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TZ Analog Sensors™

Product Manual

TZ Sensors™ 8115CF | 8116CF | 8117CF | 8118CF





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TZ Sensors™ 8115CF | 8116CF | 8117CF | 8118CF

About TZ

Telezygology, Inc. (TZ) is a wholly owned subsidiary of publicly listed intellectual property and technology development company TZ Limited with design and engineering operations throughout the United States, Europe and Australia.

TZ is a leader in the integration of intelligence and software control into everyday objects to enable new levels of functionality. Supported by a full product development capability, TZ Technology is a platform on which many different solutions can be created by third parties seeking to integrate remote controlled intelligent locking and sensory devices to add functionality to their products.

TZ solutions fuse software controlled remote locking and fastening, environmental sensing, real time analysis and measurement to provide adopters with compelling benefits for their products and businesses.

Disclaimer

This document is intended to provide basic technical information related to TZ Sensors.

This document is not meant to be an exhaustive statement of all relevant data. By using this document, however, you agree to accept and comply with the terms, conditions, notices and disclaimer contained in this document.

While TZ has used all due care and skill to ensure that the information contained in this document is accurate, correct, and current at the time of publication, it does not warrant or represent that the information is free from errors or omissions, and does not accept responsibility for any defect in the information.

Use of Information Contained in This Document

The correct functions of TZ Sensors will require consideration of installation and system integration issues such as networking for power and data, and subsequent programming for functionality.

The TZ Sensors described have not been tested or qualified for a specific application other than for compliance to the specification outlined. Specific qualification testing may be required for fit-for-purpose application design.

Caution

Changes or modifications not expressly approved by TZ could void the user's authority to operate the equipment (FCC Code of Federal Regulations Title 47 Part 15.21).



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Contents

1. Introduction	1
2. TZ Contact Sensor 8115CF	1
2.1. Contents of the Standard Package	1
2.2. Capabilities	1
3. TZ Temperature Sensor 8116CF	2
3.1. Contents of the Standard Package	2
3.2. Capabilities	2
4. TZ Relative Humidity Sensor 8117CF	2
4.1. Contents of the Standard Package	2
4.2. Capabilities	2
5. TZ Liquid Detector 8118CF	3
5.1. Contents of the Standard Package	3
5.2. Capabilities	3
6. Installation	4
6.1. Installation of the TZ Contact Sensor 8115CF	4
6.2. Installation of the TZ Temperature Sensor 8116CF and Relative Humidity Sensor 8117CF	6
6.3. Installation of the TZ Liquid Detector 8118CF	6
7. Wiring of TZ Analog Sensors	7
8. Configuring the TZ Centurion	10
Appendix: Specifications	11



Figure 1: TZ Contact Sensor™ 8115CF

1. Introduction

TZ is the inventor of intelligent fastening and actuation technologies that in combination with TZ software and networking devices provide a platform on which to extend traditional access control networks to create compelling security, locking, monitoring and control applications across a number of market segments.

TZ networks consist of TZ Radial, TZ SlideHandle and other intelligent locking mechanisms, a line of interconnect modules, physical and environmental sensors and industry standard access control input translators. TZ network devices can be connected to and controlled from stand-alone control devices, computers, or the Internet. This manual provides detailed technical information specific to the TZ Contact Sensor 8115CF, TZ Temperature Sensor 8116CF, TZ Humidity Sensor 8117CF, and TZ Leak Sensor 8118CF. Please refer to the appropriate system or component manual for information on other TZ products.

2. TZ Contact Sensor 8115CF

The TZ Contact Sensor 8115CF is an accessory to the TZ Radial and TZ SlideHandle locks that provide the particular device the ability to sense when the door of a cabinet or other enclosure is open or closed.

2.1. Contents of the Standard Package

The TZ Contact Sensor 8115CF comes complete with the following items in the box:

- > 1 x TZ Contact Sensor 8115CF
- > 1 x piece double-stick tape

2.2. Capabilities

- > The TZ Contact Sensor 8115CF is a magnetic reed switch. When properly installed it allows the connected TZ device to determine when a door is open or closed.
- > The TZ Contact Sensor connects directly to the screw terminal on the TZ SlideHandle lock.
- > The TZ Contact Sensor may also be connected.



