

Features

- UL 864 10th edition and ULC S527 Listed
- Fully supervised wireless communication bridge between all dry contact devices
- 2.4 GHz communication format
- Transmitter works on any dry contact product not listed as explosion proof
- Receiver provides dry contact output, compatible with any fire panel/ fire alarm system
- Receiver does not require resetting or silencing, allowing it to be installed remotely from the FACP
- Eliminates the need for extensive wiring/conduits



Important: This document contains important information on the installation and operation of the Potter SignalLink Wireless products. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

Description

The Potter SignalLink™ Bridge is a fully supervised wireless bridge designed to be attached to any non-explosion-proof dry contact sprinkler monitoring devices. It removes the need to hard wire sprinkler devices to each other, and operates on a 2.4 GHz frequency. Devices are able to communicate with each other up to a maximum of 800'. All enclosures are weather and UV resistant polycarbonate. There are no external antennas. The antenna is incorporated into the circuit board of each device.

Transmitter Model WTX-M

The transmitter enclosure has a threaded nipple, O-ring and locking nut for mounting directly to the conduit entrance of any dry contact device not listed as explosion proof. The transmitter provides two flying leads for connection to the normally open contacts of any listed dry contact fire alarm device. The connection is supervised for opens and shorts using the supplied 5.1k ohm End Of Line Resistor. The transmitter does not latch, it follows the status of the sprinkler switch it is connected to. The unit is powered by two (2) AA size 1.5 volt Lithium Iron/Disulfide batteries. The device includes a cover tamper switch as well as an LED to indicate when the battery meter has been reset. See fig 1.

Receiver Model WRX-R

The receiver contains a fail safe dry contact output than can be monitored by any UL listed fire panel zone or monitor module. The receiver enclosure has an opening for 1/2" conduit. The receiver follows the status of the transmitter so there is no reset switch, no sounder and no need for human intervention. This allows the receiver to be treated as just a dry contact initiating device so it can be installed wherever it is most convenient. This can help to reduce the need for repeaters by allowing the receiver to be placed where the signal is stronger. The receiver can be powered by the auxiliary power of the fire panel or UL 864 or UL 1481 listed 24 VDC supply with regulated limited power output and battery backup. See ordering information on page 9 for optional power supply. The receiver contains Individual LEDs for; Power, Alarm/Supervisory, transmitter or repeater trouble, Tamper, Communication Error, Low Battery and EOLR trouble to aid in troubleshooting. See fig 2.

Repeater Model WR

The repeater can be powered by one 3.6 volt D size Lithium Thionyl battery or by the auxiliary power of the fire panel or UL 864 or UL 1481

listed 24 VDC supply with battery backup. See ordering information on page 9 for optional power supply. Per UL 864, if the repeater is powered by batteries it must be dedicated to only one transmitter. If the repeater is powered by a listed supply it can support multiple transmitters. The device includes a cover tamper, pry-off tamper switch, an LED to indicate when it is transmitting, and an LED to aid in resetting the battery meter, see fig 3. For mounting to a post, use the optional post mounting kit #0090221, see fig 6.

Technical Specifications

WTX-M Transmitter	
Conduit Connection	1/2" NPT male
Dimensions	See Fig. 5
Enclosure	UV and Impact resistant Polycarbonate
Environmental Limitations	Indoor/Outdoor NEMA 4 / IP66 -40°F to 150°F (-40°C to 66°C)
Max Circuit Current	28uA
Max Circuit Voltage	3 VDC
Power Requirement	Two AA size Energizer 1.5 volt Lithium Iron/Disulfide battery model L91, 3000 uAh
Reference Level	Maximum Ambient noise level allowed: -37 dBm
Service Use	NFPA 13, 13D, 13R and 72
Weight	0.5 lbs (0.23 KG)
WRX-R Receiver	
Conduit Connection	Opening for 1/2" conduit, terminals for 12-22 AWG wires
Contact Rating	Common Alarm/Supervisory Relay: 1A at 30 VDC
Dimensions	See Fig. 4
Enclosure	UV and Impact resistant Polycarbonate
Environmental Limitations	Indoor/outdoor use with standard smoked cover. Indoor use only with optional clear cover. NEMA 4 (IP66) -40°F to 150°F (-40°C to 66°C)
Power Requirement	24VDC at 55mA Normal, 75mA in Alarm
Reference Level	Maximum Ambient noise level allowed: -37dBm
Service Use	NFPA 13, 13D, 13R, 72
Weight	0.75lbs (0.34KG)

Technical Specifications con't.

