



Kotron® RF Point Level Switches

DESCRIPTION

Kotron RF Capacitance Level Switches offer the industrial user a choice of alarm and control configurations. This amplifier utilizes extremely high radio frequency circuitry to minimize the effect of media build-up on the sensing probe.

FEATURES

- Models available for single point narrow differential (alarm) and single point wide differential (pump control)
- Integral or remote mount models allowing up to 5000 feet (1500 meters) between probe and electronics
- User selectable fail-safe switch
- Remote configurations available for high process temperature
- High/low range selector allows for accurate calibration on both long and short length sensing probes, in both conductive and non-conductive media
- Wide calibration range
- Probe lengths from 6 inches (150 mm) minimum to 150 feet (45 meters) maximum
- 0–3 second adjustable time delay (rising level), on narrow differential models, prevents relay chatter in turbulent applications
- Available with a full range of rigid and flexible sensing probes to +1000° F (+538° C) and 5000 psig (345 bar)



APPLICATIONS

- Clean or dirty liquids
- Viscous liquids
- Light slurries
- Corrosive liquids
- High temperature/pressure liquids
- Chemicals
- Hydrocarbons and solvents
- Acids and salts
- Foods and beverages

TECHNOLOGY

The amount of capacitance developed in any vessel is determined by the size (surface area) of the probe, the distance from the probe to its ground, and the dielectric of the medium being measured. Considering that the probe's mounting position is fixed, and that the dielectric value of the medium is constant, then the amount of capacitance developed in any vessel becomes dependent upon the amount of the probe which is covered by the media.

As media rises and falls in the tank, the amount of capacitance developed between the sensing probe and the

ground also rises and falls. This change in capacitance is sensed by the electronics.

The capacitance-controlled oscillator circuit, mounted on the probe, changes the capacitance signal to a variable frequency. This stabilized signal can then be sent to the main electronics located up to 5000 feet (1500 meters) away via standard shielded, twisted pair cable. Using standard twisted pair cable eliminates the costly coaxial or triaxial cable utilized by other manufacturers which limits the installation to 150 feet (45 meters) maximum distance.

MODEL NUMBER

Models available for quick shipment, usually within one week after factory receipt of a purchase order, through the Expedite Ship Plan (ESP).

Note: Delivery is ESP only if Model 80/81 and probe selected are both ESP.

MOUNTING

80	Integral
81	Remote

HOUSING

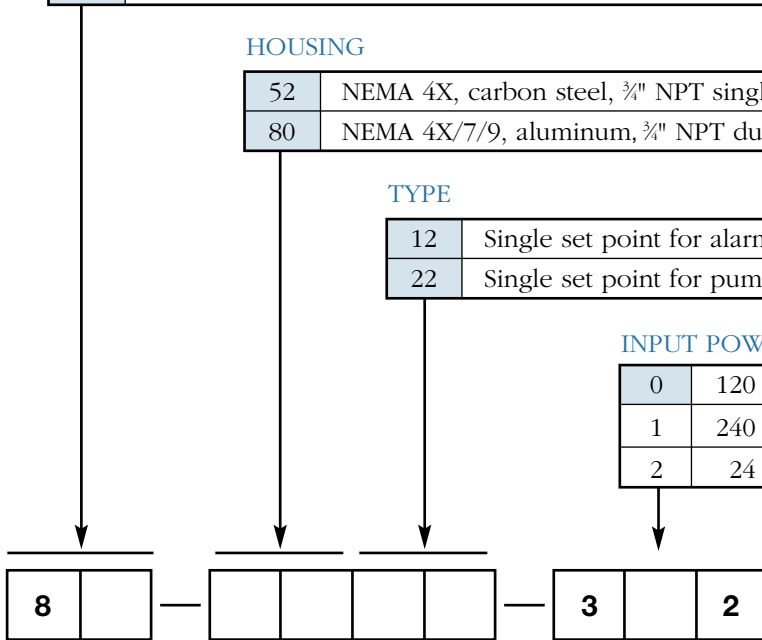
52	NEMA 4X, carbon steel, 3/4" NPT single conduit
80	NEMA 4X/7/9, aluminum, 3/4" NPT dual conduit

TYPE

12	Single set point for alarm control with narrow differential
22	Single set point for pump control with wide differential

INPUT POWER

0	120 VAC
1	240 VAC
2	24 VDC





PROBES

A full range of rigid and flexible probes for conductive and non-conductive materials is available in various lengths and materials of construction. For further information on probe assemblies, refer to bulletin 50-125.

CABLE

Connecting cable should be shielded, twisted pair, 22-gauge stranded conductors and may be ordered using Magnetrol part number 009-7146-XXX (where XXX = length in feet). 10 feet (3 meters) min., 5000 feet (1500 meters) max. length. For lengths over 999 feet, use X009-7146-999 where X=total length in feet.

