

Inner Range Integrity/Inception.

Inovonics™ RF LAN Expander Module. P/N: 996008

INSTALLATION AND APPLICATION GUIDE

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Overview

The Inovonics™ RF Expander, designated as an “F” Type module, provides an interface for Inovonics™ security transmitters such as detectors, universal transmitters and user pendants. *Refer to:*

- The “Transmitter Compatibility Guide” chapter in this manual for the list of supported transmitters.
- The ‘Inovonics Security Product Guide. Australia/New Zealand’ for detailed transmitter product descriptions.

The number of devices supported is determined by the Controller Input and User licensing. There are no Auxiliaries on this Module.

Power is sourced from the LAN or a separate battery-backed external supply.

Depending on type, Transmitters are processed as Zone Inputs or User RF remotes. Some devices can be processed as either type depending on how they are enrolled in the system.

Repeaters can be used to extend the range of the system. The Repeater device ID can be assigned to an RF Zone Input to allow Repeater problems to be monitored.

Refer to the “Inovonics Repeater Monitoring...” chapters in this manual for details.

Up to 32 Detectors can be monitored by each Module as Zone Inputs. User pendant transmissions can be received via any RF Expander Module in the system. Transmitters must be registered via simple procedures described on page 7, before they can be used. Once registered, system programming is then performed to specify their operations. An RF Zone indicates an Alarm state when the device is in alarm, and a Tamper state when the housing is opened. A ‘Detailed Review’ option is available to log information including transmitter signal strength which can assist in commissioning and troubleshooting.

COMPATIBILITY: *Integrity Controller Firmware & Software must be V17 or later.*
 Inception Controller must be V1.2.1 or later.
 For use in Australia, New Zealand or North America only.

Parts List

- RF Expander Module/EN4200 Receiver in plastic enclosure with mounting kit.
- Integrity/Inception Inovonics RF Expander Module Installation Manual. (This doc.)
- Inovonics EchoStream Serial Receiver Installation Instructions. (Note: Step 2.3 and the 'Power requirement' spec. in this document are not relevant in this application)
- 1 x 4 Way Plug on Screw Terminal. (Pre-fitted to RF Expander Module)

Specifications

Power Supply Input:	11.5V to 14V DC
Current Consumption.	115mA.
Installation environment:	0° to 50° C. 15% to 85% Relative humidity (non-condensing)
Enclosure dimensions:	165mm (Width) x 92mm (Height) x 28mm (Depth)
Zone Inputs:	32 Wireless zones.
Auxiliaries:	4. (Virtual Auxiliaries only. NO physical Auxiliaries)
RF Frequency Band:	915-925 MHz (Australia). 921-928 MHz (New Zealand). 902-928 MHz (North America)

Regulatory Information

UL294 Requirements

- Wiring methods shall be in accordance with the National Electrical Code (ANSI/NFPA70), local codes, and the authorities having jurisdiction.
- The Integrity Controller, remote Modules and UniBus in-cabinet expansion boards are acceptable for indoor use only and must be installed within the protected premises.
- If a local power supply is used, the AC power cord must not be plugged into an outlet controlled by a switch.
- Any power supply used with this product must be a UL Listed Access Control or Burglar Alarm, Low-Voltage Class 2, Power-Limited, power source capable of a minimum of 4 hours standby power.
- All cabling must be UL Listed and/or Recognized wire.
- All interconnecting devices must be UL Listed.

Installation

The RF Expander Module is supplied in a plastic enclosure which can be mounted in an appropriate location using fasteners through the four mounting holes in the base.

1. Choose a location. The Module should be installed where it is within reliable range of all devices that are to be associated with the Receiver and also meets the Integrity/Inception LAN cabling requirements. The module should also be installed away from metal objects (duct work, wire mesh screens, boxes) and away from areas of electrical interference which will reduce the RF range. The range and performance of any wireless product depends on the structure and environment in which it operates.
Refer to the Inovonics Security Product Guide and appropriate transmitter specifications and instructions for details of RF range.
2. Set the 'Frequency Band' link to "AUS" or "NZ" to suit the country of installation, or remove the link entirely for North American installations. *See page 4 for details.*
3. Set the Module Number using DIPswitches 1 to 7 as required. DIPswitch 8 must be Off. *See table below.*
4. Connect the LAN, connect the power supply (if required), test, then fit the enclosure cover. *See details on pages 3 - 5.*

DIPSwitch SW1:

The Module number is set using DIPswitches 1 to 7. The Module number equals $n + 1$, where n is the binary number set on DIPswitches 1 to 7. Switch 8 must remain OFF.