WR Repeater	
Conduit Connection	Opening for 1/2" conduit, terminals for 12-22 AWG wires
Dimensions	See Fig. 4
Enclosure	UV and Impact resistant Polycarbonate
Environmental Limitations	Indoor/outdoor use with standard smoked cover. Indoor use only with optional clear cover. NEMA 4 (IP66) -40°F to 150°F (-40°C to 66°C)
Power Requirement	Jumper selectable: One D size XENO 3.6 volt Lithium Thionyl battery model XL205F, or UL 864 or UL 1481 listed 24 VDC power supply with Regulated Output, Power Limited, with battery back-up. Current draw 23mA
Reference Level	Maximum Ambient noise level allowed: -37dBm
Service Use	NFPA 13, 13D, 13R, 72
Weight	0.75lbs (0.34KG)

WST Setup Tool	
Computer Connection	USB Drive
Dimensions	Approx. 2" L x 1" W
Operating System	Windows 10

Specifications subject to change without notice.

Site Survey/Setup Tool

The Wireless Setup Tool, model WST, is required for installation. See document #5401608 for more information regarding the setup tool. The tool is used to check signal strength between all devices among other features. It is strongly recommended a site survey be conducted before installing the wireless system. Failure to conduct a thorough site survey may result in communication errors later. The installer should determine where the transmitter will be located and then search for a suitable location to place the receiver. The best location should be within line of sight to the transmitter. The receiver can be mounted anywhere as long as power and a monitoring circuit can be connected to it. This allows it to be located where signal strength should be the greatest. Typically, higher on a wall allows the receiver to "see" over obstructions and provides a better path for the wireless signal. Keep in mind that the metal framing of a drop ceiling can affect the signal. The receiver should not be installed near a large metal object as that could attenuate the signal. After selecting a location for the receiver, the installer should walk around and in between the areas where the transmitter and receiver will be installed and look for possible obstructions to the wireless signal such as metal fences, metal doors, wired glass and other metal objects. The installer should investigate to determine if the normal business processes throughout the day might result in an obstruction between the transmitter and receiver. Possible obstructions could include the movement of equipment or fork trucks, traffic patterns for shipping, deliveries, trash pickup, food trucks, etc.

In addition to the above-mentioned scenarios, there is the possibility of interior building changes such as the relocation of metal file cabinets or shelving or changes to the interior of the building that could affect the signal path. Document and keep as much information about the site survey as possible. This will come in handy if someone must return for troubleshooting later. The notes may be helpful to determine what, if anything, has changed. When bidding wireless jobs, it may be wise to consider that a repeater may eventually be needed.

The setup tool can be used to measure the strength and quality of the communication signal between all Potter wireless devices on the network. The setup tool also allows the user to pair devices together, check battery life, add or delete repeaters, check traffic on the default communication channel, change channels and other functions. Wireless devices communicate on a specific channel on their selected frequency. Heavy traffic on a channel can lead to communication issues. The setup tool allows the installer to check for traffic on the default channel and if necessary, to change the channel. Potter wireless devices are factory set on channel 4. The installer may want to inquire if a wireless network is running at the facility and what channel it is and change the Potter devices to a different channel.

IMPORTANT NOTICE REGARDING BATTERY LIFE

Battery operated devices spend most of their time in battery conservation mode. They only communicate to indicate an event or for the required periodic supervision signal to the receiver. The receiver then puts the device back into conservation mode. Do not leave batteries in a device that is not installed as part of an active system with an operating receiver. If a battery powered device does not receive confirmation from the receiver, the device will continuously try to contact the receiver resulting in a low battery alert within a few days. If devices are not immediately going to be installed after pairing, remove the batteries after pairing. The pairing will remain after battery removal.

Device Pairing

The Potter wireless devices do not require any programming to operate. The only requirement is to pair together the devices that will communicate with each other on the network to form a wireless system. This can be accomplished in one of two ways.

1. Use the Wireless Setup Tool on a laptop to enter the unique MAC ID of the transmitter and receiver that will be communicating with each other on the wireless system. This process is described in the literature with the Setup Tool.
2. Cycle the power on the transmitter and receiver to put them in Learn Mode and then use the cover tamper switches on each to force them to send their MAC ID's to each other. This process is described in the following section.

Important: Please read all the pairing steps BEFORE starting the process so you are familiar with it. Have both devices to be paired on a workbench and have the necessary power supply/batteries ready to be connected/inserted.

The transmitter and repeater (if used) must be paired to the receiver to allow them to communicate with each other. The transmitter and repeater are individually paired to the receiver. First pair the transmitter to the receiver. If repeaters are used, they will be individually paired one at a time to the receiver after the transmitter pairing is complete.

Note: When power is first applied to the devices, they go through a power-up cycle for about 3 seconds. All the LEDs on the devices will flash during this time. After the 3 second power-up process, they are in Learn Mode for about 40 seconds. The pairing must occur during the Learn Mode.

