R135 Fluid Detector Tag Installation Guide

RF Code™
discover. track. monitor.

Installation Guide

Contents

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

RFCode is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Industry Canada Compliance Statement
This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité à la réglementation d'Industrie Canada
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

The system is design to operate with RFCode R100 RFID Tags – Whose operating frequency is 433.92 MHz which have been certified or are in the certification process. These R100 devices comply with part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) these devices may not cause harmful interference, and
(2) these devices must accept any interference received, including interference that may cause undesired operation.

a. FCC ID: P6F2005433 for beacon intervals greater than, or equal to 10 seconds.
b. FCC ID: P6F433MHZ for the security tag with beacon intervals less than 10 seconds.

CE Compliance

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures. This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A, the essential protection requirement of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Copyright Statement

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Introduction

The R135 Fluid Sensor Tag is a real-time fluid detection sensor that totally eliminates the need to wire or cable a data center for fluid leak detection capabilities. Combining thin-film technology with RF Code's real-time, wire-free environmental monitoring technology, the new sensor provides the freedom and ease to deploy fluid detection wherever vulnerabilities to conductive fluids threaten expensive IT assets.

RF Code's Environmental Monitoring solution line is made up of:

- R120 Rack Door Tag
- R130 Dry Contact Tag
- **R135 Fluid Detector Tag**
- R150 Rack Temperature Tag
- R155 Humidity-Temperature Tag
- Sensor Manager Software

There are two versions of the R135 Fluid Detector Tag:

- R135-0050 "Spot Check" Fluid Sensor Tag - with attached 3 meter length fluid sensor connector and 50 cm length of sensor film and adhesive
- R135-0000 "Custom Length" Fluid Sensor Tag - with attached 3 meter length fluid sensor connector. Custom order 1 meter - 50 meter length of sensor film and included adhesive

Features

Some of the features of the R135 Fluid Detector Tag are:

- Instant notification when fluid bridges the perforations of the sensor film
- Flexible installation to allow for fluid detection beneath raised floors in IT data centers, wrapped around pipes in critical spaces, applied to floors of wiring and IT closets, in drip and condensation pans, and in lab or manufacturing environments
- Durable (can be occasionally walked on or rolled over)
- Detects most types of fluids

Contents

The R135 Fluid Detector Tag package contents are:

- R135 Tag with attached connector
- 50 cm length of fluid sensor strip and adhesive (only included with R135-0050 model)
- Customized length of fluid sensor strip and adhesive (only included with R135-0000 model)
- Printed R135 Installation Guide
- One zip-tie and one zip-tie mount
- Two adhesive pads for application on the back of the tag and connector

Installation Steps

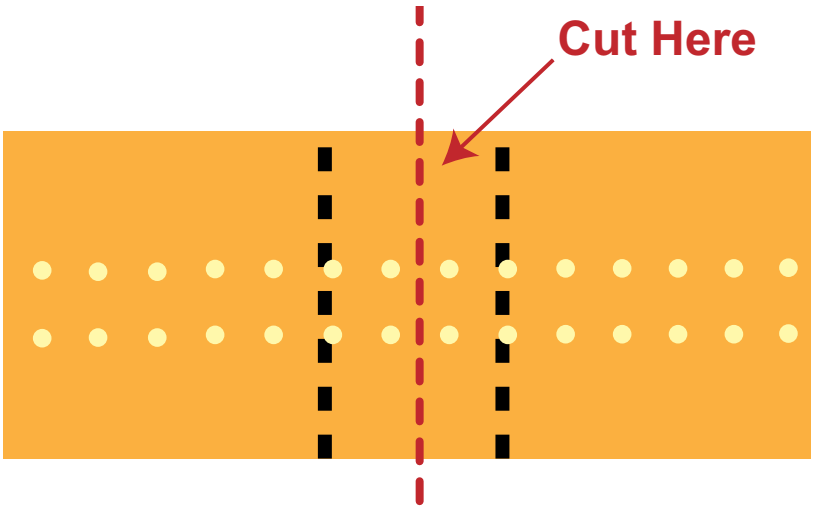
Assembly

If you are installing an R135-0000 Fluid Detector tag, you will need to follow the assembly steps described below:

