Stealth Reader MIU User Guide

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Stealth Reader MIU

User Guide

NOTICES

Patents

This product contains Stealth Reader Technologies that are licensed by the manufacturer and are protected by US

Patents including: 7782804, 7996534, 8126488, 8351409, 8428558, 8428630. The furnishing of this document and/or purchasing of the associated products does not give you any license to or ownership of such patents.

Copying

FCCIIC Compliance

FCC ID: 2ACOA-WM2E
FCC ID: 2ACOA-WM2F
FCC ID: 2ACOA-WM3
IC ID: 26631-WM3

Note: This equipment has been tested and found to comply with the limits for a Class B 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 to 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.

Note: This device complies with Industry Canada’s license-exempt RSSs. Operation is subject to the following two conditions:

- This device may not cause interference; and
- This device must accept any interference, including interference that may cause undesired operation of the device.”

Caution: Changes or modifications not expressly approved by the manufacturer could void the user’s authority to operate the equipment.

To comply with FCC/IC RF exposure requirements, the device and the antenna for this device must be installed to ensure a minimum separation distance of 20 cm or more from a person’s body. Other operating configurations should be avoided.

Introduction

Stealth Reader networks are used for remote monitoring of commercial, industrial, and municipal equipment such as automatic utility metering. Hundreds of thousands of devices are currently being monitored by Stealth Reader networks.

The Stealth Reader MIU is the next-generation of MeshPlus water MIUs. The Stealth Reader extends the feature

set of the MeshPlus WM1 and is fully compatible with MeshPlus WM1 products. The Stealth Reader offers WM1 backward compatibility with extended wireless range and extended battery life. The Stealth Reader is based on the proven WM1 design with over 500,000 MIUs deployed; added features include increased reliability, and improved wireless performance.

Quick Tour

The Stealth Reader is powered by two replaceable lithium-thiony| chloride (LiSOCI2) batteries. The Stealth Reader electronics are permanently encased in a urethane potting compound to protect them from water and chemicals. The end cap is secured by a single screw to secure the batteries, electronics and cabling. The Stealth Reader interface cable includes 8 colored wires for connecting to a wide variety of water meter registers. Stealth Readers can also be ordered with a 3-wire Nicor cable for encoders wired with Nicor cables. The Stealth Reader enclosure supports mounting in a variety of environments including pole, wall, and pit mounts.

Pre-Installation

Supplies/Equipment

In order to install the Stealth Reader properly the following Equipment is needed:

- The Stealth Reader

Wire-end Connectors

- Lid Lock (for pit mounting) or Wall/Pole mount
- Stealth Handheld

In order to install the Stealth Reader and prevent water damage these materials are needed:

- UY Gel Cap Connectors
- 3ME9-Y Crimping tool
- Burial Pod (pit installs, not necessary for indoor installs)

Installation

This section covers the installation of the Stealth Reader and the mounting process.

Considerations

1. Signal distance depends on the location of the Stealth Reader’s antenna. When the Stealth Reader’s antenna is higher the signal is generally stronger. The use of a Riser plate will increase the height.
2. Different materials used for the Pit Lid or Vault will affect the transmission range. A plastic lid allows a longer range compared to a cast iron lid.
3. The installation usually takes 10 minutes if the meter pit lid can accept the Lid Lock Assembly, but it will depend on the location and mounting. Make sure there is enough space between the box lid and the ground for the Stealth Reader to fit. If there isn’t enough space for the Stealth Reader to fit properly, remove some dirt from the area. Do not over-tighten lid locks!

Procedure

Connecting to the Register

The Stealth Reader is wired directly to the meter. The following table matches the type of Register and the wires that need to be connected for each type. Follow the instructions in the Connection Techniques Section at the end of the chart. If the wiring is not per the chart, the Stealth Reader will not work properly with the meter. Some Registers will have screw terminals. The screws will be labeled with either the word or the starting letter of the colors, for example “R, G, B, etc.”.

