



# 1500 SERIES RELAY DATA SHEET

The Series 1500 Induction Relays provide versatile and economical means of controlling many processing and production functions from remote locations with the safety inherent in a low energy sensing circuit that is isolated from the AC power source. When installed near pumps, motors or other operating equipment, the Series 1500 Induction Relay permits use of low-cost light gauge wires for the control circuit to level sensing electrodes. Relays with low voltage secondary coils provide remote control up to 36,000 feet from contact type pilot devices. Available as open chassis units or furnished with a choice of standard enclosures, these relays are connected to a constant source of alternating current. When properly installed, they will draw a maximum of 9 volt-amperes regardless of the line or electrode circuit voltage.

**CAUTION:** Electrodes are terminals of live electrical circuits and must be installed to prevent accidental contact by personnel. Control power must be disconnected before servicing.

**A GOOD DEPENDABLE RETURN GROUND CONNECTION TO LIQUID IS REQUIRED**

### SPECIFICATIONS

**Input Voltage:**

110 to 600 VAC 50/60 Hz

**Power Consumption:**

9 Volt-Amperes Max.

**Contact Rating:**

25 Amps Resistive at 120, 240, or 480 VAC

1 HP Single Phase at 120 or 240 VAC

Heavy Duty Pilot 120 to 600 VAC

2 Amps Resistive at 120 VDC

10 Amps Resistive at 48 VDC

**Ambient Temperatures:**

-20° F to 150° F

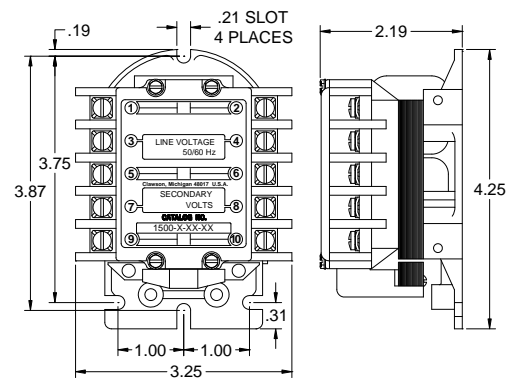
-28.8° C to 65.5° C

**Coil Insulation:**

Class "B"

**Output Contact Arrangement:**

Available in 1, 2, and 3 pole N.O. and/or N.C. configurations as shown in diagram.

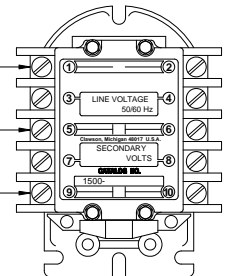


**MUST BE VERTICALLY MOUNTED AS SHOWN**



### CONTACT ARRANGEMENT CODE

	A	B	C	D	E	F	G	H	J
	1 N.O.	1 N.C.	2 N.O.	1 N.O. 1 N.C.	2 N.C.	3 N.O.	2 N.O. 1 N.C.	1 N.O. 2 N.C.	3 N.C.
TOP CONTACT TERMINALS 1 & 2	—	—	—	—	—	—	—	—	—
MIDDLE CONTACT TERMINALS 5 & 6	—	—	—	—	—	—	—	—	—
BOTTOM CONTACT TERMINALS 9 & 10	—	—	—	—	—	—	—	—	—



### PART NUMBER ORDERING INFORMATION

Series 1500 —————→ 1500 - A - L1 - S7 - N1 - X

Contact Arrangement —————→  
A, B, C, D, E, F, G, H, J (See Chart Above)

Supply Line Voltage —————→  
L1 (110-120 VAC 50/60 Hz), L2 (208-240 VAC 50/60 Hz), L3 (440-480 VAC 50/60 Hz),  
L4 (550-600 VAC 50/60 Hz), L5 (120/240) VAC 50/60 Hz)

Secondary Coil Voltage —————→  
S1 (12 V), S2 (24V), S3 (40V), S4 (90V), S7 (220V), S8 (360V), S9 (480V), S11 (800V)

Enclosure Type —————→  
OC (Open Chassis), N1 (NEMA 1), N4 (NEMA 4), N4X (NEMA 4 Fiberglass), N7 (NEMA 7), N12 (NEMA 12)

Additional Options —————→  
X (None), M (Manual Rest Relay)

## PRIMARY COIL

The primary coil voltage should be chosen to match the Line Voltage of the control system. The 1500 Series Induction Relay can be supplied with the following line voltages.

LINE VOLTAGE	FREQUENCY (Hertz)	MAXIMUM AMPERES (Secondary Shorted)	B/W COIL NUMBER
110 - 120	50 - 60	.075	02-089000
208 - 240	50 - 60	.038	02-089200
440 - 480	50 - 60	.019	02-089300
550 - 600	50 - 60	.015	02-089400

## SECONDARY COIL

Since B/W level control systems use the liquid as an electrical conductor to complete the relay's secondary circuit and since the resistance of the liquids varies, it is necessary that each induction relay be equipped with a secondary coil that will operate over the resistance of the liquid it controls. The following tables list the operating characteristics of various coils available. All values are based on line voltages of 115, 230, 460 or 575 volts at 60 Hertz.

COIL VOLTAGE	TYPICAL LIQUIDS	MAXIMUM AMPERES (Shorted)	MAX. SPECIFIC RESISTANCE OF LIQUID (ohms-cm)	MIN. SPECIFIC CONDUCTIVITY OF LIQUID (micromho/cm)	COIL NUMBER
12	Metallic circuits.	.44	15	67,000	02-088700
24	Metallic circuits.	.22	61	16,000	02-088800
40	Acid or caustic solutions; Milk, Brine, And salt solutions; Plating solutions; Buttermilk; Soups.	.117	216	4,630	02-088900
90	Weal acid or caustic solutions: Beer; Baby foods; Fruit juices.	.053	1,065	940	02-089000
220	Sewage, Most water -- except very soft; Pottery slip; Water soluble oil solutions; Starch solutions.	.022	6,650	150	02-089500
360	Very soft water; Sugar syrup.	.013	17,000	59	02-089300
480	Steam condensate; Strong alcohol solutions.	.011	26,600	38	02-089400
800	De-mineralized or distilled water.	.006	92,600	11	02-123700

**NOTE 1:** The maximum closing resistance in ohms over which each coil will operate is approximately equal to the specific resistance values shown above. All B/W relays may be energized indefinitely with the secondary circuit shorted without damaging the coils.

**NOTE 2:** Maximum distance limitations for typical induction relay secondary circuits are:

<b>12</b> secondary = 36,000 feet	<b>90</b> secondary = 12,000 feet	<b>480</b> secondary = 250 feet
<b>24</b> secondary = 30,000 feet	<b>220</b> secondary = 900 feet	<b>800</b> secondary = 70 feet
<b>40</b> secondary = 30,000 feet	<b>360</b> secondary = 350 feet	

## BASIC APPLICATIONS