1. Determine the length of sensor film and adhesive needed for your application.

2. Cut sensor film and adhesive to proper length + 1 inch allowance for the end of the sensor film that will be attached to the sensor connector. When cutting the sensor film to size, take special care to cut this film as straight across as possible (a 90 degree angle square cut) with scissors or a sharp cutting blade. Cut only within the black dotted area which indicates 1/2 meter lengths. Make the cut between the holes in the sensor film's plastic outer covering to ensure the best possible fluid detection readings (Figure 1). RF Code recommends that the sensor film is cut in 1/2 meter lengths (i.e. 2 or 2.5 meter length vs. 2.25 meter, etc.).

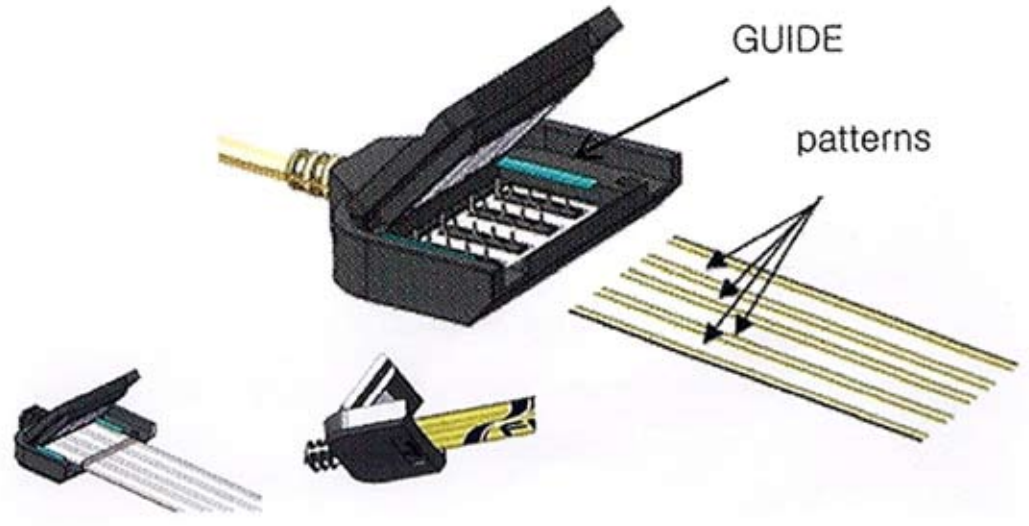
Figure 1: Indicator of Sensor Film Cut Location



