WhereCall III+ User Guide

WhereCall III+

WhereCall III+ PLC

Model: TFF-2200

User Guide Special Notices

Warnings call attention to a procedure or practice that could result in personal injury if not correctly performed. Do not proceed until you fully understand and meet the required conditions.

⚠ CAUTION

Cautions call attention to an operation procedure or practice that could damage the product if not correctly performed. Do not proceed until understanding and meeting these required conditions.

Notes provide information that can be helpful in understanding the operation of the product.

FCC Requirements

FCC Compliance Statement

This device complies with Part 15 rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation. The user is cautioned that any changes or modifications not expressly approved by WhereNet Corp. could void the user's authority to operate the equipment.

Canadian DOC Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

User Guide

Document Revision History

Revision	Change	Change Description	Date
A	C01508	Initial Release	6/26/08

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1   OVERVIEW

The WhereNet WhereCall System allows users in manufacturing and assembly operations to request service or specific parts without leaving their workstations. Specific parts or service requests may be assigned to individual WhereCall III+ devices so that users may indicate which item is needed. For example, an assembly worker using several parts: Each part is associated with a separate WhereCall III+ device located in the workstation. By pressing the green button on the WhereCall III+ device, a radio signal is sent by the WhereCall System to the computer system in the supply area, indicating which workstation requires the specified part or service.

There WhereCall III+ also operates in an optional "Message mode". This mode can be used to indicate a status; the display will blink either "-ON" or "–OFF" and will toggle each time the button is pressed.

To insure that the WhereCall system is in constant operation, real-time monitoring using an "I'm Still Alive" blinking transmission advises the system supervisor of the status of each WhereCall III+ device.

WhereCall III+ devices may be individually labeled for identification by applying a user-supplied label to the recessed area on the front panel below the green button.

The WhereCall III+ may be mounted in a work area with removable fasteners, double-sided foam tape or with mounting brackets and screws. Overhead installation is also possible by using cable mounting (Refer to Section 3, Installation and Mounting).

2   COMPONENTS

The **WhereCall System** consists of four major components: the WhereCall III+
device; a location antenna; a location processor and a WhereNet computer server.
This document details only the WhereCall III+ device.

The **WhereCall III+** is a palm-sized device approximately 3 inches by 5 inches, 1
inch thick, in a yellow and gray colored case. A green colored actuator button is in
the center of the device. A liquid crystal display (LCD) screen is located above the
button.

The WhereNet **Location Sensor** receives radio signals from the WhereCall III+
device when the work station user sends a call requesting parts by pressing the green
button on the WhereCall III+. These signals are transferred by cable to the
WhereNet Location Processor.

The WhereNet **Location Processor** converts signals from the antenna(s) and sends
them to the **WhereNet computer server**. A message is generated by the server and
sent to the user's computer system indicating that a part is needed at the location of
the WhereCall III+ device.

If necessary, the **WhereWand** hand-held communicator allows the WhereNet
technician to configure the **WhereCall III+** device. The WhereWand is not required
for most applications.

3   INSTALLATION & MOUNTING

The WhereCall III+ may be mounted in a work area with removable fasteners, double-coated foam tape, hanging brackets, or with mounting screws. Overhead installation is also possible using cable mounting.

Each WhereCall III+ must be mounted in a location to provide an unobstructed view in at least one direction. To maintain communication with the Location Antennas, do not install the WhereCall III+ inside a metal enclosure such as a metal cabinet.

3.1   Poly-Lock

A plastic, adhesive-backed fastener, Poly-Lock uses mushroom-shaped contact points that overlap and snap together, forming a strong attachment that can be separated by a forceful pull. Poly-Lock is not included with the WhereCall III+, but is available from WhereNet in precut squares. Contact your WhereNet account manager for information.
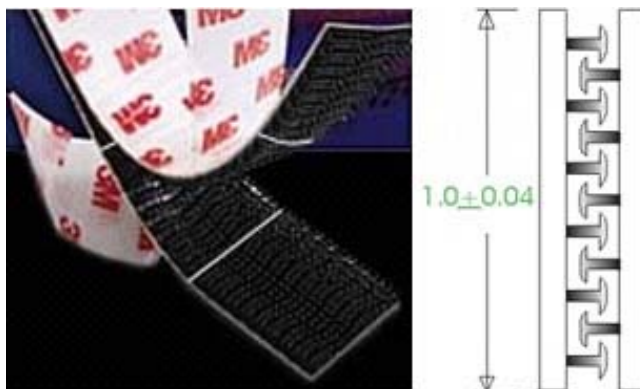
Figure 1:   Poly-Lock fastener with adhesive backing

Figure 2:   Poly-Lock & foam tape positions

3.2   Mounting WhereCall III+ with Poly-Lock

⚠ **CAUTION**

Do not apply the poly-lock when the temperature is below 60°F (15°C) or above 90°F (32°C).

