WaveLynx Technologies

Fusion IP Reader Installation Guide Rev 0.3

Overview

The Fusion IP Reader is a self-contained RFID Reader and Door Controller. The reader supports 125 kHz, 13.56 MHz, and Bluetooth credentials, while capable of powering up to 500 mA for Door Strike or Magnetic Lock control.

For In / Out scenarios, the Fusion IP Reader can power and communicate to an external reader through Open Supervised Device Protocol (OSDP) v 2.1.8.

The device is powered from Power over Ethernet (PoE) and/or a 10VDC – 15 VDC DC Power.

UL Listed when powered using a UL approved DC Power Supply.

Wiring

Install according to ANSI/NFPA70 National Electrical Code and local codes.

All wiring except for the CAT5 Cable shall be shielded wire.

For IP connectivity a Female CAT5 cable comes out the back of the Fusion IP Reader.

Door control and external reader communication utilizes a 10 wire pigtail (note there are two ground wires):

Red	12 V Out
Black	Ground
Brown	Switched Ground/ +12v Trigger
Orange	12 V In
White	RS485B
Green	RS485A
Purple	AUX
Yellow	DSM
Blue	REX

Power In

- DC Power In is rated from 10VDC to 15 VDC. DC Power shall be provided through a UL294 approved Power Supply with Class 2 limited output.
- Optionally power can be supplied through Power over Ethernet through the RJ45 connector

- In the case of both DC power and PoE, the Fusion IP Reader will draw power from the DC power source.

Lock Control

Magnetic Lock or Door Strike is controlled through the Switched Ground.

Switched Ground

Switched Ground enables the Ground (powering the lock) or disables ground (releasing power from the lock). Fusion can source up to 500 mA of current through its 12V Out.

Connect the positive side of the lock to the 12V Out and Ground wire of the lock to the SW GND of the IP Reader.

Configure the default power as either Power-On or Default Power-Off through the software.

Additionally, the Switched Ground can be utilized as an input to a PIR sensor.

+12V Trigger

Some locks require power and then a trigger to lock/unlock. For these use cases, the lock should be powered with the Red and Black wires from the Fusion IP Reader. The Brown Wire is then connected to the trigger line. Fusion should then be configured to have the Door Control line to +12V Trigger, in which case the Brown line will toggle between floating and then pulled high to +12V.

Note that the +12V trigger value is pulled high with a 300 ohm resistor and is not meant to be used as an additional 12V power source.

Reader

Communication to an external reader is performed through OSDP.

The Fusion IP Reader can communicate to external readers connected through 1,000 ft of twisted pair, 24 AWG wire at 9600 Baud.

The Fusion IP Reader was tested by UL with the Ethos Reader Line.

Total Output Power

When powered from PoE the Fusion IP Reader supplies a total of 650mA of current at 12VDC.

Inputs

Connect the door switch monitor to the DSM connector.

Connect the request to exit monitor to the REX connector

If there is an additional Input monitor, connect it to the AUX.

Reader Mounting

- Screw wallplate onto wall along with large center hole for wiring
- Wire the pigtail following wiring instructions and secure pigtail securely to backplate of the reader using screws attached to the pigtail
- Attach RJ45 cable

- Mount reader onto wallplate and secure with security screw.

Specifications and Troubleshooting

General Specifications	
Input Power	Power over Ethernet (PoE) and/or 10 – 15VDC. Maximum Input power when powered by a DC power supply is 900 mA
Output Power	9 VDC – 15VDC based on DC Power Supply - 12 VDC when powered by PoE. Sourcing up to 700 mA. 12V Outputs are Class 2, power-limited circuits
Reader Communications	Single Half-Duplex RS485 OSDP
Door Control	Switched 12V Power or 12V Triggers
Temperature	-40° to 150.8° F (-40° to 66° C) and 85% humidity if DC Powered or PoE powered with 250mA of sourced current. -40° to 122° F (-40° to 50° C) if PoE powered and supplying maximum external current.
Tamper	Accelerometer Based Tamper
A/V	Red / Green / Blue LED bar and 4 kHz buzzer
UL294 Performance Levels	Destructive Attack: I Line Security: I Endurance: IV Standby Power: I

Troubleshooting

- When device is powered, the reader board LED's turn on
- Ensure I/O Cable pigtail has been properly screwed onto reader backplate

Bluetooth

The Fusion IP Reader can communicate with approved applications running on iOS 9.0 or later and Android 5.0 or later.

Regulatory

EN302291, EN301489, EN300330, IP55, UL294

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 telecommunication equipment conforms to NTC technical requirement

This device complies with Industry Canada licence-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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.