LED Conditions in Learn Mode:

- On the receiver, only the WTX-M & WR LEDs will flash simultaneously. See fig. 2, page 7 for location of LEDs.
- On the transmitter, only the BATT RST LED will flash. See fig. 1, page 7 for location of LEDs.

Pairing Process:

1. Apply 24 VDC to the receiver.
2. Install the batteries in the transmitter/repeater (or apply 24 VDC power supply to the repeater if used).
3. Wait about 3 seconds until only 1 LED on the transmitter is flashing and only 2 LEDs on the receiver are flashing.
4. SLOWLY press the transmitter/repeater cover tamper switch holding it down long enough each time to make sure the 2nd LED lights on the transmitter/repeater each time the switch is pressed.
5. After the 5th activation of the switch/lighting of the 2nd LED, both LEDs on the transmitter/repeater will flash rapidly for a few seconds.
6. The devices should now be paired. Verify a successful pairing by releasing the tamper. The WRX-R should display a tamper error for that transmitter/repeater.

The Learn Mode LEDs will continue to flash until the Learn Mode times out. There is no need to do anything during this time. When the Learn Mode LEDs stop flashing, the devices are ready to be put in service. If a repeater needs to be paired, remove power from the receiver and start over at step 1 above. The devices will remain paired together even after power is removed. There is no need to re-pair them after removing power and re-applying power for field installation.

If multiple repeaters are paired, the technician should record on each Repeater whether it was the first, second or third repeater paired to aid in troubleshooting later. Repeaters must be installed in the order in which they were paired. Repeater # 1 should be closest to the receiver and the last repeater is closest to the transmitter.

NOTICE

Devices do not need to be re-paired when batteries are replaced or if the unit is powered down.

If a WR must be replaced, the wireless Setup tool must be used to remove the MAC address of the old device from the system. Then the new device can be paired using either the Setup tool or the cover tamper switch.

Installation

Installation shall be performed by qualified personnel and in accordance with all local and national codes and ordinances and the approval of the local AHJ.

NOTICE

Maximum clear field line of site communication is approximately 800 feet between devices. Metal objects can greatly reduce signal strength. A chain link fence can almost completely block a signal if the fence is too close to the transmitter, repeater or receiver. Metal shelving, walls with metal framing, metal doors, windows with wired glass, vehicles, all have an effect on the ability of the wireless signal to pass through.

For best transmission/reception of wireless communication, it may help to attempt to install the Transmitter in a position so that it is not completely obstructed from metal. Rotating the Transmitter enclosure so that it can “see” around the metal Potter device, pipe, valve, etc. may help communication.

When mounting the repeater to a post, it may be necessary to rotate the Repeater on the post to achieve best signal reception/transmission.

WTX-M - Transmitter

The Transmitter is designed to be connected to any Potter product not classified as explosion proof that provides a dry contact output. Remove the locknut from the threaded nipple of the Transmitter, make sure the O ring is properly installed on the nipple and insert the nipple through the ½” conduit opening of the Potter device. Install the locking nut on the inside of the Potter device and tighten firmly in place.

Connect the two wire leads of the Transmitter and the supplied 51.k ohm End of Line Resistor across the normally open contacts of the device to be monitored. Polarity is not a concern. The Transmitter can also be mounted to a suitable junction box and then wired to the open contacts of the device to be monitored.

WRX-R - Receiver

The Receiver provides a dry contact output allowing it to be monitored by any zone or monitor module of any fire panel as just a dry contact input. This allows the Receiver to be installed where it receives the best signal from the transmitter, thereby possibly eliminating or reducing the need for repeaters. It can also be installed near where the fire alarm circuit is already running saving installation costs. The Receiver follows the status of the transmitter so it does not have to be manually reset after activation. When the device connected to the transmitter restores to normal, the transmitter will send a restoral signal to the receiver causing it to restore to normal. This allows the Receiver to be installed where it is most convenient.

The Receiver provides three terminals for connection to the FACP, see fig 2. Connect the EOLR from the FACP across the COM and EOLR terminals. Connect the zone from the FACP across the COM and NO terminals. The EOLR and NO terminals are connected internally by a failsafe relay contact that is normally energized closed. In the event of a trouble signal from the transmitter or repeater, loss of communication or loss of power to the Receiver, that relay will drop out and initiate a trouble at the FACP. An alarm signal from the transmitter will result in a relay closing across the COM and NO terminals initiating an alarm or supervisory condition on the FACP depending how the panel is programmed.

The receiver needs to be connected to a latching trouble zone and re-sound every 4 hours (If silenced). The receiver cannot be monitored by a zone that uses alarm verification.

If the wireless system is installed as Class A, or if a repeater is shared between multiple transmitter and receiver pairs, the receiver that the repeater is mapped to should be installed adjacent to the fire panel so users may see which repeater/communication path is in trouble while at the fire panel.

The receiver shall be mounted adjacent to the fire panel.

