

Installation Instructions

Original Instructions



Allen-Bradley

by ROCKWELL AUTOMATION

Rectangular Capacitive Sensors

Bulletin Number 875F



ATTENTION: This sensor must not be used in applications where personal safety depends on proper function of the sensor. The sensor is not designed according to the EU Machinery Directive.

Only trained technical personnel with basic electrical installation knowledge should install and use the sensor.

The installer is responsible for correct installation according to local safety regulations and must verify that a defective sensor does not result in hazards to people or equipment. If the sensor is defective, it must be replaced and secured against unauthorized use.

Product Overview

The 875F rectangular capacitive sensor is designed for detecting water-based (conductive) liquids through a non-metallic container wall, and it automatically adapts to various thicknesses of plastic or glass walls. The universal mounting brackets allow the sensor to be mounted on multiple tubes or containers of plastic or glass materials.

The 875F sensor reliably detects the liquids while compensating for residue film, moisture, or foam build-up from liquids such as water, milk, body fluids (blood), acid or alkaline solutions with conductivity as high as 50 ms/cm inside, or outside the container wall.

The 875F sensor can be mounted using the universal mounting bracket that comes with the unit. The 875F sensor can also be flush mounted without a bracket with the two screw holes in the sensor housing.



Applications

The sensor and bracket can be installed in any position and mounted in the following ways:

- Adhesive surface mounting
- Velcro strap mounting
- Cable tie mounting on small tubes and pipes

Package Contents

Each 875F sensor is packaged with the following:

- Universal mounting bracket
- Two foam pads (3 mm [0.12 in.] thick) for pipe mounting
- Two adhesive pads (1 mm [0.04 in.] thick) for surface mounting

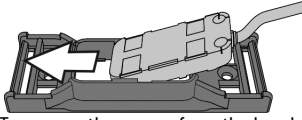
Specifications

Attribute	Value
Certifications	cULus (UL508), CSA-C22.2 No.14-13, ECOLAB
Detection	<ul style="list-style-type: none">• Pipes diameter: Ø8 mm (0.31 in.), min• Wall thickness (factory settings):<ul style="list-style-type: none">- Non-conductive plastic: 0.5...6 mm (0.02...0.24 in.)- Non-conductive glass: 0.5...4 mm (0.02...0.16 in.)• Wall thickness (manual setup):<ul style="list-style-type: none">- Plastic wall: ≤10 mm (0.4 in.) (best case)- Glass wall: ≤10 mm (0.4 in.) (best case)• Liquids: Water-based liquids such as water, milk, syrup, honey, milkshakes, lubricates, acids, alkaline fluids, body fluids, and other high-conductive liquids (≤50 ms)
Effective operation distance (Sr)	0.9 x Sn ≤ Sr ≤ 1.1 x Sn
Usable operation distance (Su)	0.85 x Sr ≤ Su ≤ 1.15 x Sr
Repeat accuracy (R)	≤5%
Rated operational volt (UB)	10...30V DC (ripple included)
Ripple	≤10%
Output functions	NPN or PNP by sensor type
Output switching function	N.O. and N.C. by sensor type
Rated operating current (Ie)	≤100 mA
No load supply current (Io)	≤13 mA
Rated insulation voltage (UI)	75V DC
Power-ON delay (tv)	≤300 ms
Voltage drop (Ud)	≤1.5V
Status indicators	<ul style="list-style-type: none">• Green: Power• Yellow: Output function
Protection	<ul style="list-style-type: none">• Short circuit• Reverse polarity• Transient
Degree of protection	IP65, IP66, IP67, IP68 @ 1.3 m (4.27 ft) and 24 h; IP69K (NEMA 1, 2, 4, 4x, 5, 12)
Temperature	<ul style="list-style-type: none">• Operating: -25...+80 °C (-13...+176 °F)• Storage: -40...+85 °C (-40...+185 °F)
Humidity range	35...95%
Material	<ul style="list-style-type: none">• Body: PC/PBT• Mounting bracket: PC/PBT
Connection	PVC, 2 m (6.6 ft), 4 x 0.14 mm ² , Ø=3.4 mm (0.13 in.) / M8 - 4 pin, male, stainless steel

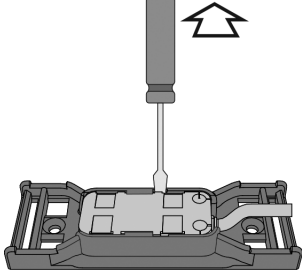
Installation

To secure the 875F sensor in the bracket, follow these steps:

1. Slide the sensor down and forward into the bracket and push down. The sensor clicks into place and is difficult to remove by hand.



