supply Voltage

General Information: applicable to all control units.  
 - check supply voltage of control unit before connecting to your source.  
 - control unit is protected against wrong input connection. If LOAD relay does not work, reverse input signal polarity.

### Ordering Information:

State computer part number (if available) / model number / size / range / connection size and location / options required.

Specifications given in this price list represent the state of engineering at the time of printing.  
 Modifications may take place and the specified materials may change without prior notice



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