Figure 2: TZ Temperature Sensor™ 8116CF



Figure 3: TZ Relative Humidity Sensor™ 8117CF

3. TZ Temperature Sensor 8116CF

The TZ Temperature Sensor 8116CF is an accessory to the TZ Radial and TZ SlideHandle locks that provides the particular device the additional functionality of measuring the ambient temperature within the enclosure or cabinet.

3.1. Contents of the Standard Package

The TZ Temperature Sensor 8116CF comes complete with the following items in the box:

- > 1 x TZ Temperature Sensor 8116CF.
- > 1 x 4-conductor 2-meter cable.
- > 1 x piece double-stick tape.

3.2. Capabilities

The TZ Temperature Sensor 8116CF contains a temperature sensor circuit designed to measure temperatures between -15 °C to 60 °C (5 °F to 140 °F).

The TZ Temperature Sensor 8116CF requires connection to the TZ network through either a TZ Centurion™ Multi Port Link 7105CL or Port Link 7101CL.

4. TZ Relative Humidity Sensor 8117CF

The TZ Relative Humidity Sensor 8117CF is an accessory to the TZ Radial and TZ SlideHandle that provides the particular device the additional functionality of measuring the relative humidity within the enclosure or cabinet.

4.1. Contents of the Standard Package

The TZ Relative Humidity Sensor 8117CF comes complete with the following items in the box:

- > 1 x TZ Relative Humidity Sensor 8117CF
- > 1 x 4-conductor 2-meter cable
- > 1 x piece double-stick tape

4.2. Capabilities

The TZ Relative Humidity Sensor 8117CF contains a circuit designed to measure relative humidity between 5% and 95%.

The TZ Humidity Sensor 8117CF requires connection to the TZ network through either a TZ Centurion Multi Port Link 7105CL or Port Link 7101CL.



Figure 4: TZ Liquid Detector™ 8118CF

5. TZ Liquid Detector 8118CF

The TZ Liquid Detector 8118CF is an accessory to the TZ Radial and TZ SlideHandle that provides the particular device the added functionality of signaling the presence of a liquid within the enclosure or cabinet.

5.1. Contents of the Standard Package

The TZ Liquid Detector 8118CF comes complete with the following items in the box:

- > 1 x TZ Liquid Detector 8118CF
- > 1 x 4-conductor 2-metre cable
- > 1 x optical point-leak detector extension
- > 1 x piece double-stick tape

5.2. Capabilities

The TZ Liquid Detector 8118CF contains a sensor whose output will be high in air and will sink up to 10mA current when in contact with any liquid (with the exception of mercury.)

The TZ Liquid Detector 8118CF requires connection to the TZ network through either a TZ Centurion Multi Port Link 7105CL or Port Link 7101CL.