Stealth Reader MIU to Register Wiring

Brand	Model	Register Type	SR Wires	Register Wires
Zenner	ETR / ETRU	Encoded	Red	Red
			Green	Green
			Black	Black
ABB/Kent	Scancoder	Encoded	Red	Green
		Type 2	Green	Red
			Black	Black
Hersey	Translator	Encoded	Red	Red
		Type 16	Green	Green/White
			Black	Black
Master Meter	Dialog	Encoded	Red	Green
			Green	Green
			Black	Red
Metron	Prolink	Encoded	Brown	Red
			White	Green
			Black	Black
Neptune	T-8	Encoded	Red	1 Post
			Green	2 Post
			Black	3 Post

Brand	Model	Register Type	SR Wires	Register Wires
Neptune	AUTO	Encoded	Red	Black
		Type 15	Green	Red
			Black	Green
Rockwell	EOR	Encoded	Red	Red
	3 Wire		Green	Green
			Black	Black
Rockwell	EOR	Encoded	Red	Red
	2 Wire		Green	Red
			Black	Black
Rockwell	Touchread	Encoded	Red	Red
	3 Wire	Type 1	Green	Green
			Black	Black
Rockwell	Touchread	Encoded	Red	Red
	2 Wire		Green	Green
			Black	Black
Schlumberger	ARB V	Encoded	Red	Black
		Type 9 (4 digits), 10 (5 digits), and 11 (6 digits)	Green	Red
			Black	Green
Schlumberger	ARB VI	Encoded	Red	Black
		Type 15	Green	Red
			Black	Green
Schlumberger	AUTO	Encoded	Red	Black
		Type 15	Green	Red
			Black	Green
Sensus	SR II	Encoded	Red	Red
	3 Wire		Green	Green
			Black	Black

Brand	Model	Register Type	SR Wires	Register Wires
Sensus	SR II	Encoded	Red	Red
	2 Wire		Green	Red
Invensys	AMR System	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black
Neptune	E-coder	Encoded	Red	Black
		Type 13 or 15	Green	Red
			Black	Green
Badger	ADE	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black
Metron	Spectrum 22	Encoded	Red	Red
			Green	Green
			Black	Black
AMCO	InVision	Encoded	Red	Green
		Type 3, 14, or 17	Green	Red
			Black	Black
Invensys/Sensus	ICE	Encoded	Red	Red
		Type 3 or 17	Green	Green
			Black	Black
Actaris	Cyble Coder	Encoded	Red	Red
		Type 3 or 17	Green	Green
			Black	Black

Brand	Model	Register Type	SR Wires	Register Wires
Master Meter	BL	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black
Master Meter	Octave	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black
Metron	Hawkeye OER	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black
Sensus	IPERL	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black
Elster	EVO Q4	Encoded	Red	White
		Type 3	Green	Red
			Black	Black
Hersey	MVR 650	Encoded	Red	Red
			Green	White
			Black	Green
Hersey	HPM ETR	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black
Master Meter	AccuLink	Encoded	Red	Red
		Type 3	Green	Green
			Black	Black

Connection Techniques

When connecting he Stealth Reader to the Register please use the following procedure:
1. Check the chart above for the proper wiring for the brand and model of register.
2. Connect the wires using UY gel cap connectors. If the wires are stripped, cut of the stripped ends. Wires must have un strapped ends in order to use the gel cap connectors. Use the Gel Cap Crimping tool to Secure the gel cap connectors.
3, The connections for encoded registers will be tested during Stealth Reader installation, however pulse register connections cannot be tested so is important to be sure the wires are connected correctly before

inserting in the burial pods.

If the wires are installed incorrectly and need to be repaired, use the following steps:
1. Cutoff the wires where they enter the UY gel caps.
2. Repeat procedures 2-3 from the section above.

There are some registers that use screw terminals instead of wires; each screw terminal has a letter next to it indicating the equivalent wire color it represents. Use the model and brand of register to find the proper wiring in the chart above then follow these installation stops:

1. Examine the wiring chart above to identify the proper wire to screw-terminal connections.
2. Wrap the connect wire around the screw terminal dock wise.
3. Tighten the screw while also making sure the wire stays in place. In doing this i the wires are wrapped around the correct way, it will tighten itself when the screw is being tightened.
4. Repeat steps 2 and 3 for each screw terminal

Splicing Techniques

This method ensures wire connections are completly water prof.

Water Pit Splice Method using burial pods

- Make sure that the gel caps are completely in the grease.
- Seal the burial pod

Water Pit Splice Method for Direct Register Connections

Strip the outer cable shield back 4 inches.

- Strip the insulation from the used wires % of an inch.
- Cut off excess wire and direct connect to the water register according to the wire connections chart per register type.

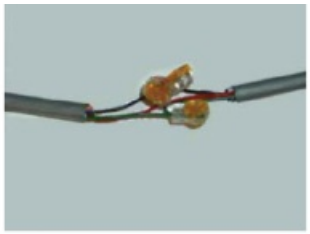

Figure 1 - A correct wire splicing using UY gel cap connectors.