1. Select the desired location in the workstation to mount the WhereCall III+.

2. Clean the mounting surface and the back plate of the WhereCall III+ with isopropyl alcohol.

3. Select a pair (they are shipped in attached pairs)of Poly-Lock squares, remove the adhesive backing and press them to the mounting surface, sticky side down (see Figure 2).

4. Remove the adhesive backing from three additional pairs of Poly-Lock squares and affix them to the back plate of the WhereCall III+ to match the fastener locations on the mounting surface.

5. You should now have four pairs of Poly-Lock attached to the back of the WhereCall III+. Remove the adhesive backing from all four squares.

6. While holding the WhereCall III+, aligned with the fasteners on the mounting surface. Gently press the unit against the mounting surface to assure that the adhesive on the squares is bonded to the both surfaces.

3.3   WhereTag Foam Tape Squares

WhereTag foam tape, both sides adhesive, provides a secure, semi-permanent mounting method for the WhereCall III+ device. Foam tape is not included with the WhereCall III+. Contact your WhereNet Account Manager for information.
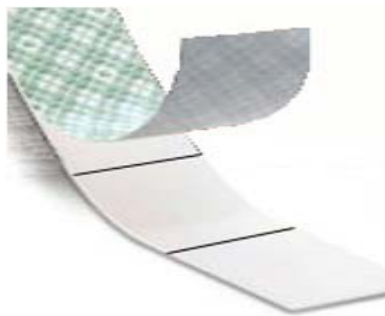

Figure 3:   Foam tape squares

"Double sticky" tape applies a layer of permanent adhesive film to both surfaces. Care should be taken in the application of foam tape; once applied it is difficult to remove.

3.4   Mounting WhereCall III+ with Foam Tape Squares

⚠️
CAUTION

Do not apply the foam tape when the temperature is below 60°F (15°C) or above 90°F (32°C).

1. Select the desired location to mount the WhereCall III+.

2. Clean the mounting surface and the back plate of the WhereCall III+ with isopropyl alcohol.

3. Select two foam tape squares, remove the adhesive backing from one side only and apply them to the back plate of the WhereCall III+ as shown in Figure 2.

4. Remove the adhesive backing from the exposed surface of the tape squares.

5. While holding the WhereCall III+, aligned to the desired position. Gently press the unit onto the mounting surface.
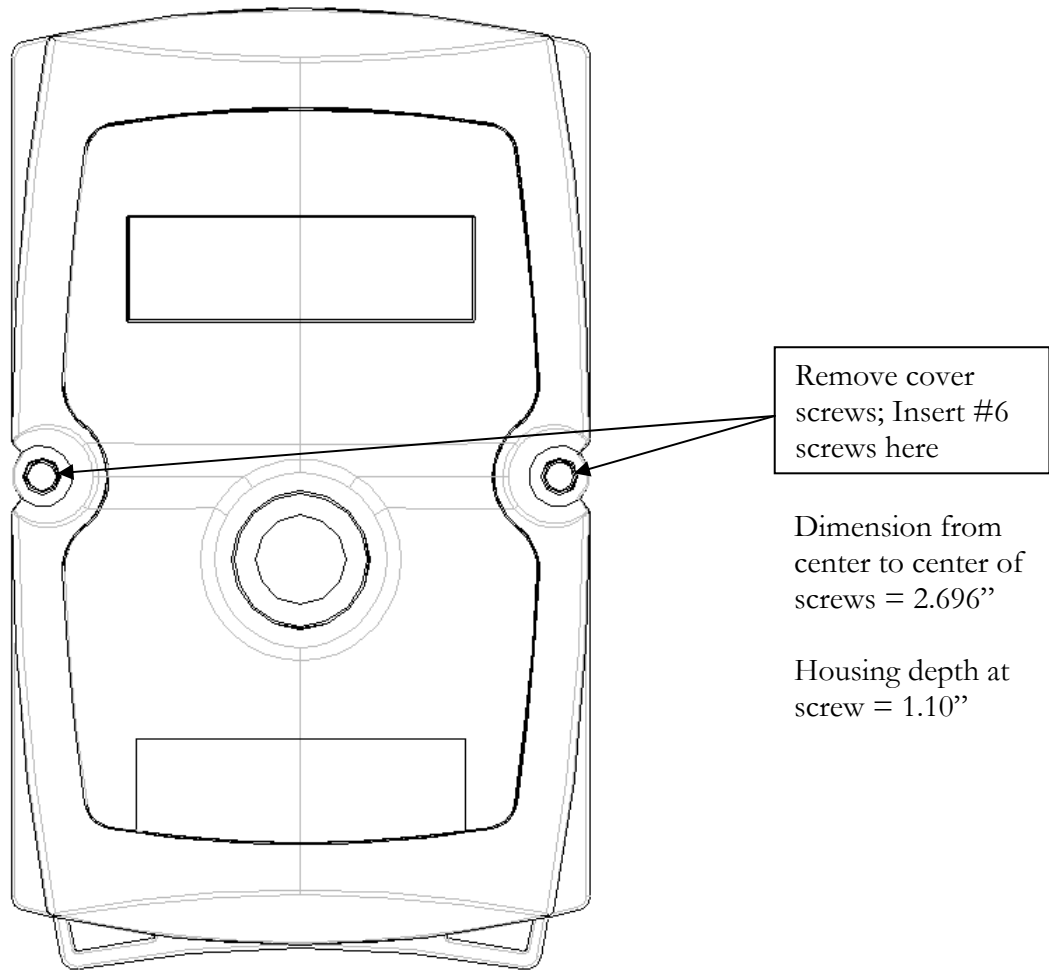
Figure 4:   Screw mounting template (drawing is actual size).

