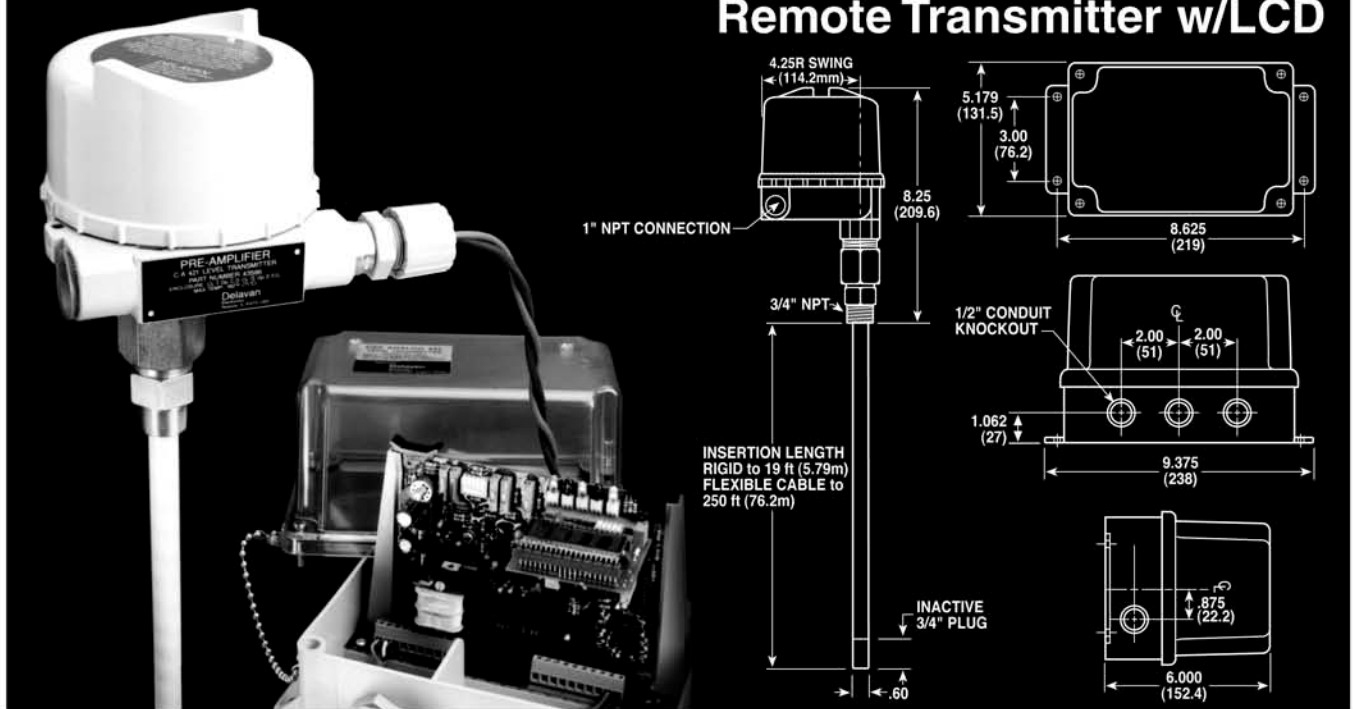


CAP ANALOG 421

DATA SHEET R.F. Capacitance Remote Transmitter w/LCD



■ PURPOSE

Delavan's **Cap Analog 421** series is a Continuous Level Transmitter for liquids, slurries and powder bulk solids. The 421 has the ability to display and transmit a continuous level measurement with optional hi or low level alarms on one sensing element.

■ PRINCIPLE OF OPERATION

Delavan's Capacitance **Cap Analog 421** system uses a compact pre-amplifier mounted on the rear of the probe assembly. The pre-amp is housed in a cast aluminum enclosure that is weather-tight and explosion proof.

All other electronic hardware is located in the remote NEMA 4X housing. All calibration adjustments are made at the remote location.

The **Cap Analog 421**, along with its probe sensor, operates as a capacitance sensitive system that converts changes in level to changes in output signal. After calibration, any change in level is recognized and converted to an analog output signal (4-20mA or 0-10 Volts DC). The system will operate any standard 4-20mA DC or 0-10 Volts DC indicator. A digital display that can be calibrated in engineering units is available. This display is visible through the transparent cover of the remote amplifier.

The **Cap Analog 421** system is available without relays or with one or two relays along with the standard analog outputs. The relay or relays can be calibrated independent of the analog circuit.

The **Cap Analog 421** is supplied with two 15 turn, ZERO and SPAN adjust potentiometers. The span control is independent and non-interacting. In addition, a rotary switch is provided to extend the range of the SPAN potentiometer.

