



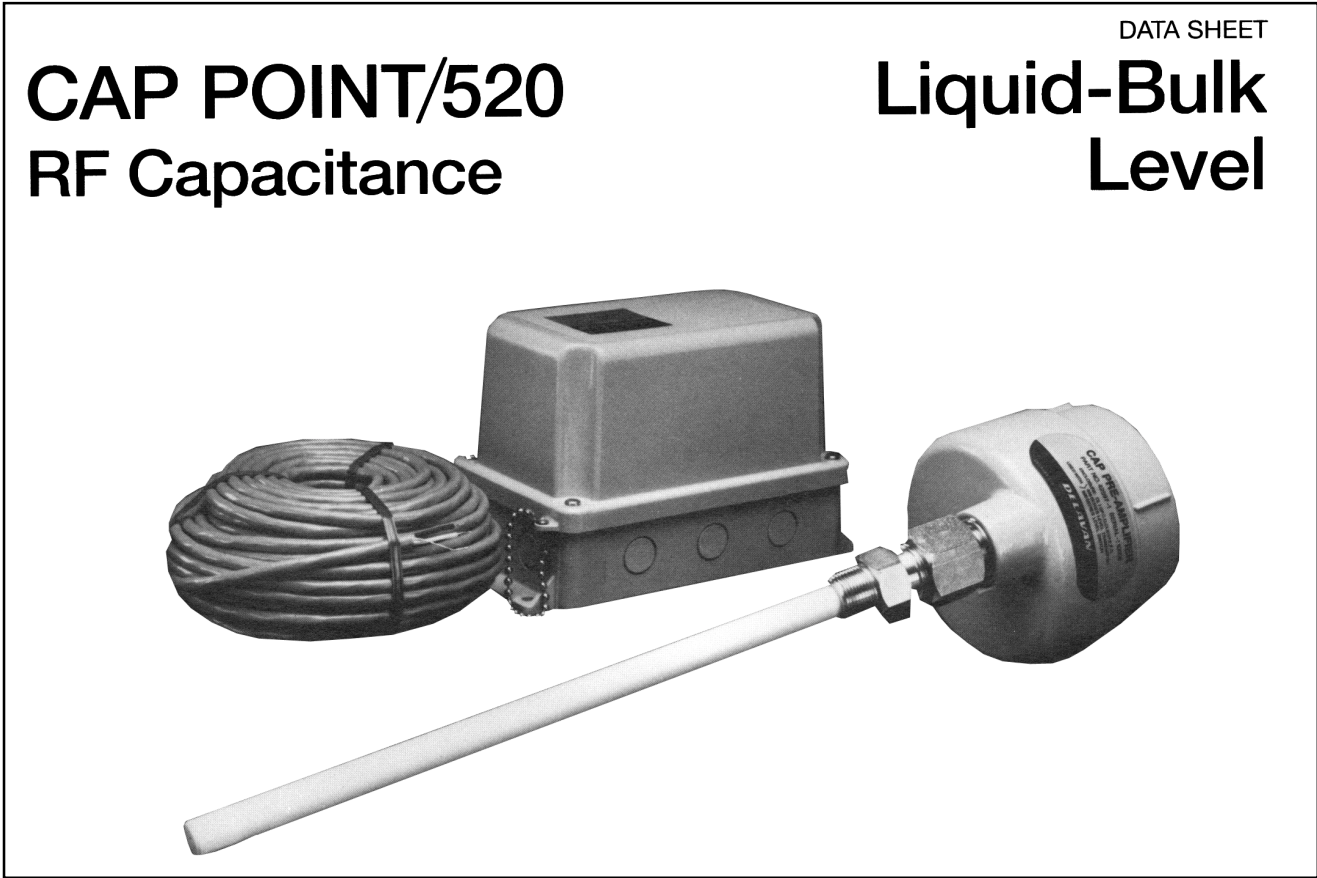
DATA SHEET

# CAP POINT/520

## RF Capacitance

# Liquid-Bulk

## Level



### Function

Point level control of LIQUIDS or BULK SOLIDS  
High and Low Level Control (single unit)  
out of limits indicator, control.