3. Remove the screws from the sensor connector. Open the sensor connector as shown in Figure 2.

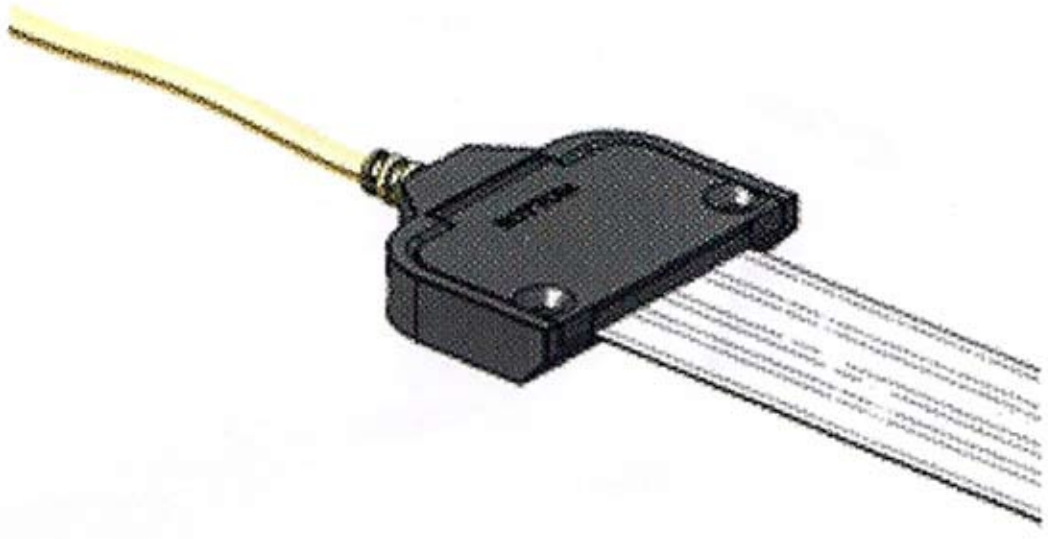
4. Take the sensor film with the **side marked "BOTTOM"** (Figure 2) and insert the straight edge of the sensor film under the side guides and flush with the end of the connector. The bottom of the sensor film is the side with the channels and does NOT have holes. Align the channels in the film to the pins in the connector. It is very important to ensure that the bottom side of the sensor film matches up with the bottom side of the connector.

Figure 2: Inserting Sensor Film



5. Once you have ensured that the sensor film is facing the correct way, push the cover down and close the connector cover (Figure 3). This will puncture the sensor film with the connector pins. Please note that you may need to push firmly and apply some pressure to ensure that the film has been pierced by the pins and that the cover is flush.

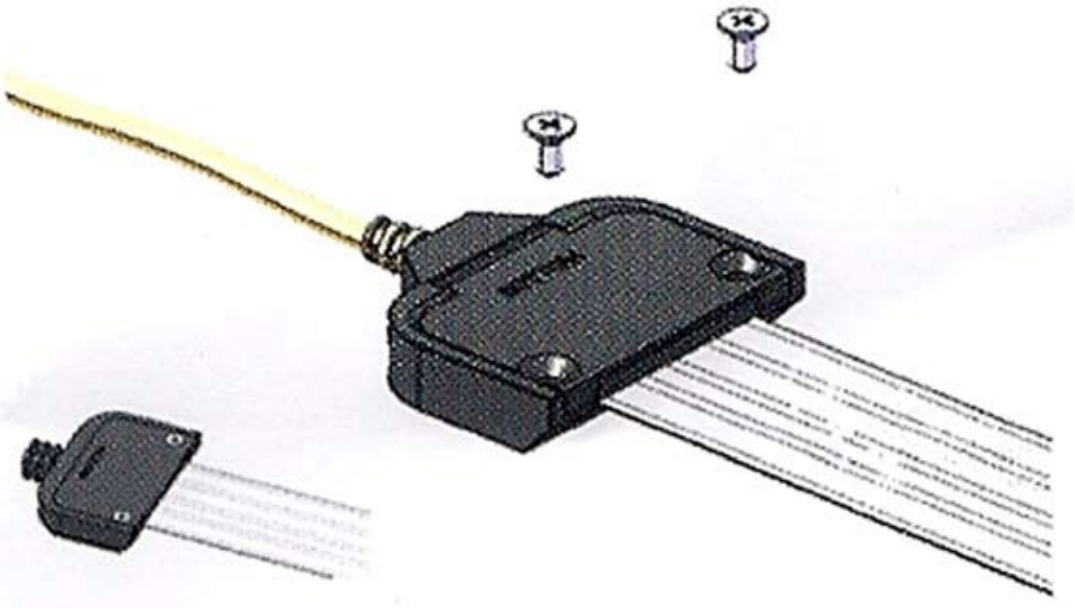
Figure 3: Close Connector Cover



6. Insert the screws that you previously removed in step 3 and tighten them down to secure the film in the connector.

7. Take that adhesive that you cut to length in step 2, remove the release liner on one side of the adhesive and apply it to the bottom side of the sensor film. If your installation will be for a longer length of sensor film, it may be easier to cut the length of adhesive you need and apply it to the surface on which you intend to mount the sensor film first. Then apply the sensor film to the already mounted adhesive. This will prevent the tedious task of having to line up the adhesive along the roll of sensor film.