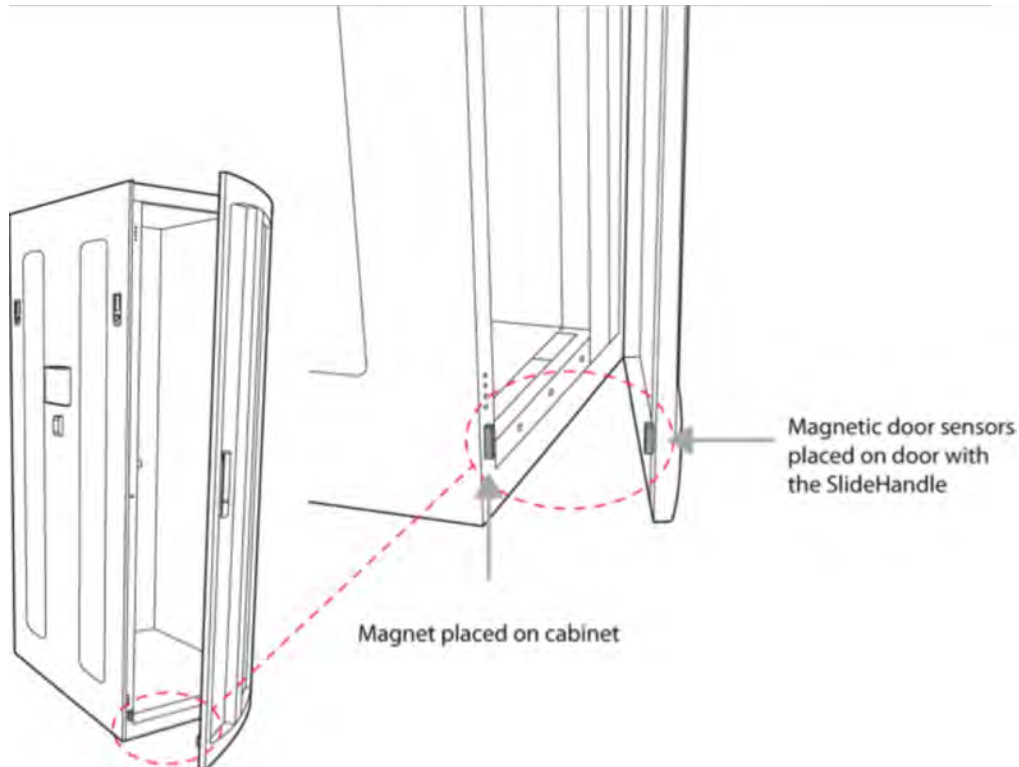


Figure 5: For a cabinet with a single door, one portion of the TZ Contact Sensor™ 8115CF should be affixed to the frame, and the other portion to the door.

6. Installation

In general, the TZ Analog Sensors should be affixed at or near the point of interest, and then wired to a TZ Radial or TZ SlideHandle via either a TZ Centurion Port Link or Multi Port Link. Finally, the software within the TZ Radial or TZ SlideHandle locks must be configured to work with each sensor. The following sections discuss the positioning and methods of affixing the sensors. Section 7 discusses the wiring procedures.

The procedure for configuring the TZ Centurion software for the TZ Radial or TZ SlideHandle locks is discussed in Section 8.

6.1. Installation of the TZ Contact Sensor 8115CF

The TZ Contact Sensor 8115CF is used to ascertain if a door is open or closed. The sensor consists of two parts: a magnetic reed switch and a magnet, both of which have an

adhesive backing. The switch is open (no electricity can flow through) unless the magnet is in close proximity – typically around $\frac{3}{4}$ inch. To install the contact sensor, follow the procedure outlined below:

Typically the reed switch is mounted to the same door with the TZ SlideHandle lock so that the wiring will not bend nor flex as the door is opened and closed. The sensor can be placed first, with its double sided tape, and then the magnet temporarily positioned by simply placing it on the door (if it is made of steel). Although the parts can be repositioned after being affixed, the strength of the tape is greatly reduced if it is removed and replaced. There are also holes provided for sheet metal or wood screws to fix the sensor and magnet if desired (screws not included).

For a single door, as pictured in Figure 5, the sensor can be positioned anywhere on the door that corresponds to an acceptable frame mounting location for the magnet.

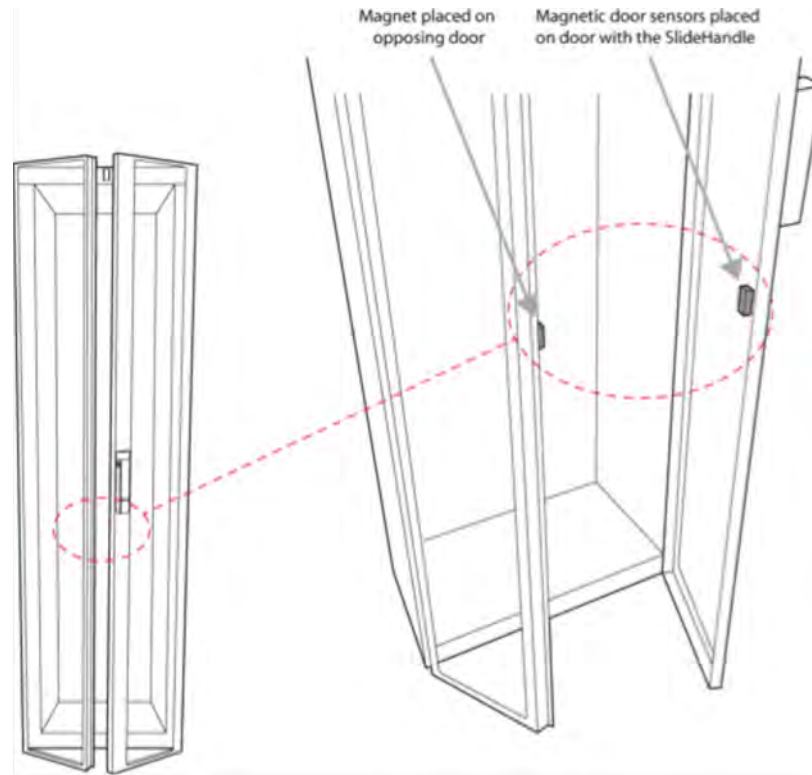


Figure 6: For a cabinet with a double door, one portion of the TZ Contact Sensor™ 8115CF should be affixed to each door — so that the switch will conduct electricity if and only if both doors are closed properly.

