Operators Manual

Rev 1.0

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Figure Reference Guide

CONTROLLER INTERFACE

ENDPOINT INTERFACE

Part Numbers

DS015-RELAY-FIRE	LV Bridge System: includes one each SFI-HV801-01 and SFI-HV802-01
SFI-LV801-01	Low Voltage Bridge Control Interface
SFI-LV802-01	Low Voltage Bridge Endpoint Interface
SFI-LV803-01	Low Voltage Bridge Expansion Endpoint Interface

Overview

The Sure-Fi Low Voltage Bridge System consists of two Interface units:

Control Interface

Endpoint Interface

Overview (continued)

The Sure-Fi DS015-RELAY-FIRE Bridge System includes two interface units: The Control Interface, and the Endpoint Interface. The system is factory paired and is ready for use immediately without any configuration required. The system provides a wireless connection (bridge) between the two units for up to eight relays.

[Content Needed Here]

Features

- Works with low-voltage (12 to 30V AC/DC) relay-based control systems
- Eight relay channels from Control unit to Equipment unit
- Provides two relay channels from Equipment unit back to the Control unit
- Multiple Endpoint Interface units (up to eight) can be paired to one Control Interface unit allowing for all eight equipment units to respond to the relay inputs at the Control Interface.
- Signal Strength, Transmit and Receive indicators on Endpoint Interface.
