

Elpas LF BUS Exciter

For P/Ns: 5-ALA00125-11, 5-ALA00125-12 & 5-ALA00125-2

Introduction

This wiring & installation guide provides basic instructions for common LF BUS Exciter installation scenarios.

CAUTION! It is important that you read, understand, and follow the instructions in this document. If you have questions, call your local VT support representative.

Product Description

The Elpas LF BUS Exciter is a fully supervised, 125KHz emitter that adds instantaneous location (choke-point) awareness to RTLS security and safety applications

The LF BUS Exciter generates a user-adjustable, spherical shaped electromagnetic field up to 1.5m/5ft in radius that can be used to cover a single interior doorway. Optionally, up to four LF BUS Exciters can be deployed in 'Primary–Secondary' star or daisy-chain topologies to cover large double-doors or architectural complex indoor entrance/exit areas

The LF BUS Exciter also contains an I/O port that enables the monitoring of one alarm sensor and control of either one digital open-collector output or one 26-bit Wiegand device

Note: An Elpas RS-485 BUS may contain up to fifteen Elpas BUS devices (such as RF or IR Readers, Elpas Display Panels, LF Exciters or other Primary BUS Exciters) which are wired together using Elpas RS-485 Junction Boxes (P/N:5-JBA00485).

Primary/Secondary Exciters – Front View

Front Cover Tamper Switch: All BUS exciters contain a tamper switch which indicates non-authorized attempts to remove the device's front cover when in operation.

The tamper switch is also used to control the coverage area of the LF field. (See page 4 for details.)

Status LED: All BUS exciters contain a Red, Green and Orange LED array that detail the status of the devices:

- Green LED
- Unregistered: Flashes once/second
- Power up/Communication Loss/Sync Cable Disconnected: Flashes once/second
- Red LED
 - Invalid ID: Flashes once/second See page 4 for additional details
 - Device Tamper: Flashes once/second
 - o Output Activated: Flashes once
- Orange LED
 - Flashes to indicate the selected LF field range See page 5 for additional details

DIP Switch: Only the Primary Exciter has an eight-position DIP Switch for assigning its ID Address. (See page 4 for details.)

Primary/Secondary Exciters – Rear View

Rear Cover Tamper Switch: All BUS Exciters contain a dual purpose tamper switch which indicates non-authorized attempts to remove the device's rear cover when in operation.

RS-485 Interface: All BUS exciters contain a female RJ-11 connector for linking to the RS-485 Junction Box. This connector is used for both power & data. (See page 2 for details)

Buzzer: The exciter has a buzzer that sounds when an improper ID Address has been assigned. (See page 4 for details.)

General Purpose Inputs: All BUS Exciters have general purpose inputs. (See page 6 for details.)

Digital Output: The primary exciter and the secondary exciter have one digital output. (See page 6 for details.)



LF BUS Exciter (Primary) - Sample Network Topology





LF BUS Exciter (Rear View)

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

RS-485 BUS/Stub Topology

The RS-485 BUS **MUST BE** wired using a BUS/Stub topology where the BUS Master (a RF IP Reader or an ELC Controller) is connected anywhere along the BUS. The topology supports data transmission between the BUS Master and up to 15 Elpas BUS Devices (such as RF or IR Readers; LF Exciters primary & secondary), Elpas Display Panels and 6x6 I/O Modules using Elpas RS-485 Junction Boxes (P/N: 5-JBA00485).

IMPORTANT NOTE: Only 1 RF IP Reader/ELC Controller and up to 7 RF BUS Readers may coexist together on a single BUS.

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



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

Primary/Secondary Synchronization

Up to four LF BUS Exciters can be deployed in 'Primary–Secondary' **Daisy-Chain** or **Star Topologies** in order to cover large double-doors or architectural complex indoor entrance/exit areas.

When deploying either of these two topologies, the LF fields generated by the secondary exciters **MUST BE** synchronized to pulse at precisely the same moment in time as the LF field generated by the primary unit in order to avoid mutual interference between any of the LF fields.

To implement Primary/Secondary Synchronization a **Sync Data Link** (typically using a 2x2x26 Category 5 cable) needs to be physically connected between the Primary Exciter and all of the Secondary devices.





Primary/Secondary Synch Data Connection Diagram – Daisy-Chain Topology

Primary/Secondary Synch Data Connection Diagram – Star Topology



ID Address Setup

Before initial power-up, the Primary LF BUS Exciter must be assigned a unique ID Address (Neuron ID) in order for the Eiris Software Platform or an Elpas Local Controller to be able to identify the device. Convert the Neuron ID (typically using a scientific calculator) into the two-digit hexadecimal number that correctly corresponds to the DIP switch found on the LF Exciter. This hexadecimal number will be used to register the exciter's ID address into the EIRIS or the ELC database.

