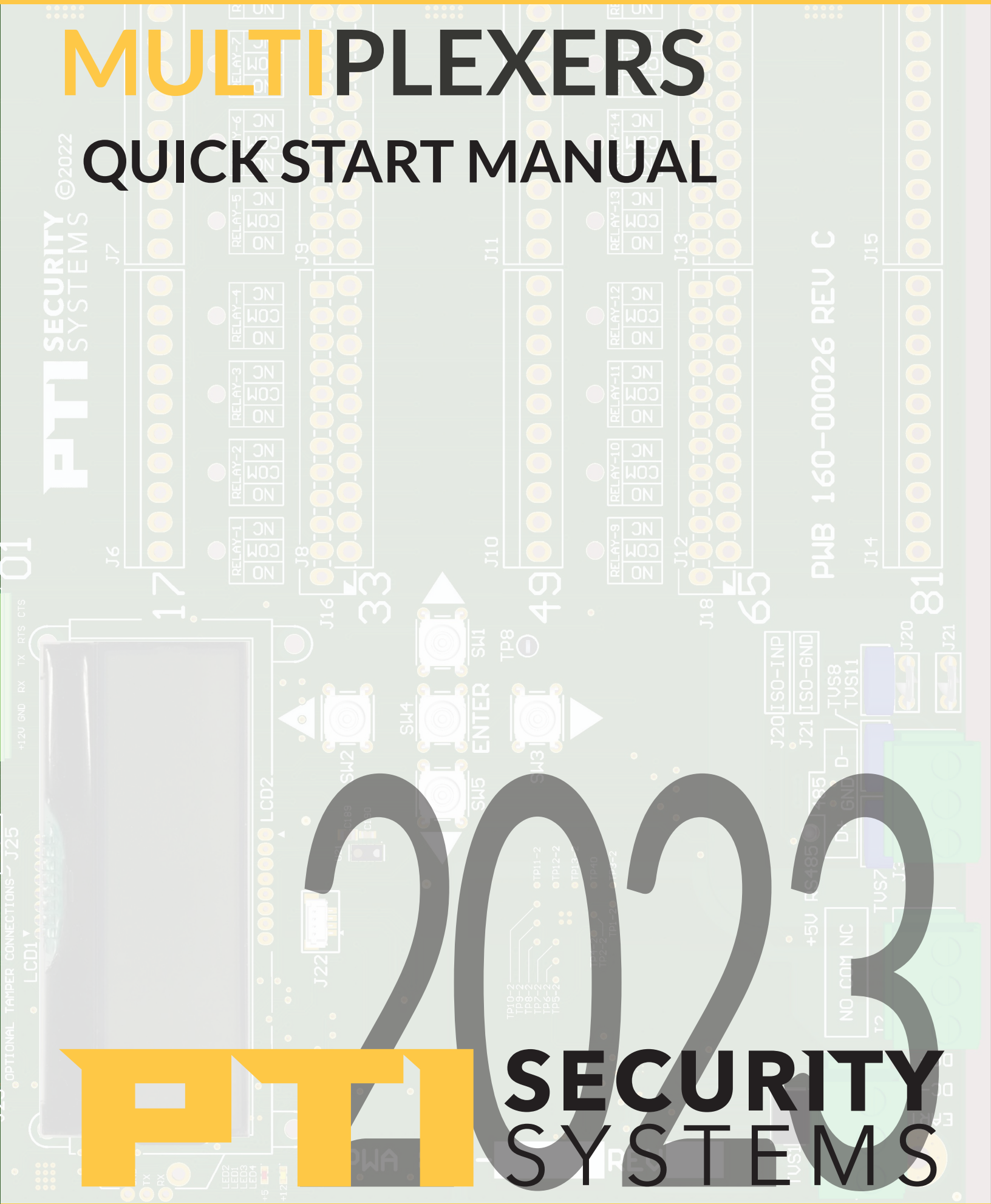
MULTIPLEXERS

QUICK START MANUAL



2023

PTI SECURITY SYSTEMS

MULTIPLEXERS

QUICK START MANUAL

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NOTE: This equipment has been tested and found to comply with the limits for a Class A 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 A digital apparatus complies with Canadian ICES-003 - Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

PTI MULTIPLEXERS

MUX DEVICE INSTALLATION & OPERATOR MANUAL

Introduction

The IM-WL is PTI RS485 peripheral that uses Inovonics Echo Stream Wireless Technology to implement a wireless storage unit door monitoring system.