- Range: up to 1 mile through obstructions and greater than 50 miles line-of-sight.

General Specifications

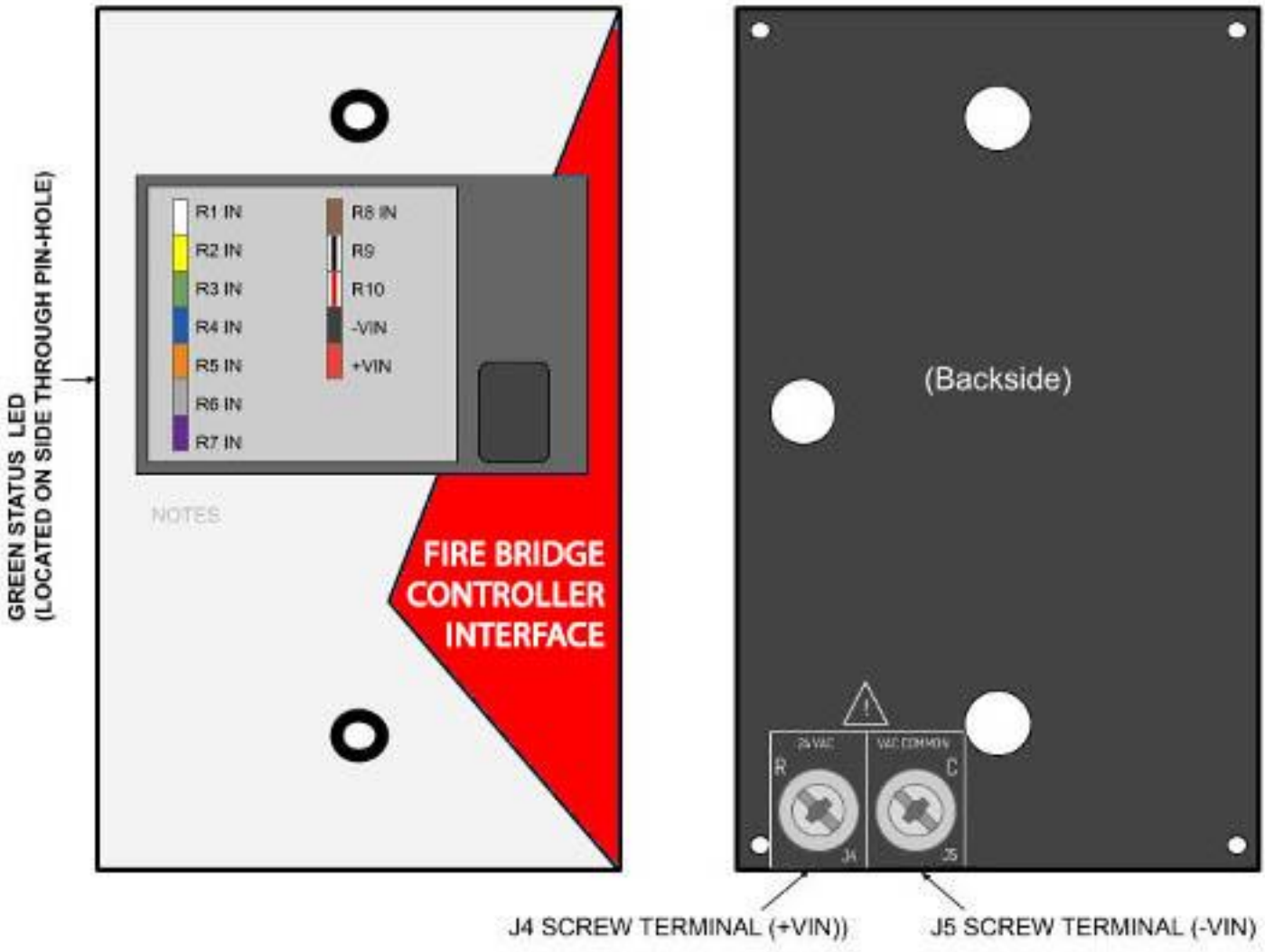
Operating Voltage:	12 to 30VAC/DC
Operating Current (@ 24VAC):	0.02A (idle), 0.26A (transmit)
Operating Power (@ 24VAC):	6.3VA (peak)
Controller Interface relays:	Relay Inputs (R1 – R8): 7 to 30VAC/DC Minimum input 'ON' threshold voltage 7VAC/DC
	Relay outputs (OUT 1, OUT 2): 30V max
Endpoint Interface relays:	Relay inputs (IN 1, IN 2): 7 to 30V Minimum input 'ON' threshold voltage 7VAC/DC
	Relay outputs R1 – R5: NO contact only 0.5A, 1.5A maximum combined. The relay output voltage is equal to the input operating voltage on the unit (the input voltage connected at the +VIN pin on the unit).
	Relay outputs R6, R7, R8: FORM A (NO/COM) contacts: 0.5A 60V max
Range:	Up to 1 mile through obstructions.
	Greater than 50 miles line-of-sight
Operating Temperature:	-40°F to +158°F (-40°C to +70C)
Storage Temperature:	-67°F to +185°F (-55°C to +85°C)
Humidity:	0 to 85% non-condensing
Dimensions (Thermostat Int.) :	4.45"L x 2.75"W x 0.575"H (113mm x 70mm x 15mm)
Dimensions (Equipment Int.) :	4.25"L x 4.20"W x 1.30"H (108mm x 107mm x 33mm)
Controller Interface Mounting:	Mounts to single gang box or direct mount.
Endpoint Interface Mounting:	DIN mount or direct mount. 35mm DIN rail (DIN46277-3)
Degree of Protection:	IP20 to IEC/EN 60529