WR-Repeater

Per NFPA 72, if the repeater is powered by an external power supply, the repeater is allowed to support multiple transmitters and receivers. Although the repeater may support more than one receiver, it can only be paired to one receiver. This selected receiver will display the status of the repeater.

If a repeater is powered by a battery, that repeater shall only serve one transmitter/receiver set. This is so that in the event that if the repeater loses its sole source of power, it does not affect more than one transmitter/receiver set.

The Wireless Repeater is designed to be mounted to a wall or a post using the optional post mounting kit, see fig. 6. When installing the Repeater outdoors, it may be necessary to install the device so that it is above vehicular traffic.

When mounting to a wall make sure the surface is flat enough to activate the pry-off tamper on the back of the unit. When mounting to a post, follow the instructions that come with the post mounting kit to ensure that the pry-off tamper on the back of the Repeater will operate correctly.

There is a weatherproof rubber plug in the conduit entrance on the bottom of the Repeater enclosure. When powering the Repeater with batteries, leave the weatherproof plug in place. When using an external power source, remove the plug to connect the conduit. The Repeater can be powered by an on-board battery or an external power supply. It is shipped from the factory in the External Power mode. To switch to battery power, remove the 4 screws holding the cover in place and move the jumper from Com and Ext Power to Batt & Com. See fig. 3.

For class A operation, the repeater must be powered by a UL 864 or 1481 listed supply with battery backup. every repeater must have a backup repeater to provide dual communication paths and each repeater must have it's own UL864 or 1481 battery backed up power supply so the loss of one power source only affects one repeater.. If the system would normally require one repeater, two must be used. If the application would normally require two, four must be used, etc.

Please note, only 3 repeaters can be paired to a receiver. If additional repeaters are required for class A operation, the additional repeaters would be paired to subsequent receivers.

NOTICE

After the devices are paired and installed, the signal strength between all devices should be checked using the Wireless Setup Tool. The signal strength between all devices shall be above a minimum of 53%. Anything below 53% may result in communication errors. See document 5406108 for information about the setup tool.

Testing

Testing of the wireless devices shall be conducted upon completion of the installation and periodically thereafter in accordance with the testing requirements of the devices they are monitoring, applicable NFPA codes and ordinances and/or the authority having jurisdiction. (Manufacturer recommends quarterly or more frequently)

1. Activate the Potter sprinkler switch. The Alarm/Supervisory relay on the Receiver shall change states within 10 seconds.
2. Restore the sprinkler switch back to the normal state. The Alarm/Supervisory relay on the Receiver shall restore back to normal within 10 seconds.
3. Disconnect a wire from the Transmitter to the sprinkler device. The trouble relay on the Receiver shall change states within 10 seconds.
4. Reconnect the wire to the sprinkler device. The Transmitter shall restore to normal within 10 seconds
5. Remove the cover on the Transmitter allowing the cover tamper switch to activate. The trouble relay on the Receiver shall change state within 10 seconds.
6. Depress the cover tamper on the Transmitter. The trouble relay on the Receiver shall restore to normal within 10 seconds.
7. Remove the battery from the Transmitter. The trouble relay on the Receiver shall activate within 84 seconds.
8. Reinstall the battery in the Transmitter. The trouble relay on the Receiver shall restore to normal within 10 seconds.
9. Replace the cover on the Transmitter and make sure the Receiver is in a normal condition.
10. Repeat steps 5 and 6 for any repeaters.

Note: The times noted above are the maximum times allowed. Actual times will be significantly less with the possible exception of the missing battery test. Battery status is checked every 84 seconds so it depends where in that 84 second timing cycle the battery was removed.

Battery Information

The batteries will last 1 year under normal use. When the battery level reaches a point where there is a minimum of seven days of power left, the Transmitter and/or Repeater if powered by batteries will transmit a low battery signal to the Receiver. At this point the batteries should be replaced as soon as possible with the correct batteries. The batteries may last longer than 7 days from the initial low battery signal. Additional life depends on temperature, signal strength and number of transmissions. It is possible to determine remaining battery capacity using the Potter Setup Tool.

NOTICE

DO NOT leave batteries in a device that is not installed as part of an active system with an operating receiver. If a battery powered device does not receive confirmation from the receiver, the device will continuously try to contact the receiver, resulting in low batteries in a matter of a few days. If devices will not be immediately installed after pairing, remove the batteries after pairing. The pairing will remain after battery removal.

⚠ CAUTION

If the batteries in a battery powered device are not replaced in a timely manner after the device sends a low battery signal, that device will eventually quit communicating. At that point it will not be able to send a low battery signal or any other signal so the only visible indication will be the COM ERROR LED on the receiver.