Module No:	DIPswitch:	1	2	3	4	5	6	7
	Binary Value:	1	2	4	8	16	32	64
1		off	off	off	off	off	off	off
2		ON	off	off	off	off	off	off
3		off	ON	off	off	off	off	off
4		ON	ON	off	off	off	off	off
5		off	off	ON	off	off	off	off
6		ON	off	ON	off	off	off	off
7		off	ON	ON	off	off	off	off
8		ON	ON	ON	off	off	off	off
9		off	off	off	ON	off	off	off
etc., through to								
99 (Integriti)		off	ON	off	off	off	ON	ON
OR								
128 (Inception)		ON	ON	ON	ON	ON	ON	ON

Earth Connection:

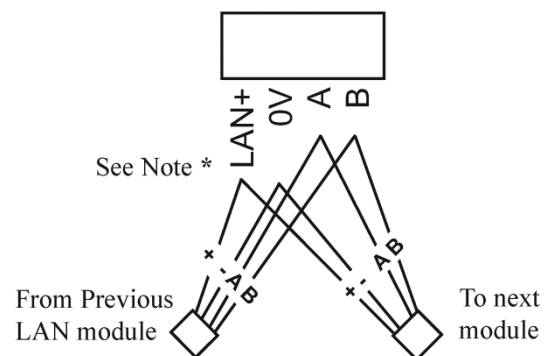
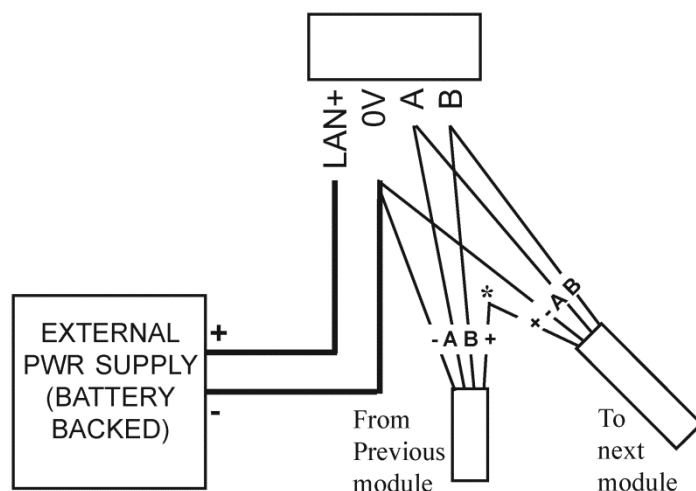
The Inovonics RF Expander Module does not have an earth terminal and in a normal installation a connection to earth is not required.

If the LAN cabling connected to the Module passes through areas where electrical interference may exist, is installed outside a building, or is a very long run, then the Inner Range LAN Surge Diverter (P/N: 995041) may be used and connected to an effective EARTH to minimise interference. Inner Range products that are mounted in a metal chassis and have transformers, provide an earth point on the chassis, while three-wire plug packs provide connection to earth through the earth wire.

LAN and Power Supply Wiring

MODULE POWERED FROM THE LAN

* Note: If both “LAN +VE” wires provide a Power supply source, the one that is not required to power the Reader Module must NOT be connected.



MODULE POWERED FROM EXTERNAL SUPPLY

Heavy duty Fig. 8 cable (24/0.20 or 14/0.20) recommended for Ext. Power Supply wiring.

* Note: If required, the LAN to subsequent Modules may derive +12V from “LAN+” or the incoming LAN cable.

The Inovonics™ RF Expander Module Assembly

1. ANTENNAE

The Antennae must be kept clear of any power or LAN wiring.

2. RESET (LEARN) BUTTON

3. FREQUENCY BAND

Set for correct country/region of installation. (Power down before changing)

AUS Australia

NZ New Zealand

Not Fitted North America

For Aust. or NZ installations do not leave unfitted.

(Removing the link altogether selects the North American frequency band)

4. RECEIVER INDICATOR LED. 'DEC'

Decode. On when the receiver is decoding an RF transmission from an Inovonics Wireless device.