### Typical Uses

High Level Alarm or Control  
Low Level Alarm or Control  
Pump/Conveyor Control

### Primary Areas of Application

The CAP POINT/520 is an ideal solution for many level control problems. Most liquids are potential applications for the CAP POINT/520 as are free flowing granular products.

### Liquids - Petroleum products

Eg: Crude Oil, Refined Oil, Kerosene, Ethylene Glycol, Gasoline and so on.

### Liquids - Organic solvents

Eg: Ethylene, Methyl and Isopropyl Alcohol, as well as Toluene, Heptane, Turpentine, Acetone, etc.

### Liquids - Conductive

Eg: Water, acids, diluted acids (within the limits of probe sensor gland housing and insulation) water with impurities.

### Slurries

Eg: Coal/Water, lime/water, virtually any conductive slurry.

### Liquids - Interface

Eg: Petroleum products and water.

### Bulk solids

Eg: Cereal grains, plastic pellets and powders, sand ores, crushed coal, coke and most free flowing granular products.

### Features

#### Long Cable Lengths

Cables between pre-amplifier and amplifier may be up to 800 feet.

### Versatile

A single amplifier with probe sensor can provide 2 INDEPENDENT RELAY OUTPUTS.

### Failsafe

A simple field selectable DIP Switch determines the High or Low FAILSAFE mode.

### Rugged

Totally solid state electronics. Probe pre-amplifier mounted in explosion proof cast Aluminum housing. Remote amplifier mounted in NEMA 4X Housing.

### Versatile power supply

The standard unit accepts 120, 240 VAC, or low voltage 15 to 24 DC inputs.

### Immune to static/Immune to RFI.

The probe input circuit is protected from static electrical discharges. The circuit is immune to RFI.

### Immune to product build up

**A unique circuit used in the pre-amplifier provides immunity to product build up of conductive or non-conductive materials.**

### High sensitivity

Maximum sensitivity is 0.5 pfd. The proper selection of high gain probe sensors insures that the CAP POINT/520 will reliably detect and control low dielectric materials.

### Independent set point and differential adjust

SET POINT and DIFFERENTIAL are non-interacting and independent adjustments. Adjustments are located in remote housing.

### Versatile

Probe sensors may be installed horizontally or vertically.

### Calibration

All calibration adjustments are located in remote housing.

## Principle of Operation

The DELAVAN RF CAPACITANCE CAP POINT/520 system consists of a Pre-amplifier mounted in a cast aluminum explosion proof housing. This housing normally is integrally mounted on the rear of the sensor probe.

The system uses a remote amplifier that can be mounted as much as 800 feet from probe sensor location. All calibration and field adjustments are made at remote location.

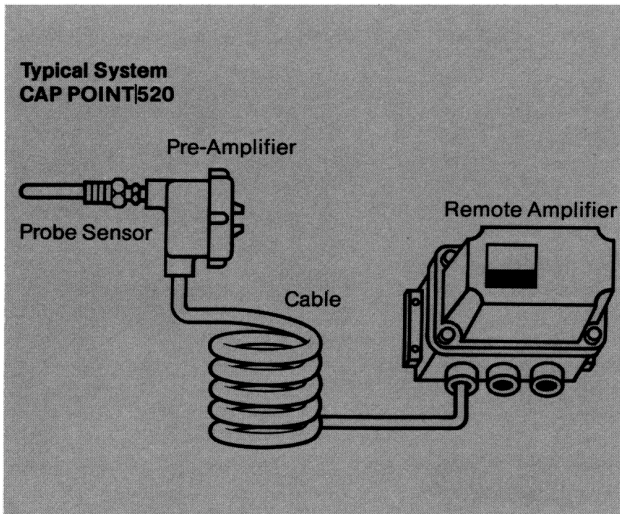
Probes are manufactured in a variety of insulating materials and types of metal. The active length of the probe will vary subject to the specific application of the system. The probe may be mounted in a vertical or horizontal position. Normally the probe is threaded into a process vessel with a 3/4" or 1" NPT connection. The probe sensor is energized with a radio frequency signal (about 2 megahertz). When the process level changes, a change of capacitance occurs resulting in a small change in frequency. This change is compared with preset values in the electronic measuring circuit. After proper amplification, this signal is used to provide a change of state condition which operates the relay.