TRANSMITTER

- Use only two (2) AA size Energizer 1.5 volt LITHIUM IRON DISULFIDE BATTERY model L91.
- Be careful to observe polarity.

NOTICE

The use of any other 1.5 volt battery may not provide sufficient battery life.

RECEIVER

- Use only one (1) D size XENO 3.6 volt LITHIUM THIONYL BATTERY model XL205.
- Be careful to observe polarity.

NOTICE

The use of any other 3.6 volt battery may not provide sufficient battery life.

Battery Meter Reset Procedure

After replacing all of the batteries with ones that are correct and fully charged, the battery meter must be reset to prevent false low battery signals.

Important: Please read these steps before starting the process for familiarization purposes.

Note: Immediately after installing new batteries, the device goes through a power-up cycle for approximately 3 seconds. All LEDs on the device will flash during this time. After the power-up process, the device is in Learn Mode for approximately 45 seconds. During this time, the BATT RST LED will flash. DO NOT interact with the device while any LEDs are flashing.

Reset Procedure:

1. Install new batteries that are the correct model and charge.
2. Wait until all LEDs have stopped flashing, approximately 50 seconds after new batteries have been installed.
3. SLOWLY press the cover tamper switch, pressing down until the BATT RST LED flashes once, then release the cover tamper switch.
4. Perform step 3 five times. After the 5th flash, the LED will flash rapidly a few times and then go out.

The Battery Meter is now reset. The wireless setup tool can also be used to reset the meter.

It is not necessary to re-pair devices after replacing the batteries.

⚠ CAUTION

Do not reset the battery meter without replacing the batteries.

NOTICE

By law, these batteries cannot be shipped by air.

⚠ WARNING

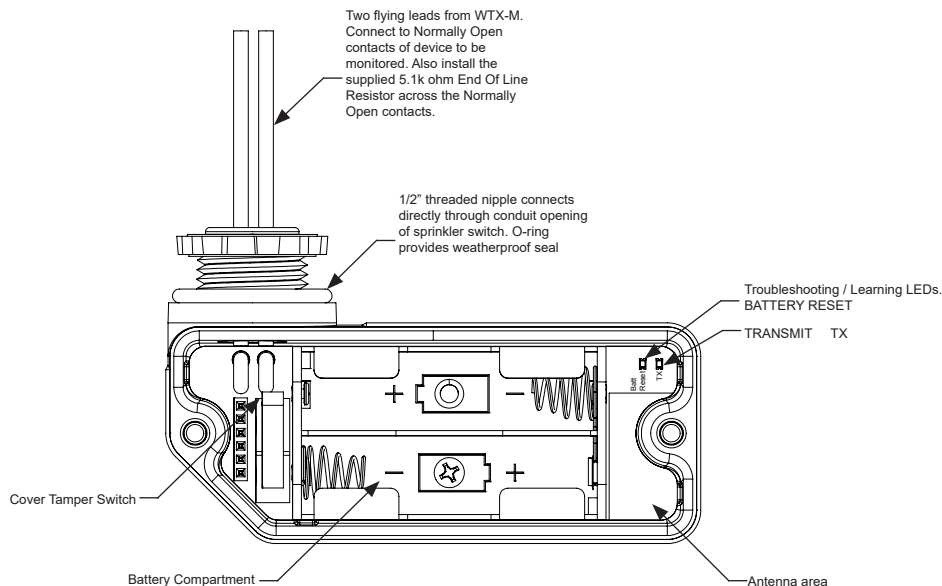
DO NOT RECHARGE, OPEN, CRUSH, HEAT ABOVE 212°F (100°C), OR INCINERATE. KEEP BATTERY OUT OF REACH OF CHILDREN AND IN ORIGINAL PACKAGE UNTIL READY TO USE. DISPOSE OF USED BATTERIES PROPERLY. REPLACE BATTERY WITH BATTERIES DESCRIBED ABOVE. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

Maintenance

No maintenance is required other than replacing of batteries as needed. See the battery replacement instructions above.