5. RECEIVER INDICATOR LEDS

TX Data being sent to the Integrati system.

RX Data being received from Integrati.

6. TAMPER SWITCH

Check that spring is in place before fitting cover.

7. HOUSING RELEASE TAB

8. JP1

Serial interface connection to EN4200 Serial Port.

9. INDICATOR LEDS

L5 RF RX. Valid Wireless message received.

L6 RF TX. Not used.

L1 (Rx). LAN Data Receive & FAULT Diagnosis

L2 (Tx). LAN Data Transmit & FAULT Diagnosis

FAULT. Fault condition exists.

SYS. System Status.

See tables on page 5 for full details.

10. DIPSWITCH

Switch 1-7. Module number. See table on page 2.

11. P1 Factory Use ONLY

12. T1. LAN & EXTERNAL POWER CONNECTIONS

LAN+ Connect LAN +ve IF Module powered from the LAN, OR +12V from External Battery-backed Power Supply.*

0V Connect LAN 0V (Negative).

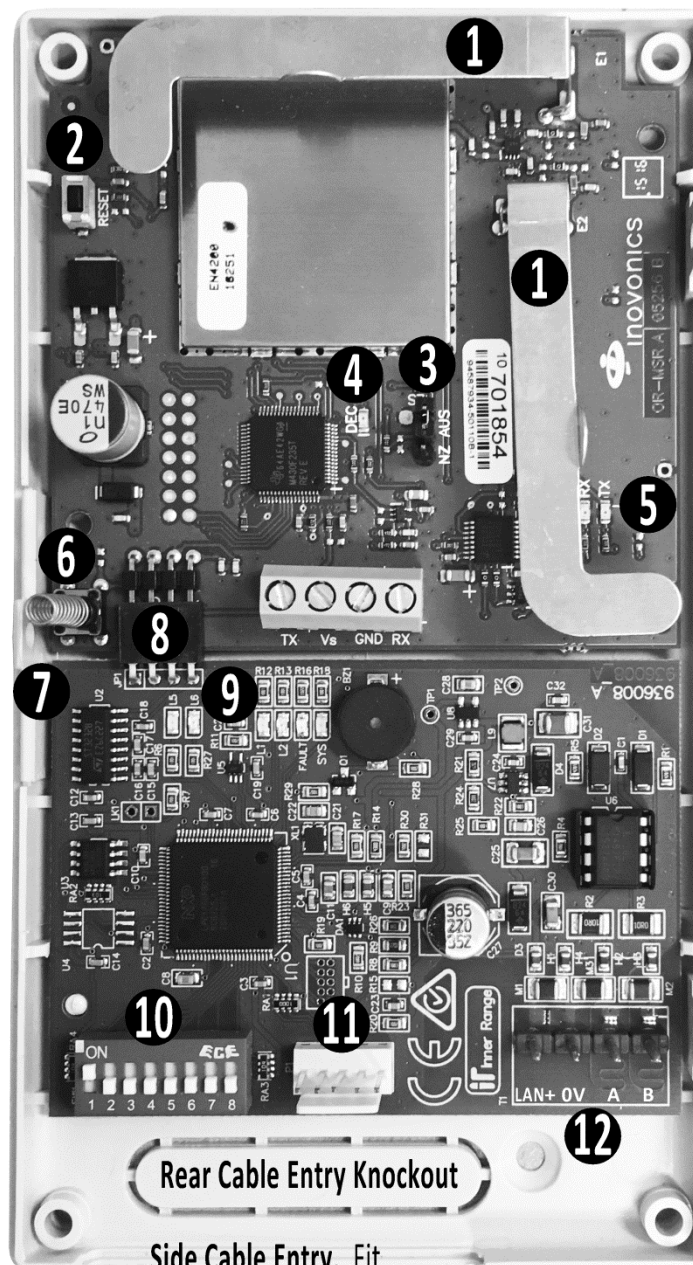
Connect 0V (Negative) from External Power Supply if used.

A LAN Data A connection.

B LAN Data B connection.

*NOTE: Positive (+) connections from two different power supply sources must never be connected together.

See "LAN & Power Supply Wiring" on page 3.



Side Cable Entry. Fit
supplied insert if not used.