The CAP POINT/520 system is available with a single relay with DPDT contacts or two relays with 1 set of SPDT contacts each. These relays when used can be independently calibrated in the field.

The CAP POINT/520 system is factory calibrated to operate with a fixed 0.5 second time delay. An option is available that provides a field adjustment from 50 milliseconds to 10 seconds. A pair of DIP Switches are provided to set the instrument to operate in a high or low failsafe mode.

Multi-turn potentiometers are provided for calibration of set-point and differential. These two adjustments along with range changes on the DIP Switch permit the application of the CAP POINT/520 to almost any point level situation. An important feature is the ZERO Set Point and Differential adjustments. They are non-interacting and independent of each other.

A simple step by step calibration permits the application of this system to almost any level control situation. The flexible calibration procedure can be made with level changes from empty to full or full to empty.



## TWO-YEAR PRODUCT WARRANTY

Delavan Inc. control products will be replaced, put in good operating condition, or the purchase price refunded, at the option of Delavan Inc., free of charges except transportation, if defective in their manufacture, labeling, packaging, or shipping, and if notice of said defect is received by Delavan Inc. within two years from the date of shipment. The cost of such replacement, repair or refund or purchase price shall be the exclusive remedy for any breach of any warranty, and Delavan Inc. shall not be liable to any person for consequential damages for injury or commercial loss resulting from any breach on any warranty. Delavan Inc. makes no warranty of fitness for a particular purpose, and makes no other warranty, express or implied, including implied warranty arising from course of dealing or usage of trade.

## Specifications

	NOMINAL	ABSOLUTE LIMITS
<b>Supply Voltage</b>	115 VAC 230 VAC 15-24 DC	90-135 VAC 180-270 VAC
<b>Power</b>	Less than 6 Volt-Amperes	
<b>Frequency, AC Power</b>	50-60 Hz 40 Hz Minimum	
<b>Failsafe Switch selectable</b>	High Level Failsafe Position: Relay is de-energized when liquid is present. Low Level Failsafe Position: Relay is de-energized when liquid is not present.	
<b>Model 520-1</b>	Single Relay, 2 Form C DPDT Switches	
<b>Model 520-2</b>	Two Relays, 1 Form C SPDT Switch Each	
<b>Relay Ratings</b>	5 A @ 115 VAC Non-Inductive 2.5 A @ 230 VAC Non-Inductive 3 A @ 26 VDC Non-Inductive	
<b>Indicators Status (1 Set each Relay)</b>	Two, light emitting diodes, (LED). RED - Illuminated when probe capacitance is greater than set point. YELLOW - Illuminated when relay is energized.	
<b>Differential</b>	0.5 pfd minimum to 100,000 pfd, maximum. 0.08 inches of water to 200 feet of water (field adjustable).	
<b>Temperature Range (Amplifiers)</b>	-40 to +160° F (-40° to +70° C)	
<b>Stability</b>	±0.01%/° F	
<b>Sensitivity</b>	±1% of base capacitance up to 1000 pf	
<b>Other Features</b>	Set point and differential adjustments are completely independent of each other.	

## Time Delay

<b>Standard</b>	0.5 Second on Make, fixed.
<b>Optional</b>	Variable 50 milliseconds to 10 seconds, adjustable.

## Pre Amplifier

<b>Cast Aluminum with Fused Polyester Finish</b>	Meets NEMA 4, 5, 7, 9, & 12 NEC Class I Group C, D Class II Group E, F, & G.
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## Remote Amplifier

<b>Glass-Reinforced Polyester Enclosure S.S. Trim</b>	NEMA 4X
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## How to Order

<b>520-1</b>	Single Relay
<b>or</b>	
<b>520-2</b>	Two Relay

**Specify cable length  
Detail probe type and length**



**DELAVAN**  
Process Instrumentation

an L & J TECHNOLOGIES Company

5911 Butterfield Rd.  
Hillside, IL 60162  
PH: (708) 236-6000  
FAX: (708) 236-6006  
E-MAIL: sales@ljtechnologies.com