Radio Transceiver Specifications

Transmit Power:	1 Watt (30dBm)
Frequency Band:	902 – 928MHz
Channels:	72 (Frequency hopping)
Receiver Sensitivity:	-133dBm
Link Budget:	163dB

Device Overview: Controller Interface

Figure-2: Control Interface overview



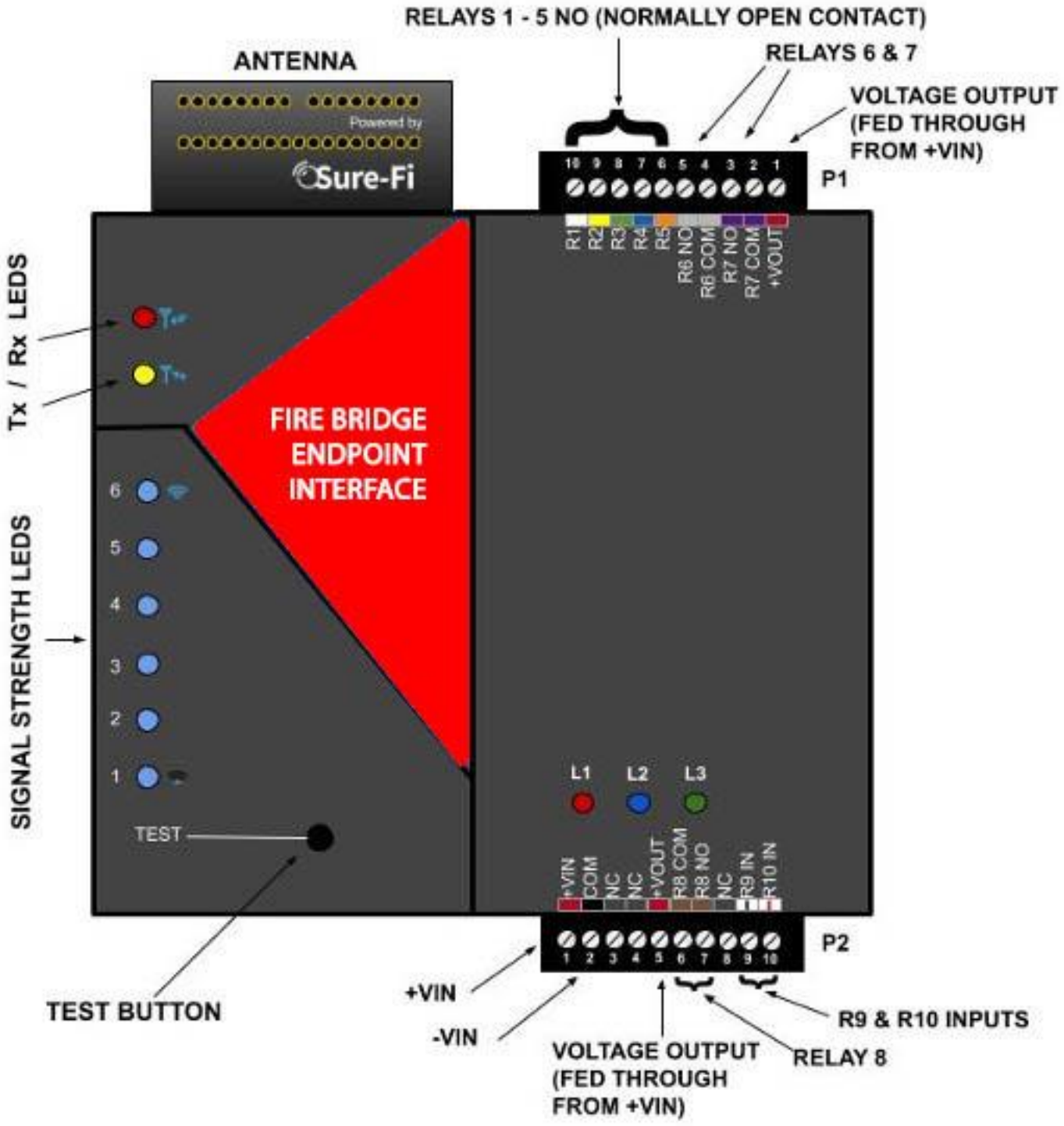
Controller Interface: Wire Functions & Colors

Figure-6: Control Interface wire functions and colors

NAME	WIRE COLOR	DESCRIPTION
R1 IN	WHITE	RELAY 1 CONTROL INPUT
R2 IN	YELLOW	RELAY 2 CONTROL INPUT
R3 IN	GREEN	RELAY 3 CONTROL INPUT
R4 IN	BLUE	RELAY 4 CONTROL INPUT
R5 IN	ORANGE	RELAY 5 CONTROL INPUT
R6 IN	SLATE	RELAY 6 CONTROL INPUT
R7 IN	VIOLET	RELAY 7 CONTROL INPUT
R8 IN	BROWN	RELAY 8 CONTROL INPUT
R9 NO	BLACK/WHITE	RELAY 9 NO TERMINAL (RELAY COMMON CONNECTED INTERNALLY TO +VIN INPUT VOLTAGE)
R10 NO	BLACK/RED	RELAY 10 NO TERMINAL (RELAY COMMON CONNECTED INTERNALLY TO +VIN INPUT VOLTAGE)
-VIN	BLACK	-VIN (INPUT POWER CAN BE CONNECTED HERE OR USING J4 SCREW TERMINAL ON BACK)
+VIN	RED	+VIN (INPUT POWER CAN BE CONNECTED HERE OR USING J4 SCREW TERMINAL ON BACK)

Device Overview: Endpoint Interface

Figure 2: Endpoint Interface overview.



Bottom edge connector: Endpoint Interface

Figure 16: Endpoint Interface Bottom Edge Connector (See Figure 2 for reference).