Module Status and Fault LEDs

LED	DESCRIPTION	NOTES / REMEDY
L1 (RX)	Valid LAN packet received or LAN Fault/System Fault indication.	<i>See below.</i>
L2 (TX)	LAN packet sent or LAN Fault/System Fault indication.	<i>See below.</i>
FAULT	ON = LAN Fault.	<i>Refer to “LAN Problems” table below for fault details.</i>
	FLASHING: - & L1 FLASHING / L2 OFF = System Fault. Hardware problem. - & L1 OFF / L2 FLASHING = System Fault. Firmware problem.	Return to supplier for repair or replacement.
SYS	ON = Module is starting up.	
	FLASHING = Module is powered and firmware running OK.	
SYS & FAULT	BOTH FAST FLASHING = No valid firmware loaded. (RF Expander Firmware <u>prior to</u> V1.1.0 only.)	Return to supplier for repair or replacement.
L5	RF RX. Valid Wireless message received.	
L6	RF TX. Not used.	

LAN Problems. If ‘FAULT’ LED is ON.

L1(RX) L2 (TX) EXPLANATION / REMEDY

ON	ON	Module is un-addressed. Check LAN 0V, A & B connections.
OFF	ON	Module type unknown. Firmware upgrade required to Control Module. <i>See page 1 for compatible Controller firmware versions.</i>
Flash	ON	Duplicate Module. This module number is already in use by a module of the same type.
Flash	Flash	Module number selected is too big for Control Module RAM size or Memory Configuration. Select a lower Module number.
ON	OFF	Too many modules on the Network for Control Module RAM size.
ON	Flash	Module is disabled.
OFF	Flash	Module is disabled. (RF Expander Firmware <u>prior to</u> V1.1.0 only.)

System Programming

INTEGRITI

RF Zone Inputs: Program ‘Radio Expander’ module/s and ‘Inputs’.

User Pendants: Program ‘RF Remotes’, ‘RF Remote Templates’ and ‘Users’.

Refer to the ‘Transmitter Registration’ and ‘Integriti Inovonics Functionality’ chapters in this manual for additional information.

Full programming details are provided in the Integriti Programming Reference Manual.

INCEPTION

RF Zone Inputs: Program ‘IR-Inovonics RF Module/s’ and ‘Inputs’.

User Pendants: Program ‘Remote Fob Templates’ and ‘Manage Users’.

Refer to the ‘Transmitter Registration’ and ‘Inception Inovonics Functionality’ chapters in this manual for additional information.

Full programming details are provided via the Info buttons in the Inception browser.

NOTE: Additional programming may be required depending on the desired functionality.

Transmitter Registration

Depending on the type, Inovonics Transmitters are enrolled in an Integrity or Inception system as a Zone Input or a User Remote.

Typically, an Intruder detection device, Smoke/Heat detector or Universal Transmitter is enrolled as a Zone Input, while a Pendant is enrolled as a User Remote.

Some devices can be enrolled as either type allowing the device to be processed as a Zone Input or a Remote depending on the application.

e.g. An EN1223S Single-button Pendant may be enrolled as a Remote for use as a portable garage door controller, or enrolled as a Zone Input and installed in a fixed location for use as a call button.

INTEGRITY (NOTE: User Pendants are registered via a nominated RF Expander module, selected in the Controller 'Default Modules' options. The default is F01 (RadioExp: 01).

Transmitter Registration via Integrity Software (Recommended method):

- User Pendant (Remote) registration. If the Hexadecimal Device ID is known, it can be entered in the 'Remote Data' field under 'Credential' in 'RF Remote' programming.

If the Device ID is not known, use the 'Find Remote' dialogue. This is accessed in User programming by clicking on the 'From Review' button under the 'RF Remotes' tab.

When the 'Find Remote' screen is opened, press a User button on the Pendant.

- Zone Input registration is done in 'Radio Expander' module programming under 'Sensor Registry'. If the Hexadecimal Device ID is known, it can be entered in the 'RF Sensor ID' field for the required Zone Input. If the Device ID is not known, click on the selection button <...> at the end of the RF Sensor ID field. This opens the 'Sensor ID Picker' window allowing you to view/search past or real-time RF Transmitter events to select a Transmitter ID. Press the Reset/Learn button on the Transmitter; or a User button if a Pendant.