Figure 4: Tighten Screws on Connector Cover



This completes the assembly required before installation of the R135-0000 Fluid Detector Tag.

Testing

Prior to installation of the R135 Fluid Detector Tag, RF Code recommends that each tag should be tested to ensure that the sensor film and tag functions are performing properly. To test the R135 tags, you will need the tag, an RF Code reader, a computer running Asset Manager, Sensor Manager or a terminal for direct contact with the reader, and a small amount of water. To test the functionality of the tag, simply apply a bit of the water to the top side surface of the sensor film (the side with the holes). A dampened paper towel can be used for this purpose. You should notice the tag beacon **"Yes"** for fluid detection in the Asset Manager software or **"741"** payload if using a direct connection to the reader. Please refer to AssetManager_UserManual.pdf or ReaderConfiguraionUtility_UserManual.pdf for further instructions. Use a rag or towel to remove the fluid from the surface of the sensor film and ensure that the tag now beacons **"No"** or **"740"** payload indicating no fluid detection. If fluid detection is not indicated in the software, try applying a bit more fluid to the surface of the film. If you continue to have problems with fluid detection, contact the RF Code support line at **1 866.830.4578** or **support@rfcode.com**.

Mounting

RF Code recommends using one of the two mounting methods described below:

Pipe Wrap Mounting

In this mounting method, you will attach the R135 Fluid Detector Tag around the surface of a pipe or other rounded structure to monitor for fluid leaks.

1. Apply the adhesive pad that was supplied to the back side of the sensor connector. Remove the release liner from the back of the adhesive pad and position and press firmly to apply the sensor connector on the pipe.

2. Remove the release liner from the back of the adhesive on the sensor film and wrap the fluid sensor film around the surface of the pipe with the top side (side with the holes) pointing away from the surface of the pipe. Ensure that you do **NOT** to overlap the sensor film. Secure the sensor film to the pipe by zip-tying around the sensor film and pipe at periodic intervals across the length of the sensor film.

   Although the sensor film is flexible and allows for bending, take care to avoid creasing or pinching the sensor film as this can cause the film to not work properly.

3. Position the R135 Tag on a wall near the pipe above the sensor connector. Apply the adhesive pad that was supplied to the back of the tag. Remove the release liner from the back of the tag and press firmly to mount the tag to the surface of the wall or use screws to screw the tag and mounting bezel to the wall.

   TIP If mounting the tag in an area where it could potentially be bumped or snagged, you may want to use a strain relief method with the supplied tie-wrap and tie-wrap mount (**Figure 5**) to position the sensor connector wire in such as way that if snagged, the wire will not be ripped from the tag.

Figure 5: Strain Relief Wire Mounting Method

Flat Surface Mounting

In this mounting method, you will attach the R135 Fluid Detector Tag to a flat surface such as a floor or wall.

1. Remove the release liner from the bottom side of the sensor film and position the sensor film on the section or floor. Press firmly along the surface of the sensor film ensuring that there are no bubbles or kinks in the sensor film and that it is smoothly flattened against the floor or wall surface.

2. Apply the adhesive pad that was supplied to the back side of the sensor connector. Remove the release liner from the adhesive and position the sensor connector on the floor or wall. Press firmly to adhere the connector.

3. Run the connector wire up or along the wall or surface. Apply the adhesive pad that was supplied to the back side of the tag. Remove the release liner and press firmly to mount the tag to the wall or use screws to mount the tag using the screw mount bezel.

TIP If mounting the tag in an area where it could potentially be bumped or snagged, you may want to use a strain relief method (**Figure 5**) to position the sensor connector wire in such as way that if snagged, the wire will not be ripped from the tag.

Note Please note that the tag must be mounted in such a way where it will have an unobstructed proximity to the reader to ensure a correct detection beacon.