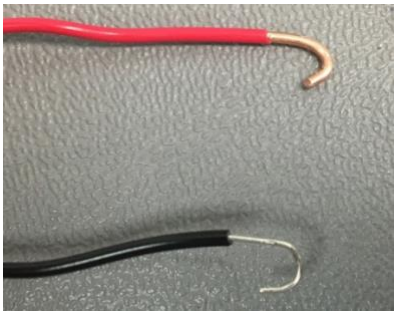
POSITION	NAME	DESCRIPTION
1 (left)	+VIN	+VIN
2	-VIN	-VIN
3		NOT CONNECTED
4		NOT CONNECTED
5	+VOUT	USE FOR OUTPUT VOLTAGE FOR R8 COM, FED DIRECTLY FROM THE +VIN VOLTAGE INPUT
6	R8 COM	RELAY 8 COMMON CONTACT
7	R8 NO	RELAY 8 NORMALLY-OPEN TERMINAL
8		NOT CONNECTED
9	R9 IN	RELAY 9 CONTROL INPUT
10 (right)	R10 IN	RELAY 10 CONTROL INPUT

Top Edge connector: Endpoint Interface

Figure 17: Endpoint Interface Top Edge Connector (See Figure 2 for reference).

POSTION	NAME	DESCRIPTION
1 (Right)	+VOUT	CONNECTED DIRECTLY TO THE +VIN VOLTAGE INPUT
2	R7 COM	RELAY 7 COMMON TERMINAL
3	R7 NO	RELAY 7 NORMALLY-OPEN TERMINAL
4	R6 COM	RELAY 6 COMMON TERMINAL
5	R6 NO (E)	RELAY 6 NORMALLY-OPEN TERMINAL
6	R5 NO	RELAY 5 NORMALLY-OPEN TERMINAL
7	R4 NO	RELAY 4 NORMALLY-OPEN TERMINAL
8	R3 NO	RELAY 3 NORMALLY-OPEN TERMINAL
9	R2 NO	RELAY 2 NORMALLY-OPEN TERMINAL
10 (left)	R1 NO	RELAY 1 NORMALLY-OPEN TERMINAL

Figure-9: Connecting 24VAC: The 24VAC (R) and (C) wires are shown connected to the J4 and J5 screw terminals.



Deployment Examples: Endpoint Interface

Providing Power to the Endpoint Interface:

IMPORTANT

Turn off the 24VAC power before connecting to the Endpoint Interface. Do not turn on the 24VAC power until all of the wiring between the Endpoint Interface and the connected equipment is complete.

Connect the wires for the 24VAC input power to the +VIN (R) and COM (C) terminals of the Endpoint Interface

Wiring the Endpoint Interface to the Fire Monitoring Equipment:

[CONTENT NEEDED]

Endpoint Interface: Test (Range Test) Push Button

Range Test: Pressing and releasing the 'Test' button quickly initiates the Range Test. The Range Test feature is used to test the signal strength of the radio transceiver between the Equipment and Controller Interfaces. The result of the Range Test is displayed on the six blue LEDs, these are labeled 'Signal Strength LEDS (1 – 6)' in Figure 13. Maximum signal strength is indicated when LEDs 1 through 6 all flash ON momentarily, and minimum signal strength is indicated when only LED 1 flashes ON.

Controller Interface: Status LED (Refer to Figure 2)

1. Status LED: The Green Status LED is located on the side of the Controller Interface unit. The LED is mounted to the board and is visible through a small hole in the side of the case. The LED uses flash-codes to show system status and can be used to assist with troubleshooting.

Endpoint Interface: LEDS (Refer to Figure 13)

1. Rx LED: The Rx LED will flash once briefly when a Sure-Fi radio transmission is received.
2. Tx LED: The Tx LED will flash once briefly upon a radio transmission.
3. Signal Strength LEDs: These six LEDs display the received signal strength. Maximum signal strength is indicated when LEDs 1 through 6 all flash ON. Minimum signal strength is indicated when only LED 1 flashes ON.
4. Heat (Red), Cool (Blue), and Fan (Green) LED's: The red 'Heat' LED will light when the Endpoint Interface R1(W,O/B) output is ON. The blue 'Cool' LED will light when the Endpoint Interface R2(Y) output is ON. The green 'Fan' LED will light when the Endpoint Interface R3(G) output is ON.