Transmitter Registration via an LCD Terminal:

If this option is used, note that in the Integrity Software, the Control Module 'Data Sync Mode' must be set to allow changes from the Controller.

- User Pendant (Remote) registration. MENU, 7, 2, 0, 0, 1. OR MENU, 2, 7.
- Zone Input registration. MENU, 7, 2, 0, 0, 2

INCEPTION

Transmitters are registered in Inception using the 8-digit Decimal Serial Number which can be found on labels on both the inside and outside of the devices.

e.g. The example shown is Serial Number 10252873.



If the serial number cannot be obtained from a label, it can be viewed by opening the Inception Browser and selecting 'Review Events'. Enable the 'Hardware' filter, then press the Reset/Learn button on the Transmitter; or the User button/s if a Pendant.

Take note of the serial number that appears in the 'Who' column for each device triggered.

For Zone Inputs select the 'Hardware' option in the 'Configuration' menu. Select the "IR-Inovonics RF Module" to configure and enter the Serial Numbers in the 'RF Inputs' step.

For Pendants, first program one or more 'Remote Fob Templates' found under 'Configuration' > 'Access Control'. Then go to 'Manage Users' under 'Configuration' > 'Users'. Select or create a User. Expand the 'Credentials' option, click on 'Add Items' under 'Remote Fobs' then follow the prompts.

Transmitter Compatibility Guide

This table shows which mode each Transmitter type is compatible with for each of the Integriti and Inception platforms.

Inovonics Part No:	Description	Integriti		Inception	
		Zone I/P	Remote*	Zone I/P	Remote*
EN1210 EN1210-60 ‡ EN1210-240 ‡	Single Input Universal Transmitter.	Y	n	Y	n
EN1210W EN1210W-60 ‡	Door/Window Transmitter with Reed Switch.	Y	n	Y	n
EN1212 † EN1212-60 ‡	Dual Input Universal Transmitter.	Y	n	Y	n
EN1235DF	Double Button, Fixed position, Holdup Transmitter, Black.	Y	Y	Y	Y
EN1243 *	Smoke / Heat Detector Transmitter.	Y	n	Y	n
EN1245A EN1245Z	CO2 Detector Transmitter. (Aust.) CO2 Detector Transmitter. (NZ)	Y	n	Y	n
EN1247	Glassbreak Detector Transmitter.	Y	n	Y	n
EN1260	Wall Mount PIR Motion Detector.	Y	n	Y	n
EN1261 EN1261HT	4 Element Motion Detector. (HT = High traffic version)	Y	n	Y	n
EN1262	Motion Detector with Pet Immunity.	Y	n	Y	n
EN1265	360deg Ceiling Mount Motion Detector.	Y	n	Y	n
EN1752 †	Temperature Detector.	Y	n	Y	n
EN1941 †	Dual Input One Way RF Module.	Y	n	Y	n
EN5040	Repeater. (An RF Zone Input can be used to monitor status)	Y	n	Y	n
EN1221S-60 *‡	Single Button, Senior Living Pendant. White/Grey	Y	Y	Y	Y
EN1223D *	Double Button, Water Resistant Pendant. Black.	Y	Y	Y	Y
EN1223S *	Single Button, Water Resistant Pendant, Beige.	Y	Y	Y	Y
EN1224 *†	4 Button, Pendant Transmitter, Black.	Y	Y	Y	Y
EN1233D *	Double Button, Pendant Transmitter, Beige.	Y	Y	Y	Y
EN1235D *	Double Button, Belt Clip Pendant, Black.	Y	Y	Y	Y
EN1235S *	Single Button, Belt Clip Pendant, Black.	Y	Y	Y	Y
EN1236D *†	Double Button, 3 Condition Pendant, Black	Y	Y	Y	Y

* There is no Tamper state processing for Transmitters marked with an asterisk or any Transmitter enrolled as a Remote.

† See 'RF Expander Zone Inputs in Integriti' below for important information on these devices.

‡ Devices with a "60" or "240" suffix on the model number indicate a longer poll time in minutes.

The poll time for these devices will need to be altered accordingly in the system programming.

Integriti Inovonics Functionality

RF Expander Zone Inputs in Integriti

When a Transmitter is enrolled in an Integriti system as an RF Zone Input, each Transmitter is assigned (registered) to a single Input and three input states are recognized; Seal, Alarm and Tamper.