The system consists of the IM-WL which interfaces the Inovonics EN6040 Network Coordinator to a PTI Access control system over the RS485 network. PTI Wireless Transmitters and magnets are installed on the outside of the storage unit doors to be monitored. Inovonics EN5040 repeaters are added to expand the wireless range of the system. The result is a highly reliable system for monitoring the door state of the units at a self-storage facility. The Inovonics Controller/Transmitter and Repeater manual can be found at ptisecurity.com/knowledgebase.

This product replaces the legacy RX900 Wireless Door Monitoring System and is compatible with its transmitters and repeaters.

TECHNICAL SPECIFICATIONS

Input Voltage:	12 to 48V DC
Power Consumption:	< 3W estimate with EN6040.
Communication:	2-wire RS485 at 9600 baud
Inputs:	None
Outputs:	Single relay for alarm implementation rated at 2 A @ 30 Vdc resistive
Operating Temperature	-40 to +85 C (-40 to 185F)
Humidity:	TBD

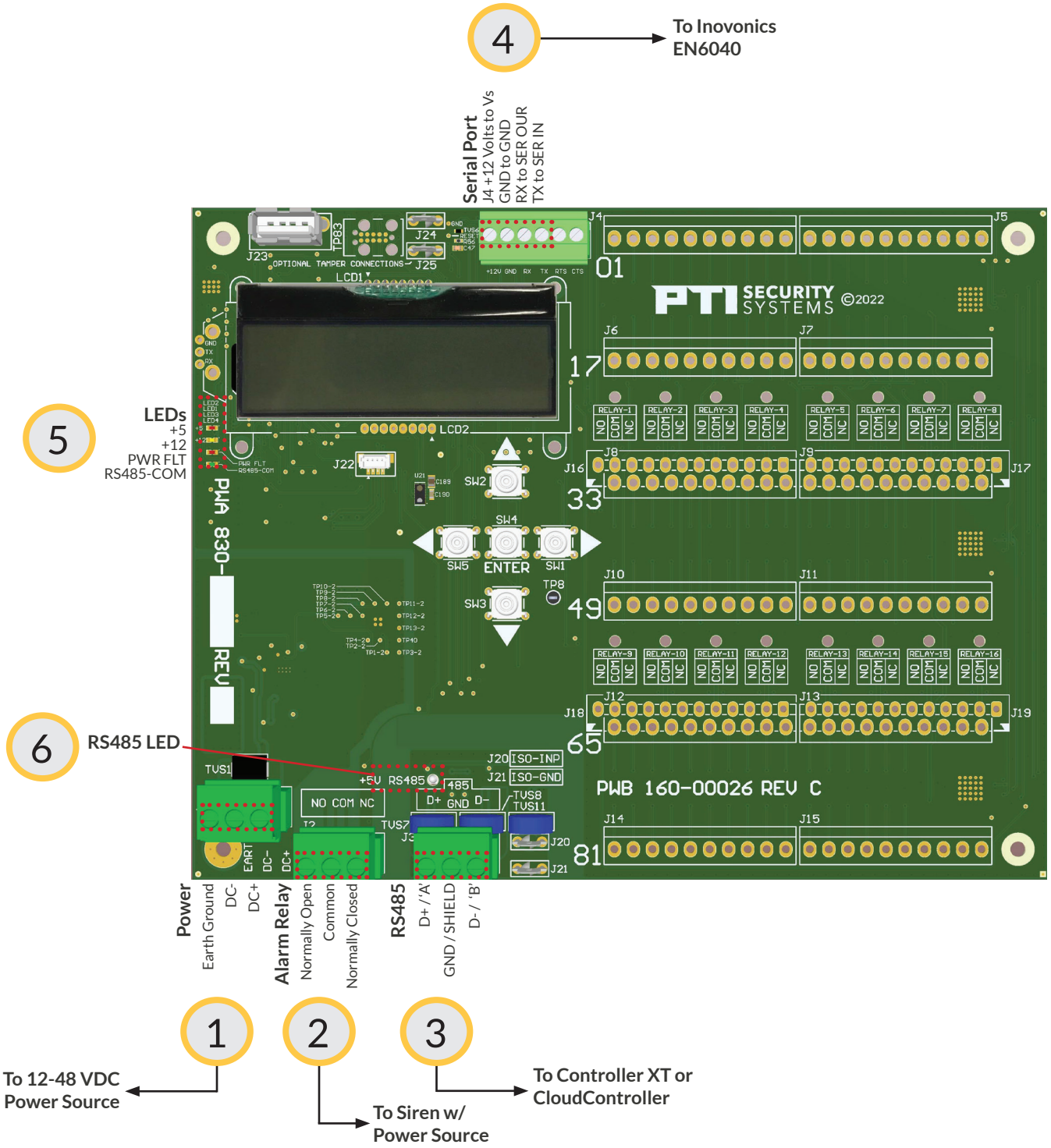
WIRELESS SPECIFICATIONS

Topology:	Inovonics Echo Stream
Echo Stream Wireless Certifications:	United States, EU, Canada, Australia, and New Zealand
Maximum Supported Transmitters:	4,000
Maximum Supported EN5040 Repeaters:	32

PTI MULTIPLEXERS

MUX DEVICE INSTALLATION & OPERATOR MANUAL

› BOARD & INPUTS



1

Power

- Connect to a DC power source of 12 to 48 volts. AC input is NOT supported.
- The system's power is electrically isolated. DC- should not be connected to EARTH (earth) ground.
- The ERTH (earth) connection should be connected to a suitable earth ground for maximum surge protection of the power supply input circuit.

2

Alarm Relay

- Used to switch on a siren or other alarm indicator in an alarm condition. Optional.

3

RS485

- Connect to system controller RS485 connection. Communications are electrically isolated therefore, the GND / Shield connection should only be connected to the GND / Shield connection of other peripherals or the system controller. Optionally, it can be connected to a suitable earth ground.

4

Serial Port - Connect to the EN6040 as follows:

- J4 +12 Volts to Vs on EN6040
- J4 GND to GND on EN6040
- J4 RX to SER OUT on EN6040
- J4 TX to SER IN on EN6040

5

LED 1 - 4

- +5 – When on indicates that the internal isolated +5 volt supply is present.