   The Red, Blue, and Green LEDs will only correspond with the Heat, Cool, and Fan functions if both the Controller Interface and the Endpoint Interface are wired accordingly.

Endpoint Interface: Antenna

The radio antenna is created using copper traces on both sides of the PC Board. Use caution when handling and mounting the unit to ensure that no damage (scratches, etc) occurs to the PC Board/Antenna. Additionally, for best performance, keep cables and wiring away from the antenna and mount the unit oriented with the antenna upwards.

Endpoint Interface: Connectors

The top and bottom connectors are 10-position, 3.5mm EURO type. The mating plug is Molex pn 39500-0010. Wire Range: 16 to 30AWG. Wire strip length 0.250". Recommended screwdriver: slotted blade 0.98" width. To install a wire, turn the screw counter-clockwise 3 or 4 turns, insert the wire and hold in place while tightening the screw. When complete, pull on the wire to ensure that it is tightened adequately.

Mounting Orientation and Guidelines

Controller Interface Unit:
The Controller Interface unit can be mounted on the wall in the vertical or horizontal orientation or it can be placed within the wall. The hole spacing is 3.25" which will fit a single-gang electrical box if required. The hole is sized for up to a #8 screw size.

The Endpoint Interface Unit:
The Endpoint Interface unit will function optimally when oriented with the Antenna positioned at top side of the unit and mounted vertically (see Figure 19). For the best RF range, route all wires and cables away from the Antenna and avoid having any wires crossing directly over the Endpoint Interface unit.

There are two common methods for mounting the Endpoint Interface Unit:
DIN Rail mount:
DIN rail mounting allows the unit to easily clip and unclip from the DIN rail. Attach a piece (minimum 4" length) of 35mm type DIN rail to the wall and then snap the unit to the DIN rail or slide it on from the end. The unit will snap in to place by putting the top retaining tabs on to the DIN rail first, then pressing the bottom on to the DIN rail until it snaps in to place, the bottom DIN clip may need to be pressed upward to seat into its locked position. To remove the unit from the DIN rail, use a small screwdriver, insert in to the bottom DIN rail clip and pull gently down and outward until the unit releases from the DIN rail.

Screw mount:
The DIN rail clips on the base of the enclosure case can be snapped outward to allow for screw mounting of the case. Mount using only the single bottom DIN clip and the top DIN clip that is located on the side below the 10-position connector. Do not use the DIN clip located behind the antenna. See Figures 20 – 24.

If mounting the unit to metal, take note that metal shavings that are created can drop into the unit and damage the electronics. To avoid any metal shavings from dropping down in to the case, it is recommended to remove the top DIN clip completely from the base and secure it to the wall first, then slide the case on to the DIN clip. The second screw can then be secured through the bottom DIN clip without removing the clip. #8 self-drilling screws are recommended. Do not use any screw that is larger than a #8 size.

Figure 18: The two DIN Clips are shown pressed outward for direct screw mounting.

Figure 19: Top DIN Clip is shown removed from the base to mount the DIN clip separately.

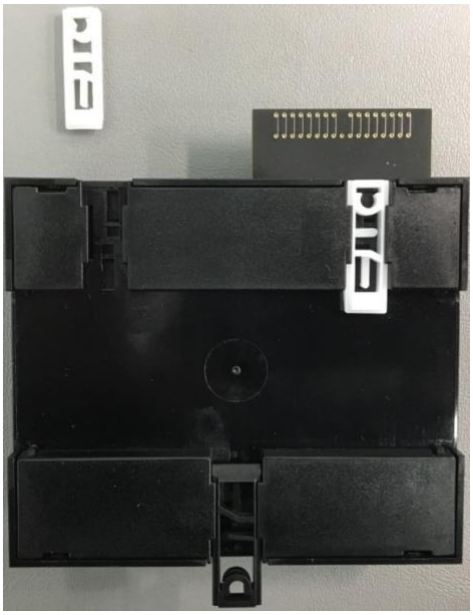


Figure 20: Top DIN Clip is shown mounted first to avoid any metal shavings from dropping in to the case.

Figure 21: The DIN clip on the top is shown secured with a #8 screw and the base reconnected to the DIN clip.