Note that Integriti only monitors a single 'Alarm' state for each input. When a Transmitter with 2 or more inputs, alarm conditions or button functions is enrolled as a Zone Input, the Integriti system cannot differentiate between the different inputs, conditions or button functions. e.g. EN1212 and EN1941 general purpose transmitters, EN1752 Temperature detector or EN1224 and EN1236D Pendants.
(Different Pendant button functions are recognized when a Pendant Transmitter is enrolled as a 'Remote'.)

Pendant Zone Input Functionality

When a Pendant Transmitter is enrolled in an Integriti system as an RF Zone Input, the button functions are shown in the table below.

Device	Left Button or Button 1	Right Button Or Button 2	Button 3	Button 4	Both Buttons	Button 1&2 or Button 3&4
EN1221S-60	Alarm					
EN1223D	-	-			Alarm	
EN1223S	Alarm					
EN1224 *	Alarm	Alarm	Alarm	Alarm		Alarm
EN1233D	-	-			Alarm	
EN1235D	-	-			Alarm	
EN1235DF	-	-			Alarm	
EN1235S	Alarm					
EN1236D *	Alarm	Alarm			Alarm	

* Note that Alarms are only generated on the Zone Input to which the Pendant is assigned (registered). When enrolled as a Zone Input, the Integriti system cannot differentiate the buttons or combinations of buttons pressed. i.e. There is no advantage in using multi-function Pendants such as EN1224 or EN1236D if assigning a Pendant to a Zone Input.

Pendant Remote Functionality in Integriti

This table shows the functionality of Pendant Transmitters when enrolled in the Integriti system as Remotes. Check this table before configuring the 'Button Definitions' in 'RF Remote Template' programming.

NOTE: The 'Area 1' and 'Area 2' options are not applicable to Inovonics Remotes.

Device	Action 1	Action 2	Action 3	Action 4	Input 1	Input 2
EN1221S-60	Button 1					
EN1223D	Both buttons					
EN1223S	Button 1					
EN1224	Button 1	Button 2	Button 3	Button 4	Buttons 1&2	Buttons 3&4
EN1233D	Both Buttons					
EN1235D	Both Buttons					
EN1235DF *	Both Buttons					
EN1235S	Button 1					
EN1236D	Left Button	Right Button	Both buttons			

* NOTE: EN1235DF incorporates a Tamper switch and is intended to be permanently mounted and enrolled as a Zone input rather than a User Remote.

Inovonics RF LAN Expander/Receiver Monitoring in Integrity

The RF LAN Expander System Inputs monitor a range of conditions on a per Module basis.

The following System Inputs are provided for RF LAN Expanders:

- Transmitter Low Battery.
- Transmitter Poll Fail.
- Transmitter RF Jam.
- Cabinet Tamper.
- Mains Fail.
- Module Low Battery
- LAN Comms problem.

These System Inputs should be enabled by being assigned to a relevant Area with an appropriate Process Group.

When these System Inputs are enabled, then any of these conditions (where relevant) on any device associated with the Module will trigger the relevant System Input for that Module.

The Review log can then be inspected for details of the specific device that triggered the alarm.

Inovonics Repeater Monitoring in Integrity

An Inovonics Repeater can be monitored for problems by assigning the Repeater device ID to an Inovonics RF Expander Zone Input.

An Input name should also be programmed to identify the device.

The following input states are monitored:

- Tamper. (Zone Input Tamper alarm and Logged to Review)
- Poll Fail. (Logged to Review)
- Mains Fail. (Logged to Review)
- Low Battery. (Logged to Review)
- RF Jam. (Logged to Review)

Note that 'Poll Fail', 'Mains Fail', 'Low Battery' and 'RF Jam' are also monitored per Module, via the RF LAN Expander System Inputs as described above to allow reporting of these conditions.

Inception Inovonics Functionality

RF Expander Zone Inputs in Inception

Any compatible Inovonics Transmitter may be enrolled as a Zone Input on an Inception system.