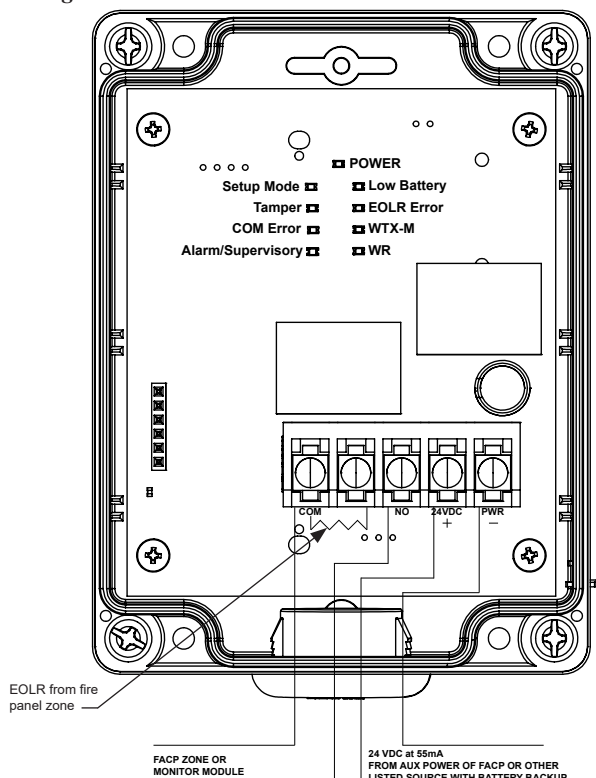
WTX-M-Transmitter

Fig 1



WRX-R - Wireless Receiver

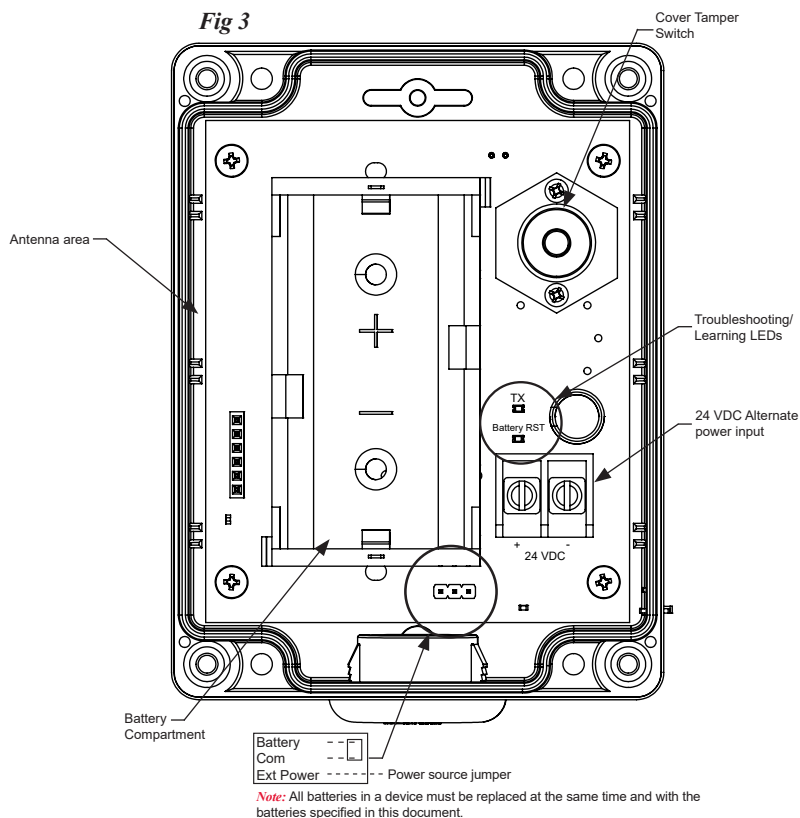
Fig 2



FACP ZONE OR MONITOR MODULE
The WRX-R contains a normally energized, failsafe relay. Under normal conditions, it internally connects the NO terminal and the EOLR resistor symbol terminal. A loss of power or any trouble condition causes the relay to drop out and open the EOLR circuit, this creates a trouble on the fire panel.