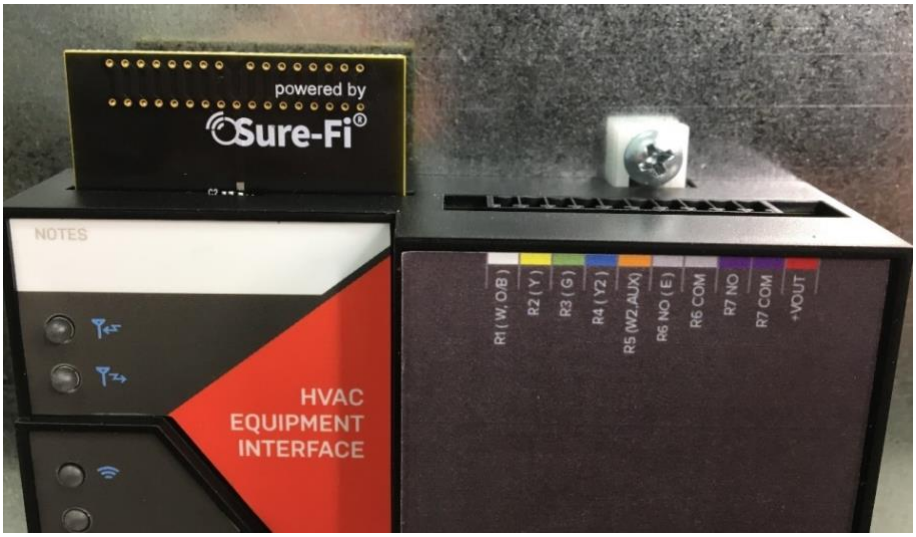


Figure 22: The DIN clip on the bottom is shown secured with the #8 screw:

Troubleshooting

If the Controller does not appear to be communicating with the Endpoint Interface:

Range Test:
Press and release the 'Test' button on the Endpoint Interface unit and observe the six Signal Strength LEDs. If any of blue LED 1 through LED 6 LEDs light up (flash), then the radio transmission between the two units was successful which means that the two units are powered, operating, and can transmit and receive properly. Perform the Range Test several times to ensure communications and note how many of the blues LEDs are lighting up.

Next, check the following:

1. Check for proper power input (20 to 30VAC)
2. Ensure that all wiring is correct
3. Check that all wiring connections are securely connected
4. Check that the wire insulation is stripped back far enough and is not interfering with the electrical connection in the pluggable terminal connector.
5. Ensure that the 10-position pluggable terminal connectors are plugged in and seated down all the way.
6. Ensure that the 10-position pluggable terminal connectors are not offset to left or to the right.

Sure-Fi APP:

The Sure-Fi APP allows for firmware updates and configuration as well as for some diagnostics and troubleshooting information. The APP is continually being updated to provide for more information and features and to improve its ease of use. To download, search for 'Sure-Fi' and then download and install. The key features of the APP are:

- Field firmware updates
- Setting default Relay output values upon a set timeout interval (in increments of the Heartbeat time)
- Changing the system Heartbeat time
- Diagnostics and Troubleshooting
- Access to documentation (Operators Manual, Application Notes, Reference documents, etc.)
- Pairing multiple Endpoint Interface units to one Controller Interface unit

FCC and Industry Canada Regulatory Statements

FCC
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. Any changes or modifications not expressly approved by manufacturer could void the user's authority to operate the equipment.

IMPORTANT! Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

IMPORTANT! Tous les changements ou modifications pas expressément approuvés par la partie responsable de la conformité ont pu vider l'autorité de l'utilisateur pour actioner cet équipment.

47 CFR 15.105- FCC

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/ TV technician for help.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada

FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Important Note:
Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Note Importante: (Pour l'utilisation de dispositifs mobiles)
Declaration d'exposition aus radiations:
Cet équipement est conforme aux limites d´exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipment doit être installé et utilisé avec un mimimum de 20 cm de distance entre la source de rayonnement et votre corps.

Warranty

The warranty period of this product is 5 years from purchase date, beginning from first power up of the device after purchase. During this period, if the product does not operate correctly, due to a defective component, the product will be repaired or replaced at the sole discretion of Sure-Fi, Inc. This warranty does not extend to the product casing which can be damaged by conditions outside of the control of Sure-Fi, Inc.

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