2. To remove the sensor from the bracket, use a small screwdriver and dislodge the sensor.



Status Indicators

The 875F sensor has two status indicators:

- The yellow status indicator lights up when the output is active. If the output is short-circuited, the yellow status indicators flashes.
- The green status indicator lights up when power is connected to the sensor.

Sensor Settings

Out of the Box (Factory Settings)

The sensor can be used without any additional calibration. It is designed to work with plastic tank walls of approximately 0.5...6 mm (0.02...0.24 in.) and glass walls of approximately 0.5...4 mm (0.02...0.16 in.).

IMPORTANT The glass or plastic must be nonconductive.

Full Calibration

The sensor switch point is set below the actual detection value to ensure that slight changes in the application do not affect the sensing performance.

In most applications, the full calibration on a full tank or tube is sufficient.

In critical applications with large variations in media type and temperature, it may be better to teach the full level with approximately 50% of the active sensing surface covered.

Full calibration procedure:

1. Connect teach wire to V+ for 2...7 seconds.
2. The green status indicator flashes and the yellow status indicator is OFF.
3. After successful calibration, the yellow status indicator flashes three times (with 1 Hz).

Empty Calibration

The sensor switch point is set above the actual detection value to ensure that slight changes in the application do not affect the sensing performance.

In most applications, the empty calibration on an empty tank or tube is sufficient.

In critical applications with a high amount of residue film, moisture or foam build-up, an empty calibration can be performed with the build-up present.

Empty calibration procedure:

1. Connect teach wire to V+ for 7...12 seconds.
2. Green status indicator flashes and yellow status indicator is ON.
3. After successful calibration, the yellow status indicator flashes three times (with 1 Hz).

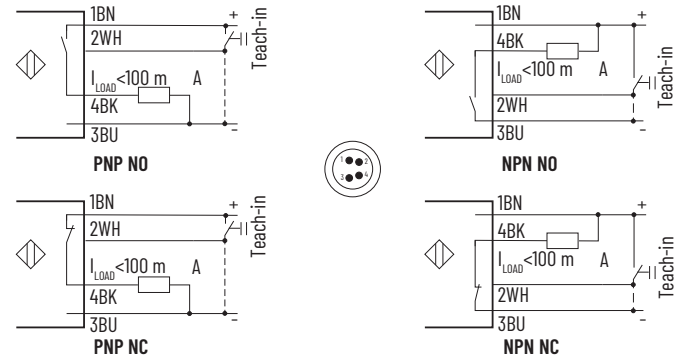
Cancel Calibration Procedure

1. Keep the teach wire connected to V+ for more than 14 seconds to cancel the teach procedure. The switch points remain unchanged.
2. Green status indicator is off and yellow status indicator flashes (4 Hz).

Factory Settings

Full teach at 2 mm (0.08 in.) distance to metal target.

Wiring



Pin	Color	Description
1	BN (Brown)	Supply (V+)
2	WH (White)	Teach input
3	BU (Blue)	Supply (V-)
4	BK (Black)	Output

IMPORTANT When not used, permanently connect the teach wire to V-.

Approximate Dimensions

Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.

Figure 1 - Sensor

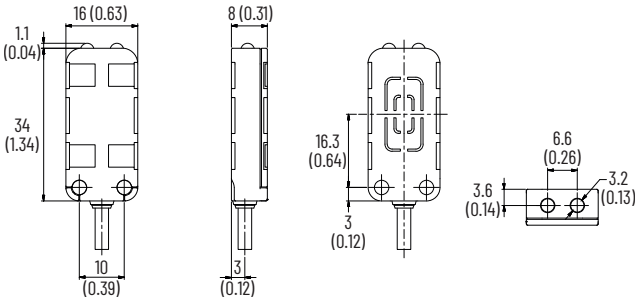
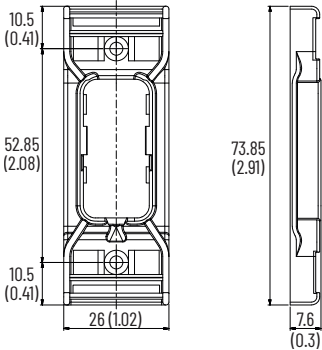


Figure 2 - Mounting Bracket



Waste Electrical and Electronic Equipment (WEEE)







At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.
For technical support, visit rok.auto/support.

Rockwell Otomasyon Ticaret A.Ş. Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400 EEE Yönetmeliğine Uygundur

Connect with us.    

rockwellautomation.com

expanding **human possibility**[®]

AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

ASIA PACIFIC: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Allen-Bradley, expanding human possibility, and Rockwell Automation are trademarks of Rockwell Automation, Inc.
Trademarks not belonging to Rockwell Automation are property of their respective companies.

Publication 875F-IN001A-EN-P - February 2022

Copyright © 2022 Rockwell Automation, Inc. All rights reserved. Printed in the U.S.A.