- +12 – When on indicates that the internal isolated +12 volt supply is present.
- PWR FLT – Flashes each time a message is received from the Network Coordinator
- RS485-COM – Flashes each time the IM-WL responds to the system controller.

6

RS485 LED

- The +5V RS485 LED lights red to indicate the internal isolated RS485 5V supply voltage is present.

› INSTALLATION

Menu	Description
IM-WL	This is the initial menu at powerup. Pressing ENTER at this menu will sequence through information about the product like part number, serial number, and firmware revision.
Settings Menu	Pressing ENTER at this menu will sequence through a series of product settings. At each setting the UP and DOWN buttons will allow changing the setting. If no change is needed, simply press ENTER to go to the next.
Register Menu	Pressing ENTER at this menu will sequence through a series of transmitter and repeater registration options.
Events Menu	Pressing ENTER at this menu will allow viewing the last activity of the unit in real time. The UP and DOWN arrows will scroll through the previous 64 events. Once scrolling and you want to return to real time activity, press the ENTER key.
USB Menu	Pressing ENTER at this menu when a compatible USB drive is attached will sequence through a serial of USB operations to export and import registration data and system status. All file operations are carried out in the root of the USB drive.

Installation:

Electrical Connections

- Make appropriate electrical connections to a 12-48VDC power source and use an 18/4 shielded wire to connect from the J3 connector to the system controller. The alarm relay output is optional. It is pulsed for one second during the registration process, which can be useful if connected to a siren or other annunciator.
- The EN6040 Network Coordinator must be wired to the J26 Connector labeled Serial Port as indicated on Page 4.

Wired Setup

- Use the Settings menu to set up the system so that it will communicate to the system controller over the RS485 network: default address is 1 and default baud rate is 9600. At minimum this includes the address and baud rate matching that of the system controller configuration. Set address to 0 for systems that support automatic addressing (not available on the XT).
- The tamper sensor uses light and proximity. No switch is used.