WR - Wireless Repeater

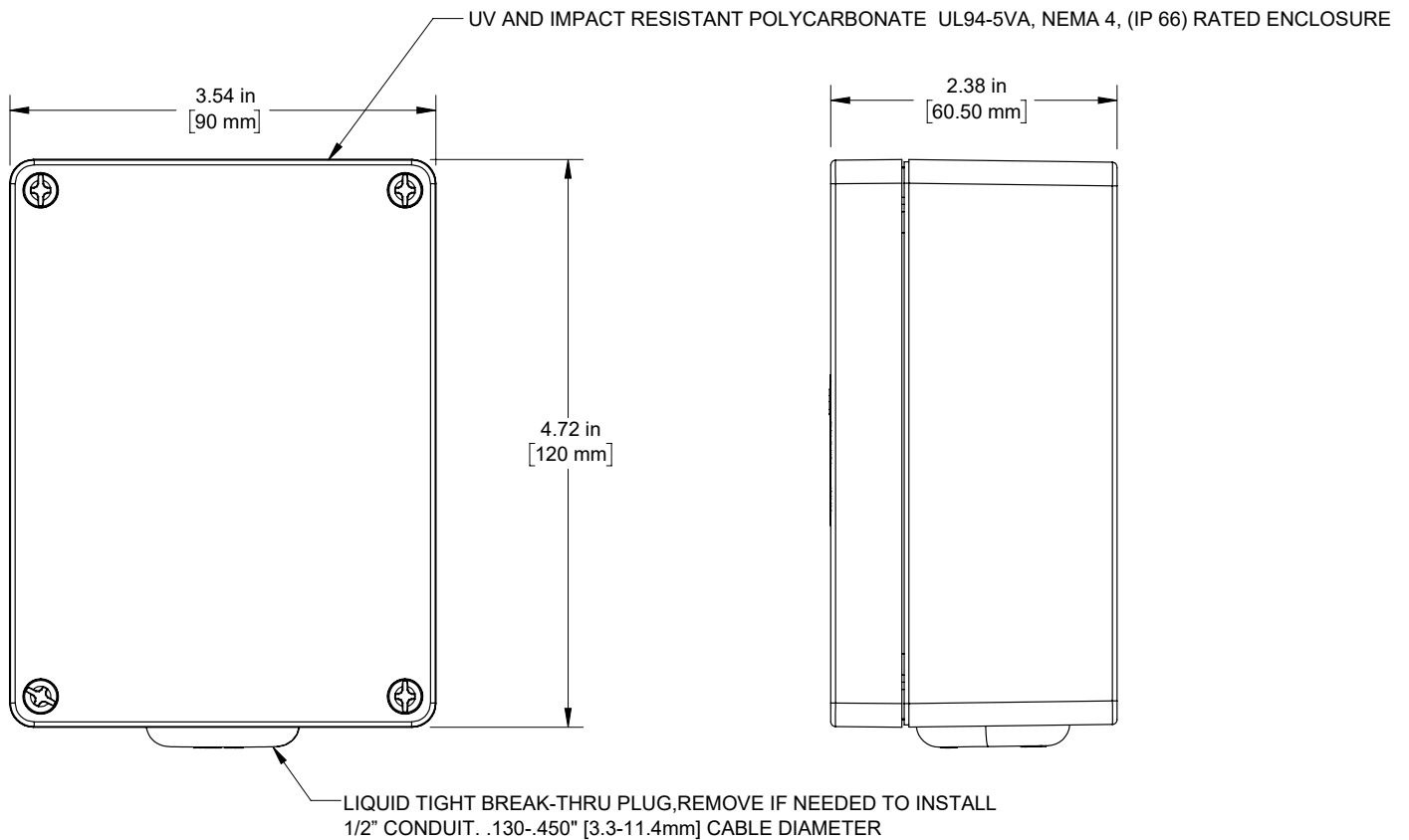
Fig 3



Dimensions

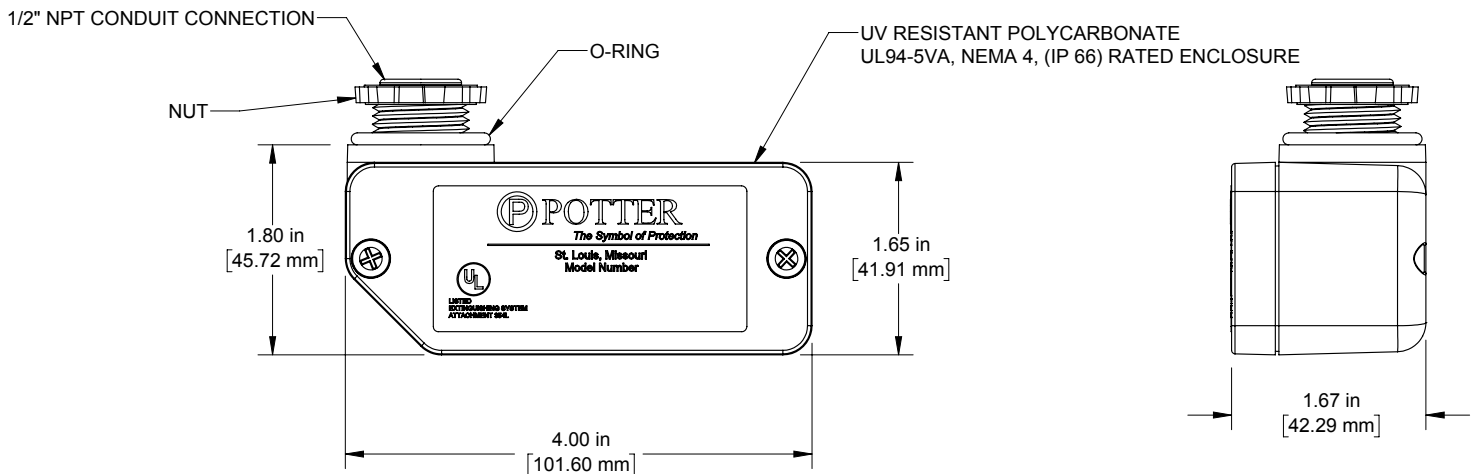
WR - Wireless Repeater & WRX-R - Wireless Receiver