Figure 2 - A correct insertion of the splice in the burial pod.

Mounting

The Stealth Reader supports several mounting options including pt, wall, and pole mounting.

Pit Mounting
1. Gather the mounting materials as shown in the picture below.

1= Screw Top,
2=Nut,
3=Riser,
4=Stealth Reader

2. If the Riser (9) is used, place the Screw Top (1) through the Riser from the indented side of the Riser. Place the Screw Top through the hole in the pit id. If there is no Riser, place the Screw “op directly through the hole in the pit id. The threaded portion of the Screw Top should be pointing down (into the pi).
3. Use the Nut (2) o secure the Screw top onto the Pit Lid. Tighten the Nut until it can’t be tightened further, but do not over-tighten it.
4. install the Stealth Reader top (opposite the wire) and place it Screw top. Tum the Stealth Reader nti a dick is hear, the click indicates that the Stealth Reader is locked into the Screw Top.
5. Carefully cover the pit with the pit id (that now has the Stealth Reader attached) and make sure the lid doses completely without putting weight on the Stealth Reader. Never it the weight of the Lid be supported by the Stealth Reader or the Stealth Reader or wiring can be damaged.
6. Pick up all trash in and around the pit.
7. Secure the Lid.

Proper/ Improper Pit Mounting

With Pit Mounting, the Stealth Reader should be upright and the lid should be able to close and seal securely. The picture to the right shows an INCORRECT installation of a Stealth Reader. The Reader is sitting to high and the lid can’t close properly. To fix this problem remove dirt from beneath the reader until the lid can close properly without putting any weight on the Stealth Reader. If a Stealth Reader has been improperly installed, it should be checked
for damage and proper operation before being retuned to service;
if the case, mounting hardware, or wiring is damaged, the Stealth Reader should be replaced.

Configuration

Stealth Reader installations are performed using a Stealth Handheld. The Stealth Handheld guides installers through the installation process, records the details of each installation, and tests and configures installed Stealth Readers.

Stealth Handheld may be used as stand-alone tools allowing Stealth Readers to be installed as needed (e.g. for demonstration purposes or to serve as repeaters). Stealth Handhelds are also fully integrated with the Stealth Reader Web work order management system allowing installations to be planned and assigned to installers or install teams.

Whether performing as-needed installations or work-order assigned installations, the process is similar and is described in the SR Handheld Users Guide.

LED Behavior

When the Stealth Reader is activated, two LED indicators provide visual status information. With a few exceptions, the Red LED generally provides status information regarding the connection between the Stealth Reader and the water register; the Green LED provides status information regarding the communication link between the Stealth Reader and the Fixed Wireless Network.

The following chart identifies the status information a Stealth Reader may provide:

Red Light	Green Light	Status	Action	
Fast Blink	Off	No application firmware installed	Return for service	
Off	Fast Blink	Date and Time not set	Proceed with installation, check Stealth Reader battery and alarm status at end of installation.	
Slow Blink	Active	No register detected	Check register wiring/connections	
Fast Blink	Active	● Encoded register: error Encoder: ● check wiring/connections	● Encoded register: error ● Encoder: check wiring/connections	
On	Active	● reading register ● Pulse: may be OK, if possible advance Pulse register: fewer than 5 register to generate several pulses	See below for action based on green LeD	

Active	Slow Blink	Searching for fixed network	May be OK, but if persists may require I installation of a rep eater or additional S tealth Readers near by. Neighbor swipin g is recommended.	
Active	Fast Blink	Found fixes network , waiting to register/r e-register.	May be OK, but if persists may require I installation of a rep eater or additional S tealth Readers near by. Neighbor swipin g is recommended.	
Active	On	Fixed network found and successfully reg istered	See above for actio n based on green L eD	
On	On	Fixed network found and successfully reg istered Water Water register found and c onnected	No Action, Install su ccessfully	
Note: Active above means slow blink, fast blink, or steady on, just not off.				
On	Off	Status for one second indicated de tected magnet activ ation	No action	

Shipping and Handling

Stealth Readers contain Lithium batteries which are hazardous and have transportation restrictions. Check with your carrier before shipping.

Specifications

Environment:
Do not exceed the temperature range of -40C to +85C.

Battery: 2 Wuhan Voltec ER34615-TW2 LiSOCI2 Batteries
Battery Life: 10+ years

Documents / Resources

	ZENNER WM3 Stealth Reader MIU [pdf] User Guide WM3, 2ACOA-WM3, 2ACOAWM3, WM3, Stealth Reader MIU