AGENCY APPROVALS

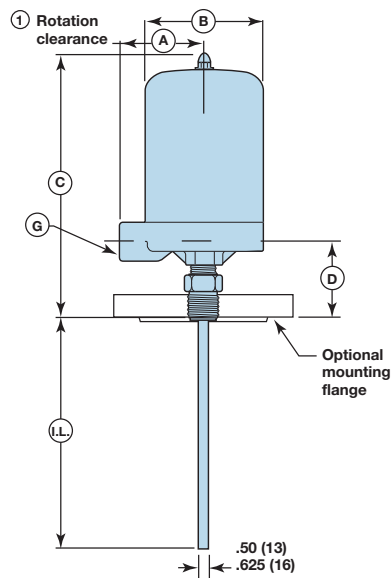
AGENCY	MODEL	APPROVAL
 FM APPROVED	8X-80XX-3XX	Class I, Div. 1, Groups C & D Class II, Div. 1, Groups E, F & G Note: This approval available with rigid insulated probes only
	All models	Non-hazardous environments: NEMA 4X
 CSA	8X-80XX-3XX	Class I, Groups C & D Class II, Groups E, F & G TYPE 4X (This approval excludes use with bare probes)
	All models	Non-hazardous locations: TYPE 4X

SPECIFICATIONS

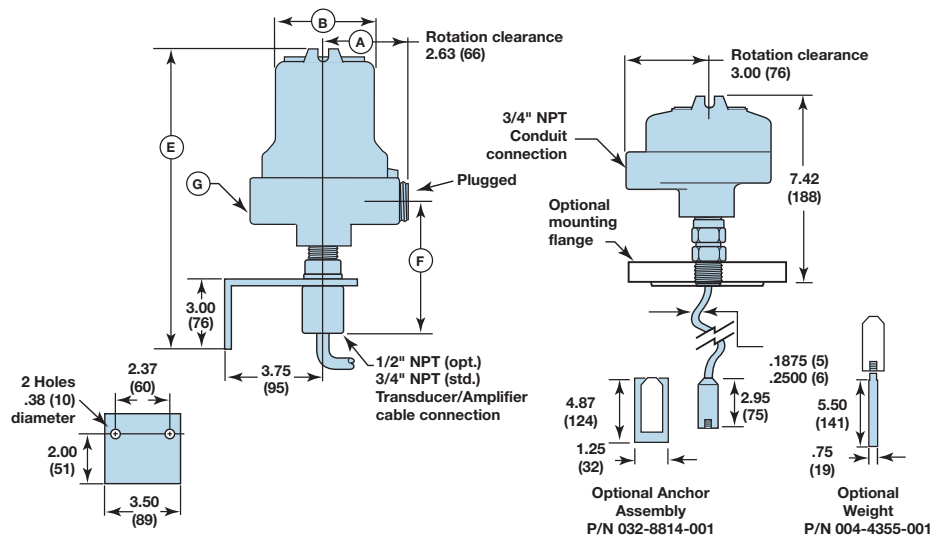
Supply voltage	120 VAC, 50–60 Hz (+10%, -15%) 240 VAC, 50–60 Hz (+10%, -15%) 24 VDC (±10%)
Power consumption	3 watts maximum
Zero range	0 pF minimum, 3000 pF maximum
Differential range (wide differential)	High range: 4 pF minimum 1500 pF maximum Low range: 2 pF minimum 500 pF maximum
Fixed minimum differential (narrow differential)	0.5 pF minimum
Output relays (DPDT)	AC: 10 amp @ 120/240 VAC resistive DC: 10 amp @ 24 VDC resistive
Time delay (narrow differential)	0–3 seconds
Response time	100 milliseconds
Ambient temperature at electronics	-40° to +160° F (-40° to +71° C)
Operating pressure/temperature	Dependent upon probe selection; refer to probe bulletin 50-125
Temperature coefficient of output -40° to +160° F (-40° to +71° C)	+0.02 pF per degree F (+0.036 pF per degree C)

DIMENSIONAL SPECIFICATIONS

INCHES (mm)



Integral Mount with Rigid Probe
NEMA 4X housing, 3/4" NPT single conduit



Remote Mount with Flexible Probe
NEMA 4X/7/9 housing, 3/4" NPT dual conduit

Housing	A	B	Standard Rigid Probe				Flexible Probe				Conduit Connection
			C	D	E	F	C	D	E	F	
NEMA 4X Carbon steel	3.38 (86)	4.69 (119)	9.04 (230)	2.29 (58)	11.67 (296)	4.04 (103)	10.48 (266)	3.73 (95)	11.67 (296)	4.04 (103)	3/4" NPT single conduit
NEMA 4X/7/9 Aluminum	5.25 (133)	5.81 (148)	11.26 (286)	2.40 (61)	13.81 (351)	4.15 (105)	12.70 (323)	4.67 (119)	13.81 (351)	4.15 (105)	3/4" NPT dual conduit

QUALITY



The quality assurance system in place at Magnetrol guarantees the highest level of quality throughout the company. Magnetrol is committed to providing full customer satisfaction both in quality products and quality service.

Magnetrol's quality assurance system is registered to ISO 9001 affirming its commitment to known international quality standards providing the strongest assurance of product and service quality available.

ESP

Expedite Ship Plan

Several Kotron RF Point Switches are available for quick shipment, usually within one week after factory receipt of a purchase order, through the Expedite Ship Plan (ESP). To take advantage of ESP, simply match the color coded model number codes (standard

dimensions apply).

ESP service may not apply to orders of ten units or more. Contact your local representative for lead times on larger volume orders, as well as other products and options.

WARRANTY



All Magnetrol electronic level and flow controls are warranted free of defects in materials or workmanship for one full year from the date of original factory shipment. If returned within the warranty period; and, upon factory inspection of the control, the cause of the claim is determined to be covered under the warranty; then, Magnetrol will repair or replace the control at no cost

to the purchaser (or owner) other than transportation.

Magnetrol shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of equipment. There are no other warranties expressed or implied, except special written warranties covering some Magnetrol products.

For additional information, see Instruction Manual 50-605.



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