System Status

- Use the IM-WL menu screen to view the devices status. At this screen, each press of the ENTER key will display information about the IM-WL. Using the System Status screens will allow you to verify basic operation prior to registering or testing transmitters and repeaters during the installation process.
- Sequencing through these screens will display the IM-WL's part number, serial number, manufacturing date, firmware revision, the states of the RS485 and Network Controller (NC) communications interfaces, the number of registered transmitters and repeaters, unregistered repeaters detected and input voltage.
- The Unregistered Repeaters screen indicates if a repeater in broadcast mode is detected or if a

repeater using the same Network ID (NID) has been detected that is not registered to the system. This is used at initial installation to determine if any repeaters from nearby systems might interfere with the installation. More on this in the repeater section. A '1' indicates detection. A '0' indicates none detected.

- The Input Voltage screen displays the minimum (Vin min) and maximum (Vin max) voltages that the IM-WL has seen since the last time viewed. The values are reset each time you view them here. These are also reported to the system controller.

Wireless Setup

- The wireless setup pertains to steps required to ensure that the wireless components, transmitters and repeaters, function properly.
- Transmitters are one-way devices which transmit the state of the door contact, battery, and tamper state. Repeaters are two-way devices which expand the range of the system.
- **Transmitters must be registered for the system to know which ones are part of the site.** Messages received from transmitters at neighboring sites are ignored because they are not registered. Only messages from registered transmitters are reported by the system. When purchasing a complete system, IM-WL and Transmitters, the transmitters will be registered by the PTI factory. If additional transmitters are purchased to add to an existing site, they must be registered prior to installation so that they will report activity.
- **It is recommended that Repeaters be registered in Directed Messaging mode to pair them with the site's wireless network.** Registering a repeater in directed messaging mode tells it to only communicate with the site's network coordinator and repeaters and not with the neighbor's network coordinator or repeaters. Registering a repeater assigns it a Network ID that matches the Network Coordinator. The process is like assigning Wi-Fi network to a phone or laptop. When purchasing a complete system, IM-WL and repeaters, the repeaters will be registered by the PTI factory. If additional repeaters are purchased to add to an existing site, it is recommended that they be registered prior to installation properly.

Registering Wireless Transmitters and Repeaters

- Use the registration menu to register all transmitters and repeaters into the system.
- Registration involves entering registration mode in the registration menu and pressing the reset button on the transmitter or repeater.
- As each transmitter or repeater is registered, the display on the IM-WL will show the channel number. Channel numbers on transmitters are used to associate them with a storage unit, so it is important to label the transmitter so it can be installed at the proper unit. Transmitters ordered with a system that are pre-registered will be labeled with their channel number. The Export feature, explained below, correlates the transmitters ID number to the channel number.

Editing Registered Devices

- To prevent accidental loss of all data, there is no 'remove all' feature for either transmitters or repeaters. Completely erasing all registration data requires importing a file with zero records.
- Individual transmitters and repeaters can be removed or replaced in the Register Menu.
- Editing of many records is best achieved using an export, edit, import operation.
- **Note that removing a repeater in the IM-WL only results in the IM-WL ignoring the repeaters**

status messages. Removing a repeater from the system requires it to be physically removed or powered off.

USB Operations

- The IM-WL includes USB host capability and supports a USB drive. It is not USB certified and some older flash drives are not compatible. You will see a USB mount event when the drive is plugged in if the drive is compatible.
- The date and time stamps of created files comes from the system controller through RS485. If no system controller is connected, the data and time stamps will not be accurate.
- **We have found the operation of the USB to be reliable but have noted in some situations with a very large number of transmitters that USB errors can occur preventing the file operation. If this occurs unplug the USB flash drive and exit the USB menu, then try the operation again. In busy systems it can be helpful to unplug the Network Coordinator when performing USB operations.**
- **USB operations are always carried out at the root (top level) of the drive. This allows archives to be stored in folders on the drive protected from overwrite operations.**
- **The USB feature and drive are meant to be a mechanism to transfer the important configuration data between the IM-WL and another safe storage medium. Do not use a single USB drive to transfer your data and be your backup. It could get lost or corrupted.**