For cabinets that have split doors or double doors, the sensor must be placed in a way that it properly detects when both doors are properly closed – not just the door holding the sensor. To do this, the sensor should be placed on the door with the TZ SlideHandle lock, and the magnet should be placed on the second door, such that the sensor only has electrical continuity as shown in Figure 6.

For the sensing to be robust, it must not report false readings, such as if a door handle is locked, but the door is open and simply closed as far as possible. It is advised to

test the exact placement of the sensor by holding the doors in various open and closed positions and confirming the reading of the sensor with either the TZ Centurion Bridge software, a volt / ohm-meter (The resistance should be nearly zero when (and only when) the doors are shut properly.), or the “beep” function of a digital multi-meter.

TZ recommends testing positions of the door sensor while running the TZ Centurion system utility which will help check and verify continuity and proper sensor activation.



6.2. Installation of the TZ Temperature Sensor™ 8116CF and Relative Humidity Sensor™ 8117CF

The TZ Temperature Sensor 8116CF and Relative Humidity Sensor 8117CF can be affixed to any clean and dry surface with double stick foam tape. Remove the liner from one side of the double stick foam tape and press to the back side of the TZ Analog Sensor. Remove the other liner from the double stick foam tape, and press the sensor into place. Make sure that sensor is oriented so that the cable port is accessible.

Insert the connector of the cable into the sensor, and run the wire back to the TZ Centurion Port Link or Multi Port Link. Use cable ties and cable clips to secure cables out of the way and keep the cables from sagging under their own weight or potentially pulling the connector and causing bad connections.

Since temperature gradients can vary dramatically inside a cabinet or enclosure, TZ suggests temperature sensors be mounted where temperatures are highest in order to monitor worst case temperature readings.

6.3. Installation of the TZ Liquid Detector™ 8118CF

The TZ Liquid Detector 8118CF is designed to give a signal when any liquid comes in contact with the round black bulb in the bracket at the end of the probe harness. To that end, bracket should be placed at the lowest point of a particular surface where water or other liquids would typically collect. Places such as the area near floor drains, or pans near air conditioning condensers are ideal. To install the TZ Liquid Detector 8118CF use the following steps:

1. Locate the “lowest point” — where water or liquids would collect.
2. Place (or affix) the probe portion of the sensor so that the black bulb would touch the liquid if it were present. If there is any potential for this sensor to move (e.g., kicked, hit, knocked out of place), secure it with screws.
3. Choose a nearby place for the circuitry box that is safe from liquids. Remove the liner from one side of the double stick foam tape and press to the back side of the TZ Analog Sensor. Remove the other liner from the double stick foam tape, and press the sensor into place. Make sure that sensor is oriented so that the cable port is accessible.
4. Insert the connector from the probe into the bottom of the circuitry box.
5. Insert the connector of the cable into the top end of the circuitry box, and run the wire back to the TZ Centurion Port Link or Multi Port Link. Use cable ties and cable clips to secure cables out of the way and keep the cables from sagging under their own weight or potentially pulling the connector and causing bad connections.