■ FEATURES

- **On board 3.5 digit LCD Display**
Scalable in engineering units
- **Two-wire transmission**
Between electronics and probe
- **Built-in "coating tolerance"**
Designed to eliminate false signals caused by process material build-up/coating
- **Remote electronics for easy access**
- **Up to 2 non-interacting and independently adjustable relays**
- **Analog dampening for agitated vessels**
- **Green LED for fault indication**
 - Sensing probe failure
 - Wiring error
- **Up to one mile separation**
Between probe and electronics
- **Sensing probes lengths to 250 ft.**
- **Inverted output option**



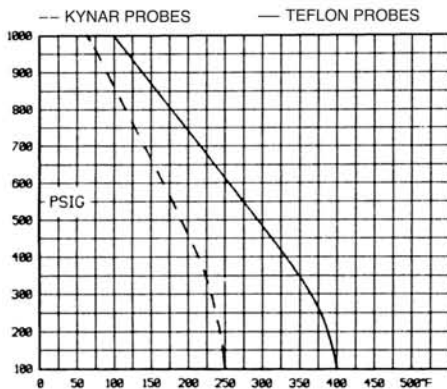
DELAVAN

Process Instrumentation

SPECIFICATIONS

Supply Voltage	NOMINAL	ABSOLUTE LIMITS		
	115 Volts AC	90-135 Volts AC		
	230 Volts AC	180-279 Volts AC		
Power	Less than 6 volt-amperes			
Frequency, AC Power	50-60 Hz			
Output	4-20mA DC 600 ohms maximum with 24 Volts DC power supply or 0-10 Volts DC			
Analog Response	A unique circuit that provides output dampening for turbulent levels			
Output 420-2	2 Relays, 1 Form C SPDT switch each, in addition to analog output			
Relay Ratings	5 amp @ 115 Volts AC Non-inductive 3 amp @ 230 Volts AC Non-inductive 3 amp @ 2 Volts DC Non-inductive			
Fail-Safe				
Switch Selectable (1 set each relay)	High Level Fail-safe Position: Relay is de-energized when liquid is present			
	Low Level fail-safe position: Relay is de-energized when liquid is not present			
Indicators Status Lights (1 set each relay)	Two, light emitting diodes (LED) RED - Illuminated when probe capacitance is greater than set point YELLOW - Illuminated when relay is energized			
Digital Display	0.50 Inch liquid crystal 3-1/2 digit, units -499 to +1,999			
Temperature (Elect.)	-40°F to +160°F (-40°C to +71°C)			
Zero (Terminal)	Min.	Max.	Min.	Max.
	10 pfd	250 pfd	10 pfd	1,200 pfd
Stability	0.5 pfd/ 30°F (at maximum sensitivity)			
Span	Ten steps; from 10 pfd to 30,000 pfd			
Standard Pre-Amp	Overlapping			
Process Mounting Requirements	3/4" N.P.T. (standard)			
Pre-Amplifier				
Cast Aluminum with Fuse Polyester Finish	Meets NEMA 4, 5, 7, 9, 12; NEC Class I — Groups C, D; NEC Class II — Groups E, F, G			
Remote Amplifier				
Glass-Reinforced Polyester Enclosure, Stainless Steel Trim	NEMA 4X			

TEMPERATURE AND PRESSURE RATINGS



ORDERING INFORMATION

CAP ANALOG

421-

Display Options

D1 = 3.5 Digit LCD Indicator
00 = None

Special Features

H = High Temperature
12" Lagging Ext. (>200°F)
00 = None

Process Mounting (Specify Size)

NPT = Nat'l Pipe Thread
Process Connection
3A = Food-Grade Tri-Clover Fitting
T3A = Teflon Faced Food-Grade Tri-Clover Fitting
K3A = Kynar Faced Food-Grade Tri-Clover Fitting
FC = Flange C.S.
FSS = Flange 316 Stainless Steel

Sensing Probe Type (Specify Length)

THD = Teflon Insulated Heavy Duty 1/2"
KHD = Kynar Insulated Heavy Duty 1/2"
TCP = Teflon Probe with Concentric Pipe and Flange
TCT = Teflon Probe with Concentric Tube 3/4" N.P.T.
BF = Bare Flexible Cable
T = Teflon Insulate 1/4"
BHT = Bare Probe - High Temp. Packing
TF = Teflon Insulated, Flexible Stainless Steel Cable
KF = Kynar Insulated Flexible Stainless Steel Cable
DWW = Polypropylene Flex Probe, 1/8" Cable, 3/4" N.P.T.
THDD = Teflon Heavy Duty Dual Probe with 1/2" and 1/4" Teflon Insulated Probes with 3" Teflon Faced Flange
KHDD = Kynar Heavy Duty Dual Probe with 1/2" and 1/4" Kynar Insulated probes with 3" Kynar Faced Flange
BHS = Bare Probe - High Sensitivity

Remote Pre-Amplifier

S = Standard Gain
B = Extreme Build-up Immunity (extreme conductive build-ups)

Electric Control Options

0 = No Relays
2 = 2 Independently Adjustable Relays

Model 421 Remote Mount R.F. Capacitance Continuous Transmitter

Note 1: Pending FM & CSA Approval for NEC Class I — Groups C, D; NEC Class II — Groups E, F, G; Divisions 1 & 2 Pending Cenelec approval for EEx d IIC T6 locations.

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