Import, Export

- Registration data for transmitters and repeaters is exported to comma separated files (.CSV) which serve as a backup of your IM-WL's registration data. These files can be opened by most spreadsheets where the backup information can be reviewed or edited.
- The exported data includes the channel number used by StorLogix, the transmitter serial number and all the status information for that transmitter or repeater.
- **The serial number of the device is printed on a label attached to the transmitter or repeater.**
- Imported data is in a typical CSV format and must include the channel number as the first field, followed by a comma then transmitter serial number followed by a comma or new line character. The status or any other information may follow but it is ignored during the import process.
- **The exported file serves as your backup! Once you have confirmed that the exported data includes all the registered devices, copy it to a location other than the root of the flash drive you use for transferring data to the IM-WL. This will ensure that it is not accidentally overwritten and ensures you have a back up of your system should it need to be replaced or the data gets corrupted.**
- Registration data for transmitters and repeaters are stored in separate files. A file name ending in _SEC is transmitter data (Security device) and a file name ending in _REP is repeater data.
- **The first part of the file name is the serial number of the device.**
- The file must be named properly for import. It is best practice to export the file, make your changes and then import as opposed to creating an import file from scratch.

Using the Exported file's Status Information

Export files double as a system status report. They can be opened by a spreadsheet program and analyzed using spreadsheet tools. The export file tells you the devices:

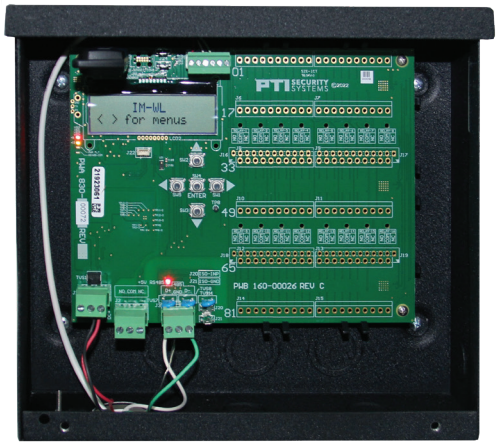
- Tamper State
- Battery State
- Check In State
- Number of minutes since the last message was received.
- Door contact state
- Signal Level and Margin of the last received message.
- NID (repeaters only. An NID of 0 means the repeater is in broadcast mode)
- Power State (repeaters only)
- Jammed Condition (repeaters only)

Use the Exported data to verify that the system is functioning properly after installation or during troubleshooting.

RX900 Import
Migration from a legacy product can be accomplished by importing the RX900 back up file. It is expected that the file be named 'import.wda'. When complete the process will create a log file which can be reviewed for errors.

Working with Repeaters
The following settings configurable in the Settings Menu if the IM-WL affect Repeater Registration:

Setting	Description
Directed (mode):	Can be turned on or off. Default from factory is on.
NID	Can be set to any value from 1 to 32. Randomly set at the factory.



› INSTALLATION

Repeater can be used in multiple ways:	Broadcast Mode	A repeater in broadcast mode will transmit all messages that it receives. No network paring is required. On a large site, broadcast mode will generate a significant amount of network traffic that can prevent messages from getting through. To put a repeater in broadcast mode, install a jumper on the pins just below the LEDs on the EN5040. Either position will work. If you are converting an RX900 site all the repeaters will be in broadcast mode.
	Directed Mode	A repeater in direct mode will only communicate with other EN5040 repeaters and EN6040 Network Coordinators using the same NID. To pair a repeater in directed mode first remove the jumper located on the EN5040 repeater just under the LEDs. Ensure that Directed mode is on. Finally register the repeater using the normal registration process.
	Registered	Registered repeaters will report their status on the IM-WL. Status includes check in failure, power failure, low battery, tamper, and a jammed signal. Note that currently this information is only available at the IM-WL or in the Export file. For a repeater to be configured for directed mode, it must first be registered. It is recommended that all repeaters be registered.
	Unregistered	Repeaters set to broadcast mode do not need to be registered, however there will be no monitoring of their status. The system will still detect their presence and report it in the IM-WL status menu in the 'Unrgstrd Rptrs' screen. Removing a repeater from the 'Register' menu affectively unregisters it, however it will continue to operate.
Recommended Repeater Usages:	New build installation. All repeaters are registered at the factory.	Install the repeaters and note their location at the site should they require maintenance. Monitor the repeaters to ensure that all are on-line before testing or troubleshooting transmitter operation.
	Replacing a single RX900 Wireless Mux with the IM-WL.	Import the backup data from the RX900 into the IM-WL. While not required, it is recommended that you register the repeaters in directed mode. Once registered verify they are working properly before verifying transmitter operation.
	Replacing a single RX900 with an IM-WL in a site using two RX900s.	Import the backup data from the RX900 that is being replaced. Register repeaters with directed mode off if you want to monitor them. To use directed mode, the other RX900 would need to be removed from the system and its transmitters imported into the IM-WL running with directed repeaters.
	The NID set by the factory conflicts with a neighboring system resulting in poor system performance.	Change the NID and re-register each repeater. The NID can be changed at the Settings Menu. After it is changed observe the Unregistered Repeaters Directed value to ensure the NID is clear meaning no other nearby systems are operating on this NID. Next, register each repeater and then monitor the repeaters to ensure all are on-line.