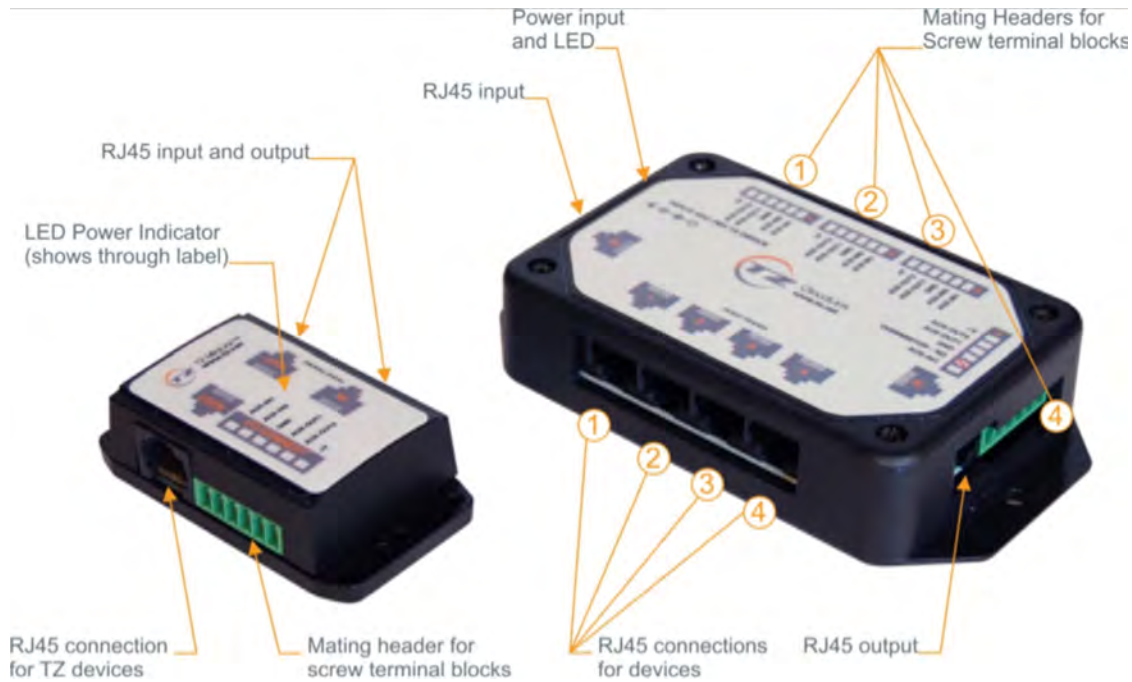


Figure 7: TZ Centurion™ Port Link or Multi Port Link electrical connections.

7. Wiring of TZ Analog Sensors™

The TZ Analog Sensors described in this manual all produce signals that are read directly by either the TZ Radial or the TZ SlideHandle lock. As such, they must be connected to the auxiliary inputs of the devices via the screw terminal block of either a TZ Centurion Port Link or Multi Port Link, shown in Figure 7.

To connect a sensor, first locate the screw terminal block that corresponds to the associated TZ device (each are numbered accordingly). For a TZ Centurion Port Link there is only one screw terminal block (located on the same side as the associated TZ lock device). Up to four TZ devices can be connected to the TZ Centurion Multi Port Link so the proper corresponding screw terminal block for the correct device must be identified.

Because the sensors are analog devices, the individual wires must be connected to the proper pins of the screw terminal. The TZ Radial can receive a signal on either the AUXIN1 or AUXIN2 pins. However, the TZ SlideHandle only receives a signal on the AUXIN1 pin. But the sensors can be wired to send the signal along either pin. The designation of the individual pins of the screw terminal is provided in Table 1 and Figure 8, and the connection diagram for each sensor is shown in Table 2 and Figures 9 through 13.



Table 1: TZ Centurion™ Port Link and Multi Port Link pin-out information for the screw terminal.

Pin	Function	Explanation
1	AUXIN1	
2	AUXIN2	
3	GND	Ground of attached power adapter
4	AUXOUT1	
5	AUXOUT2	
6	V	Voltage available from the attached power adapter, minus a diode drop.

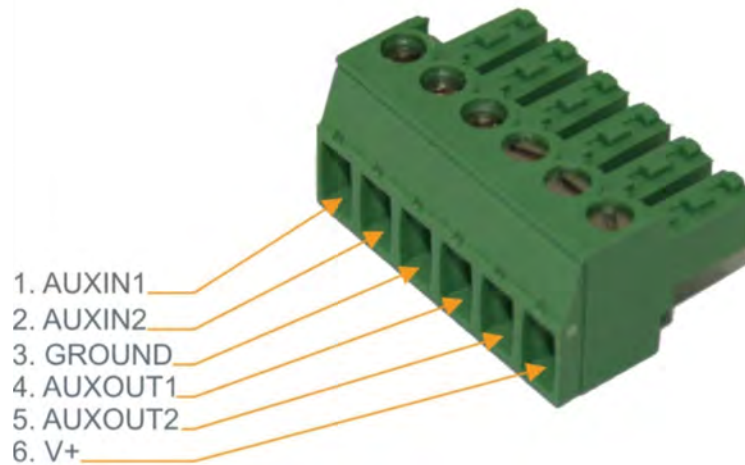


Figure 8: TZ Centurion™ Port Link and Multi Port Link screw terminal pin-out diagram.