NOTE: It is vital that a newly assigned ID Address does not conflict with any other ID Address that has already been assigned to any other exciter.

The following Neuron ID Addresses SHOULD NOT BE ASSIGNED to the Primary LF BUS Exciter: 0x00 (0000000), 0x13 (00010011), 0x35 (00110101), 0x4B (01001011), 0x4D (01001101), 0x5C (01011100), 0xB8 (10111000), 0xD5 (11010101), 0xDC (11011100), 0xFF (11111111), 0xFE (1111110) and 0x7F (0111111).

Should any of the above ID addresses be assigned by mistake, the exciter will not properly function. Additionally the exciter's Red Status LED will continually flash; and the device's buzzer will repetitively sound.

Use the exciter's 8-poisition DIP Switch to set the ID address (in binary format) of the exciter as illustrated below.

The ID address is assigned using a binary coded hexadecimal number.





Together, the two hexadecimal digits provide a total of 256 possible Neuron ID addresses



Below are three examples of addresses set in hexadecimal:



Ê Visonic Technologies Enterprise Protection Sol

LF Field Adjustment

The size of the LF field generated by any of the BUS Exciters can be adjusted using the device's Front Cover Tamper Switch to control the actual coverage of the LF field and to reduce the unwanted signal penetration.



For Primary Exciters: Primary Exciters support four ranges from10cm/4.0 inches to 1.5m/5ft in radius. To cycle to the next range press the tamper switch twice.

Each time you cycle to the next LF field range, the Orange LED will flash the applicable number of times to indicate the selected range:

- One flash Shortest range
- Two flashes Medium 1 range
- Three flashes Medium 2 range
- Four flashes Maximum range

For Secondary Exciters: Secondary Exciters support only the Medium 2 and Maximum Ranges. To cycle between the two ranges press the tamper switch twice. There will be no LED indication of the selected field range.

NOTE: In practice the coverage area (for each range mode) regardless of exciter type may vary +/- 20% by specific Active RFID Tag as well as the active RFID Tag's physical orientation in relation to the LF field.

Single Door Placement

Mount the primary exciter on the wall adjacent to the opening side of the door, at a height of 1.2m/4Ft. above the floor.

Exciters **MUST NOT BE MOUNTED** on any metallic surfaces and should be positioned at least 30cm/12in from any metal barriers (such as signs/pillars/beams) in any direction

Additionally all exciters **MUST BE MOUNTED** as far away as possible from all other pieces of equipment that may emit magnetic fields (such as large electrical motors, HVAC and refrigeration compressors.



Double Door Placement

A primary/secondary configuration may be installed by mounting the primary exciter to the right of the double door entrance area and up to three secondary device(s) to the left of the doors, at a height of 1.2m/4Ft above the floor. Ensure that all of the exciters are no more than 1m/3ft from the doors. The resulting LF fields are automatically synchronized in real time to avoid problems associated with coverage area overlap.



Possible LF Field Penetration Through Walls & Doors

General Purpose Inputs

Both the primary exciter (P/N: 5-ALA00125-12) and the secondary exciter (P/H: 5-ALA00125-2) have two general purpose inputs designated IN1 and IN2.

EOL supervision may be added to either of these inputs to detect: Open, Close, Line Cut and Line Short circuit conditions using optional Elpas End-of-Line Terminators (P/N: 5-IOX00001).



Note: Primary exciters that contain the Wiegand output option (P/N: 5-ALA00125-11) contains only Input1.

Transmission Suppression Option

Input1 on all BUS Exciters may be used to disable the LF field by shorting IN1 with GND. This allows the user to temporary override the exciter with a security detector, such as a passive infrared.

However Input1 may be used as a normal general purpose input when an Elpas End-of-Line Terminator, (P/N: 5-IOX00001) is connected to the input as illustrated in the above section.

Digital Output

Both the primary exciter (P/N: 5-ALA00125-12) and the secondary exciter (P/H: 5-ALA00125-2) have one general purpose digital output, which provides open-collector switching (up to 100mA, 28Vdc).





Wiegand Output

Primary exciters with the Wiegand output (P/N: 5-ALA00125-11) provide one 26-bit Wiegand output (instead of a digital output) for sending Elpas tag IDs to third-party access control panels.



Recommended Cable: 22 AWG, unshielded/twisted pair