Note The R135 Fluid Sensor is designed for detecting fluid in areas where fluid is not a normal occurrence. The sensor should not be used in any application where the sensor is normally in a wet state and is required to a report dry state as an alert condition. After the Fluid sensor has become wet it should be dried and retested for proper operation.

Best Practices

The following are some best practice recommendations for installing and common occurrences when using the R135 Fluid Detector Tag:

- The sensor is triggered when fluid bridges the perforations between center lines 2 and 3 on the orange side of the sensor film. A localized splash can trigger a tag payload change.
- The adhesive under the sensor slightly raises the level of fluid required to trigger the sensor.
- Avoid sensor tape installation irregularities, such as bubbles, lift, kinks and wrinkles. Avoid sharp bends, if possible.
- When wrapping pipes, some creativity may be required. Sensor tape should not overlap itself. RF Code recommends use of tie-wrap holders and zip-ties.
- Affix the tag, with adhesive and/or screws, elevated above the ground to the extent possible to facilitate the best RF signal strength.
- Affix/secure the connector using double-faced adhesive provided. Connector will not withstand prolonged exposure to standing fluid. Where possible, mount the connector a few inches off the floor.
- Sensor film can be cut-to-length for custom installs, but any cutting down of the sensor film width is not recommended and voids the warranty.
- RF Code recommends a square cut (90 degrees) across the 28 mm width of the sensor film.
- If re-positioning the connector, the sensor film should only be cut between the dotted 1/2 meter indicator lines. For assistance in moving the connector, please contact RF Code support.

Environmental Limits

The R135 Fluid Detector Tag is approved for use within the temperature ranges set forth below.

- **Operation**: -4 to 158 degrees Fahrenheit (-20 to +70 degrees Celsius)
- **Storage**: -40 to 176 degrees Fahrenheit (-40 to +80 degrees Celsius)

Limited Standard Warranty Terms

RF Code warrants its products to be free from defects in materials and workmanship for a period of 1 year (12 months) for hardware and software from the date of purchase from RF Code. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. This warranty does not apply to equipment that has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser (end-user) and is not transferable.

Standard Warranty Limitations

Except as provided herein, the entire liability of RF Code and its suppliers under this limited warranty will be that RF Code will use reasonable efforts to repair or replace, without charge, all defective Products returned to RF Code by Customer, all as more particularly described in the End User Warranty. Except for the express warranties STATED HEREIN, RF Code makes no other representations or warranties and RF Code hereby disclaims, all other warranties, express, implied, statutory, or otherwise, including without limitation, any warranty of merchantability, non-infringement of third party intellectual property rights, fitness for a particular purpose, performance, satisfactory quality, or arising from a course of dealing, usage or trade practice.

Obtaining Service & Support

For in-warranty service, customers have several options. Customers having difficulty with RF Code products should attempt to solve those problems through RF Code's Technical Support Problem Escalation Process:

First, contact the RF Code representative or other distributor from whom the RF Code product was purchased for information on how to obtain local support.
Second, contact the RF Code Customer Support via e-mail.
Third, contact the RF Code Customer Support via the Support Line.

For product returns, the support engineer will give you a return material authorization (RMA) number. No returns will be accepted without an RMA number. If the warranty expired, there is a charge for repair or replacement per RF Code's out-of-warranty policy. For full details of the RF Code RMA policy, please review the "RF Code Warranty, RMA, and Extended Warranty Policy" document.

RF Code Customer Support

RF Code Customer Support gives entitled customers and partners the ability to contact RF Code about installation and usage-related questions as well as make defect inquiries about eligible products that are covered under RF Code warranty agreements. A team of technical specialists can be contacted electronically or via phone.

The Support Line is available to provide General Support during normal business hours: Monday through Friday, 8:00am to 5:00pm Central time, excluding national holidays.

E-mail: support@rfcode.com
Support form: http://www.rfcode.com
Voice: 512.439.2244 or toll-free at 866.830.4578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