Table 2: Wire and pin out connections.

Table 2: Wire and pin out connections.

Sensor Model	Solid Orange	Orange & White	Solid Blue	Blue & White
TZ Door Sensor™ 8115CF		1* or 2*	3*	
TZ Temperature Sensor™ 8116CF	1 or 2		3	
TZ Relative Humidity Sensor™ 8117CF		1 or 2	3	6
TZ Liquid Detector™ 8118CF		1 or 2	3	6

*For the TZ Door Sensor 8115CF the individual wires are not color coded, and can be switched with each other.

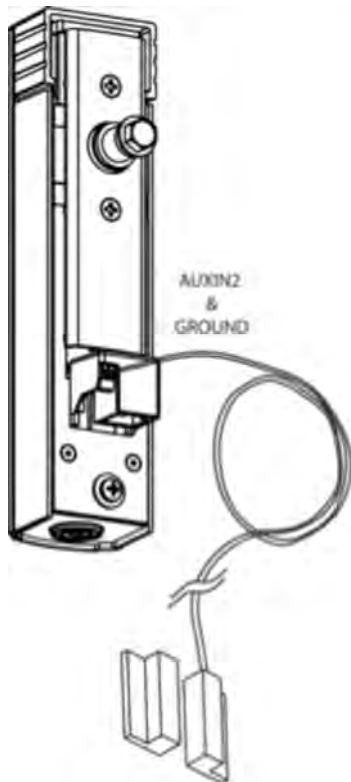


Figure 9: Wiring Diagram for connecting the TZ Door Sensor™ 8115CF to the TZ SlideHandle™.

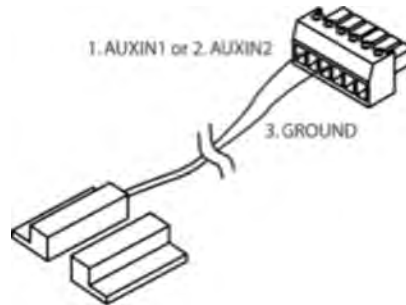


Figure 10: Wiring Diagram for the TZ Door Sensor™ 8115CF.

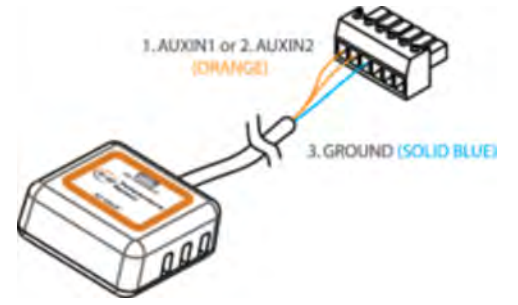


Figure 11: Wiring Diagram for the TZ Temperature Sensor™ 8116CF.

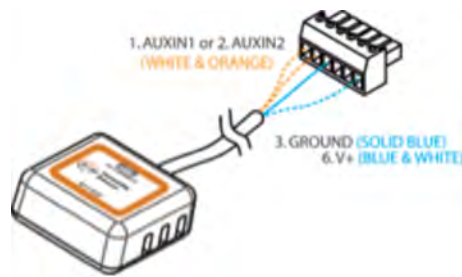


Figure 12: Wiring Diagram for the TZ Humidity Sensor™ 8117CF.

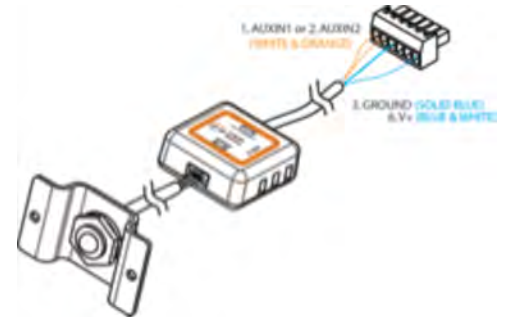


Figure 13: Wiring Diagram for the TZ Liquid Detector™ 8118CF.



8. Configuring the TZ Centurion™

After the sensor is properly wired per Section 6, a user with permission to edit the TZ devices on the TZ Centurion Bridge should log in and go to the “Device Config” tab.



TZ Sensors must be associated with a TZ intelligent lock device like a TZ Radial or TZ SlideHandle. Locate the TZ device to which the sensor in question is connected and click the [Edit] link.