Fig 4



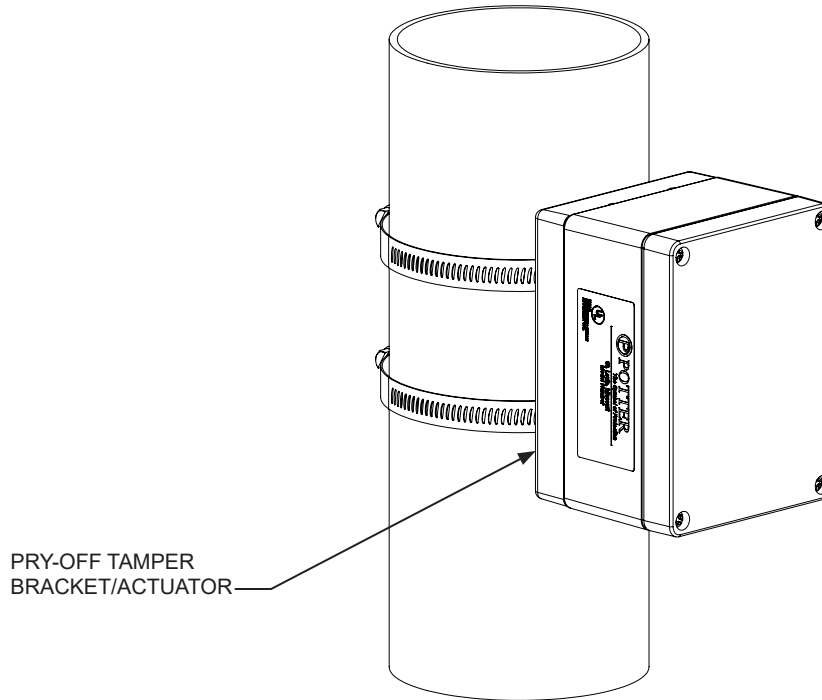
WTX-M-Transmitter

Fig 5



Optional Model PMK Post Mounting Kit for Repeaters

Fig 6



Notes: Kit includes pry-off tamper bracket/actuator.

Kit does not include hose clamps for mounting to post.

2 hose clamps required. Clamps can be up to 9/16" wide

Troubleshooting and LED Operation

The WRX-R contains the following LEDs to aid in troubleshooting:

LED Signal	Color	Indication
POWER	Green	24 VDC is applied to the receiver
SETUP MODE	Amber	Indicates when the system is in setup mode
ALARM/SUPERVISORY	Red	The relay on the WRX-R is activated indicating that the sprinkler switch has activated.
WTX-M	Amber	Lights steady to indicate the issue initiated from the WTX-M.
WR	Amber	Flashes to indicate which WR the issue initiated from. One (1) flash means repeater 1
TAMPER	Amber	Indicates the cover is removed from WTX-M or WR or the WR has been removed from its mounting location
COM ERROR	Amber	Communication has been lost from WTX-M or WR
LOW BATTERY	Amber	The batteries are low and must be replaced ASAP. Note: All batteries in a device must be replaced at the same time and with the batteries specified in this document.
EOLR ERROR	Amber	There is an open circuit in the wiring between the WTX-M and the sprinkler device to which it is connected.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

FCC Information

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing devices pursuant to Subpart C of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when devices are operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense.



NOTICE

Wireless products have a normal service life of approximately 10 years. The service life may be reduced by local environmental conditions.

Warranty Information

The WRX-R, WTX-M, WR and PMK are covered by Potters 5 year warranty. For warranty details please visit www.pottersignal.com/warranty.

Ordering Information

Model	Description	Stock No.
Signalink Wireless Kit	Includes 1 WRX-R and 1 WTX-M with batteries	3008040
WRX-R	Wireless Receiver - Relay	3008020
WTX-M	Wireless Transmitter - Monitored (batteries included)	3008001
WR	Wireless Repeater (battery not included)	3008030
XL 205F	3.6V, 19Ah D size Lithium Thionyl Battery	5130106
L91	1.5V, 3.5Ah AA size Lithium Iron Disulfide Battery (includes 2 batteries)	5130105
Cover	Optional Clear Cover for receiver or repeater. Indoor use only	5050881
WST	Wireless Setup Tool	3998000
	24 VDC Power Supply optional for WRX-R or WR	3006479
BT-80	12 VDC 8 AH Battery (2 Required) for Optional Power Supply	5130084
PMK	Post Mounting Kit F/Repeater	0090221

⚠ CAUTION

Wireless devices shall not be used as the primary initiating device to activate water or agent suppression systems. Wireless devices may experience communication or interference issues which could result in an unintended discharge or a failure to discharge.

NOTICE

By law, these batteries cannot be shipped by air. Batteries are included with the transmitters so the transmitters cannot be shipped by air.