When programming an RF Expander, each 'RF Input' (Hardware Point) is assigned a 'Device Type' to determine how the input will be used. The Device Types are as follows:

- No Device The RF Input is not used.
- Detector The detector's main/primary alarm or input is monitored by this RF Input. This is the setting required for the majority of Transmitters.
- Detector 2 Alarm The detector's secondary alarm/2nd input (if relevant) is monitored by this RF Input.
- Repeater The device to be monitored by this RF Input is a Repeater. *See 'Repeater Monitoring' below.*

For Transmitters with 2 alarm conditions or 2 or more button actions, Inception allows both alarms to be monitored independently by assigning the Transmitter to two separate RF Inputs and using the 'Device Type' setting to nominate which alarm the RF Input will monitor. i.e. The same Transmitter serial number is entered for two RF Inputs, then the Device Type 'Detector' is chosen for one, and 'Detector 2 Alarm' is chosen for the other. Note that a Transmitter Tamper condition will cause a Tamper alarm on both Inputs.

This table shows the 'Device Type' setting that must be used to monitor each detector input or condition.

Device	Main/Primary alarm	Secondary alarm /2 nd Input	Notes
EN1210	Detector Alarm		
EN1210W	Detector Alarm	Detector 2 Alarm	Input 1 is the Wired Input. Input 2 is the Reed Switch.
EN1212	Detector Alarm	Detector 2 Alarm	
EN1221S-60	Detector Alarm		
EN1235DF	Detector Alarm		
EN1243 *	Detector Alarm		
EN1247	Detector Alarm		
EN1260	Detector Alarm		
EN1261HT	Detector Alarm		
EN1262	Detector Alarm		
EN1265	Detector Alarm		
EN1752	Detector Alarm	Detector 2 Alarm	'Detector' is the High temperature alarm. 'Detector2' is the Low temperature alarm.
EN1941	Detector Alarm	Detector 2 Alarm	

This table shows the 'Device Type' setting that must be used to monitor different Pendant button actions when a Pendant is enrolled as a Zone Input.

Device	Left Button or Button 1	Right Button Or Button 2	Both Buttons	Button 1&2
EN1221S-60	Detector Alarm			
EN1223D	-	-	Detector Alarm	
EN1223S	Detector Alarm			
EN1224	Detector Alarm	Detector 2 Alarm		Detector or Detector 2 Alarm
EN1233D	-	-	Detector Alarm	
EN1235D	-	-	Detector Alarm	
EN1235DF	-	-	Detector Alarm	
EN1235S	Detector Alarm			
EN1236D	Detector Alarm	Detector 2 Alarm	-	

Pendant Remote Functionality in Inception

This table shows the functionality of Pendant Transmitters when enrolled in the Inception system as Remotes. Check this table before configuring the 'Button Actions' in 'Remote Fob Templates' programming.

Device	Button 1	Button 2	Button 3	Button 4
EN1221S-60	Button 1			
EN1223D	Both buttons			
EN1223S	Button 1			
EN1224	Button 1	Button 2	Button 3	Button 4
EN1233D	Both Buttons			
EN1235D	Both Buttons			
EN1235DF *	Both Buttons			
EN1235S	Button 1			
EN1236D	Left Button	Right Button	Both buttons	

* NOTE: EN1235DF incorporates a Tamper switch and is intended to be permanently mounted and enrolled as a Zone input rather than a User Remote.

Inovonics RF LAN Expander/Receiver Monitoring in Inception

The RF LAN Expander is monitored for a range of conditions on a per Module basis.

The following conditions are monitored for RF LAN Expanders:

- LAN Comms problem.
- Cabinet Tamper.
- Transmitter Low Battery.
- Transmitter RF Jam.
- Transmitter Poll Fail.

Any of these conditions (where relevant) on any device associated with the Module will trigger the relevant alarm for that Module.

The Review log can then be inspected for details of the specific device that triggered the alarm.

Inovonics Repeater Monitoring in Inception

An Inovonics Repeater can be monitored for problems by assigning it to an RF Module Zone Input. This is done in 'RF Inputs' programming by selecting the Device Type 'Repeater' and entering the Repeater device ID in the 'Serial Number' field. An Input name must also be programmed to identify the device.

The following input states are monitored via the Zone Input:

- Tamper

The following Repeater states are logged to Review and also monitored on a per Module basis as described above.

- Poll Fail.
- Mains Fail.
- Low Battery.

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- While every effort has been made to ensure the accuracy of this manual, the manufacturer assumes no responsibility or liability for any errors or omissions.
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