Primary Name	Secondary Name	Device State	Input 1 Type	Input 2 Type	Output 1 Type	Output 2 Type	Unlock Timeout		
Front Door	SlideHandle1	LOCKED	Unconfigured	Contact Closure	Locked Indicator	Unlocked Indicator		Edit	Delete
000000002	F00000004	LOCKED	Humidity	Temperature	Locked Indicator	Unlocked Indicator		Edit	Delete
000000003	000000067	LOCKED	Unconfigured	Unconfigured	Locked Indicator	Unlocked Indicator		Edit	Delete
000000004	F00000005	LOCKED	Unconfigured	Unconfigured	Locked Indicator	Unlocked Indicator		Edit	Delete
000000005	00000FF04							Edit	Delete

Use the dropdowns for Input Type to select the type of sensor that is connected. Use Auxiliary 1 or 2 depending on how the sensor is connected per Section 6. Note: the TZ SlideHandle will only allow for a sensor on Auxiliary 1. Auxiliary 2 is dedicated to the Door Contact Closure.

Edit Device - Radial

Device Information

[Serial Number: F00000006 | Firmware: 111781.01.G | Batch Code: 06 24 03]

Primary Name *

Secondary Name *

Unlock TimeOut sec

Auxiliary IO

Auxiliary 1

Input Name *

Input1 Type

Log Rate minutes

Output Name

Output1 Type

Auxiliary 2

Input Name *

Input2 Type

Log Rate minutes

Output Name

Output2 Type

For more detailed information on sensor configuration in the TZ Centurion interface, please refer to the TZ Centurion Bridge manual.



Appendix: Specifications

Specifications Overview

Specifications subject to change to suit particular application requirements.

Physical And Mountings

- > Dims: 8115CF: 2 pieces – 34mm x 14mm x 9mm (1.34" x 0.5" x 0.35") w/ 1220mm (48") connector
- 8116CF / 8117CF: 35mm x 35mm x 15mm (1.4" x 1.4" x 0.6") w/ 2000mm (78") connector
- 8118CF: 35mm x 35mm x 15mm (1.4" x 1.4" x 0.6") with 216 mm (8.5") extension
- > Weight: 540 g (1.2 lbs) | 12 g (0.4 oz) | 12 g (0.4 oz) | 12 g (0.4 oz) plus 30 g (1.0 oz)
- > Mounting: Double stick tape

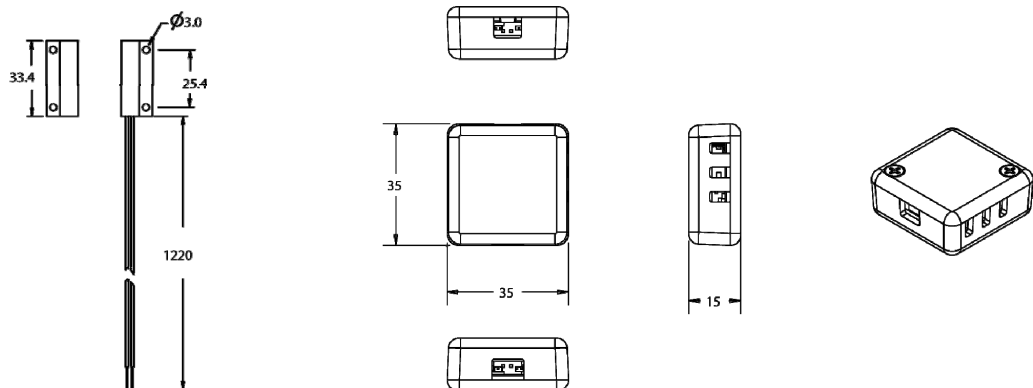
Sensors (range and accuracy)

- > 8115CF: Open/Closed
- > 8116CF: Temperature ($\pm 2C$ between $-10C$ and $70C$)
- > 8117CF: Relative Humidity ($\pm 3\%$ between 5% and 95%)
- > 8118CF: High in air, sinks current in liquid

Environmental (applies to all units)

- > Operating temperature: $-15^{\circ}C$ to $+85^{\circ}C$ ($5^{\circ}F$ to $235^{\circ}F$)
- > Non-combustible
- > Ingress protection: IP 20

Dimensions (mm)



8115CF: Door Sensor

8116CF | 8117CF | 8118CF



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