Introduction

This wiring guide provides basic instructions for common RF IP Reader installation scenarios.

Note: VT is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

Product Description

The Elpas RF IP Reader is a 433MHz fixed receiver, which forwards real-time 'Location' and/or 'State' data detected from Elpas Active RFID Tags to host RTLS applications such as the Eiris Enterprise Software Platform.

Indoor RF IP readers (P/N: RFB00433 & RFB00433-2) support read distances up to 20m/65ft (360° coverage area) in open office environments while the outdoor RF IP reader (P/N: RFB00433-L) supports read distances up to 200M/650ft using an optional Yagi directional antenna in warehouses, garages or exterior building spaces.

The RF IP reader can be installed anywhere onto standard Ethernet/Wi-Fi networks for connection to the host RTLS application. The reader also serves as a RS-485 BUS Master for relaying bi-directionally, data between the host application and up to 15 Elpas BUS devices (RF or IR Readers, IO devices, RDUs or LF Exciters) using Elpas RS-485 Junction Boxes (P/N: 5-JBA00485).

The on-board I/Os of the RF IP Reader supports monitoring of one wired device input (such as a door contactor or alarm detector) and the control of two open-collector digital switched outputs (such as alert annunciators and electric door locks).
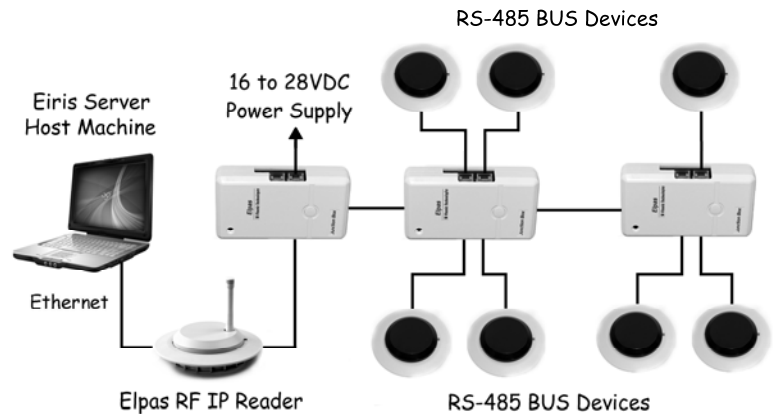
Elpas RF IP Reader - Sample Network Topology
(Refer to page 2 for wiring & specification details)

Circuit Board Terminal Blocks

Ethernet Interface: The RF IP Reader has a female RJ-45 (8P8C) connector for linking the reader via Ethernet to the host RTLS application machine such as the Eiris Enterprise Software Platform.\

Recommended Cable: CAT5 shielded cable.

RS-485 Interface: The RF IP Reader includes both a four position color-coded removable terminal block (J3) and a 6-pin female RJ-11 connector (J4) for wiring RS-485 data and power. (See page 2 for details.)

NOTE: Only one of the two interfaces (the RJ-11 connector or the terminal block) can be used at a time to wire the reader to the RS-485 BUS.

Tamper Switch: The RF IP Reader contains a spring loaded tamper switch that when pressed, generates a 'State' message that is useful for registering the device in the host application.

Once registered, the tamper switch can also be used as an input trigger for a device tamper alert indicating any non-authorized attempts to remove the device's cover.

Input/Outputs: The reader has one analogue input (J2).

End-of-the-Line (EOL) circuit supervision may be employed to detect the following fault conditions: Open, Close, Line Cut and Line Short. (See page 2 for details) The reader also contains two digital open-collector outputs (J1) located on the right-hand side of the board.
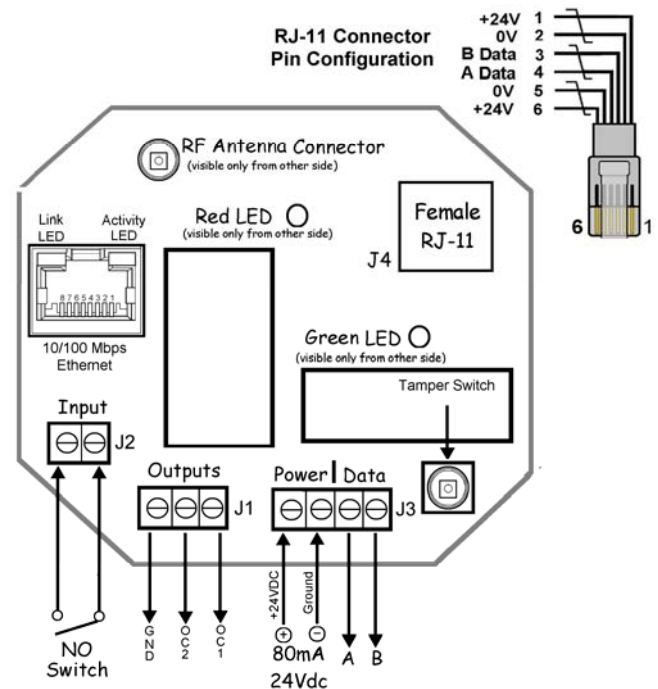
Max Distance: Refer to wiring topology on page 2.

Power: When reader is connected to the power source, the green LED flashes one time upon power-up.

Power Requirements: 100mA/24VDC
Recommended Cable: CAT5 Stranded (4x2x26AWG
Max Distance: Refer to wiring topology on page 2.

Elpas RF IP Reader – Circuit Board Details

IMPORTANT: The reader **MUST BE** powered-down while wiring the unit's I/Os and when connecting to the RS-485 BUS. This will prevent accidental shorts or power spikes causing damage to the reader.

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Supervised Analogue Input

The RF IP Reader has one analogue input (Terminal Block J2). Using the Elpas End-of-Line Terminator (P/N: 5-IOX00001), EOL supervision may be added to the input to detect: Open, Close, Line Cut and Line Short circuit conditions.

Recommended Cable: 22 AWG, unshielded/twisted pair

Digital Outputs

The RF IP Reader has two general purpose digital outputs (Terminal Block J1) that provide open-collector switching (up to 100mA, 28VDC).

Recommended Cable: 22 AWG, unshielded/twisted pair

RS-485 BUS/Stub Topology

The RS-485 BUS **MUST Be** wired using a BUS/Stub topology where the RF IP Reader is connected at any location along the BUS. This configuration supports data transmission between the Elpas RF IP Reader and up to 15 Elpas BUS Devices (such as RF readers, IR readers; LFs RDUs and I/O Boxes)**,** using multiple Elpas RS-485 Junction Boxes (P/N: 5-JBA00485).

IMPORTANT NOTE: Only 1 RF IP Reader and up to 7 RF BUS Readers may coexist together on a single RS-485 BUS.

200M/650Ft: Max. BUS length   **10M/30Ft**: Max. Stub length   **100 Ohm Termination**: Required each end of the BUS.

RS-485 Junction Box - Sample Wiring Topology

Recommended RS-485 Backbone Cable Type: CAT5 Solid (4x2x26AWG)
For Power: Use three-twisted pairs (six conductors) between RS-485 Junction boxes
For Data: Use one-twisted pair (two conductors) between RS-485 Junction boxes

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