Always replace the cover of the EN5040 after registering repeaters and ensure the tamper is secure. This prevents the repeaters from being assigned to a neighbor's system.

Warranty & Disclaimer

PTI Security Systems warrants its products and equipment to conform to its own specifications and to be free from defects in materials and workmanship, under normal use and service, for a period of one year from the date of shipment. Within the warranty period, PTI Security Systems will repair or replace, at its option, all or any part of the warranted product which fails due to materials and/ or workmanship. PTI Security Systems will not be responsible for the dismantling and/or re-installation charges. To utilize this warranty, the customer must be given a Return Materials Authorization (RMA) number by PTI Security Systems. The customer must pay all shipping costs for returning the product.

This warranty does not apply in cases of improper installation, misuse, failure to follow the installation and operating instructions, alteration, abuse, accident, tampering, natural events (lightning, flooding, storms, etc.), and repair by anyone other than PTI Security Systems.

This warranty is exclusive and in lieu of all other warranties, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. PTI Security Systems will not be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties.

This warranty will not be modified or varied. PTI Security Systems does not authorize any person to act on its behalf to modify or vary this warranty. This warranty applies to PTI Security Systems products only. All other products, accessories, or attachments used in conjunction with our equipment, including batteries, will be covered solely by their own warranty, if any. PTI Security Systems will not be liable for any direct, incidental, or consequential damage or loss whatsoever, caused by the malfunction of product due to products, accessories, or attachments of other manufacturers, including batteries, used in conjunction with our products. This warranty does not cover the replacement of batteries that are used to power PTI Security Systems products.

The customer recognizes that a properly installed and maintained security system may only reduce the risk of events such as burglary, robbery, personal injury, and fire. It does not ensure or guarantee that there will be no death, personal damage, and/or damage to property as a result. PTI Security Systems does not claim that the Product may not be compromised and/or circumvented, or that the Product will prevent any death, personal and/or bodily injury and/or damage to property resulting from burglary, robbery, fire, or otherwise, or that the Product will in all cases provide adequate warning or protection. PTI Security Systems products should only be installed by qualified installers. The customer is responsible for verifying the qualifications of the selected installer.

PTI Security Systems shall have no liability for any death, injury, or damage, however incurred, based on a claim that PTI Security Systems Products failed to function. However, if PTI Security Systems is held liable, directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, PTI Security Systems's maximum liability will not in any case exceed the purchase price of the Product, which will be fixed as liquidated damages and not as a penalty, and will be the complete and exclusive remedy against PTI Security Systems

› WARRANTY & DISCLAIMER

Warning: The User should follow all installation, operation, and maintenance instructions. The User is strongly advised to conduct Product and systems test at least once each week. Changes in environmental conditions, electric or electronic disruptions, and tampering may cause the Product to not perform as expected.

Warning: PTI Security Systems warrants its Product to the User. The User is responsible for exercising all due prudence and taking necessary precautions for the safety and protection of lives and property wherever PTI Security Systems Products are installed. PTI Security Systems does not authorize the use of its Products in applications affecting life safety.

Notice. Some PTI Security Systems products use 900Mhz wireless technology. Other devices at the site such as cordless telephones or alarm components may cause interference that will disrupt the operation of the system or may be interfered with by the system. PTI Security Systems assumes no liability for any problems caused by interference. It is the sole responsibility of the user to identify and correct such problems.

PTI SECURITY SYSTEMS

SHAPING THE INDUSTRY SINCE 1979

Since 1979, PTI Security Systems™ has provided the self-storage industry with proven security and access control systems. Known for our complete and innovative solutions that deliver advanced and cost-effective security systems, self-storage owners and operators can efficiently manage their facility from anywhere, lower operating costs, and enhance the tenant experience.

For more information about PTI Security Systems or StorLogix, please contact a PTI representative or visit our website.

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