The following labels appear in the figure:

Remove cover screws; Insert #6 screws here

Dimension from center to center of screws = 2.696"

Housing depth at screw = 1.10"

3.5   Mounting WhereCall III+ with screws

The WhereCall III+ may be directly mounted to a surface such as a wall, post, or desk. For correct screw placement, use the Screw Mounting Template provided in this User's Guide (see Figure 4).

Remove cover screws, replace with #6 screws

Figure 5:   Cover screws

1. Select the desired location to mount the WhereCall III+.

2. Position the mounting template on the mounting surface.

3. Place a pencil, pen or metal scribe on the 'Insert screw here' points as shown in Fig. 4, puncture the template and mark the mounting surface.

4. Drill screw pilot holes as needed into the mounting surface.

5. Remove front cover screws as shown in Figure 5.

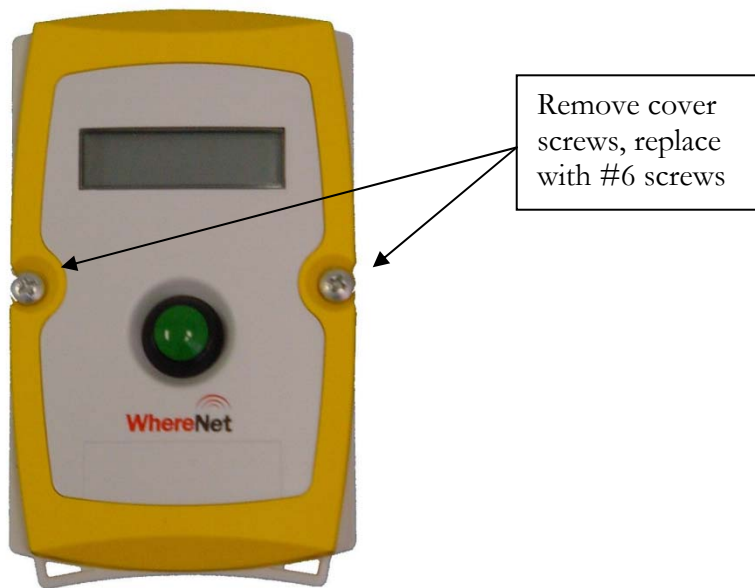6. Inserts #6 screws through holes in the front panel of the WhereCall III+ and gently tighten to a snug fit (12 to 15 in-ozs). Do not distort case by over-tightening.

⚠ **CAUTION**

Do not over-tighten screws. Damage to the WhereCall III+ might result if screws are over-tightened.

3.6   Hanging Cable Bracket (TM-216-00)

The WhereCall III+ may be installed from an overhead cable for ease of use in a workstation where mounting on flat surfaces is unsafe or inconvenient. Hanging cable brackets are not included with the WhereCall III+ but are available from WhereNet. Contact your WhereNet Account Manager for information.
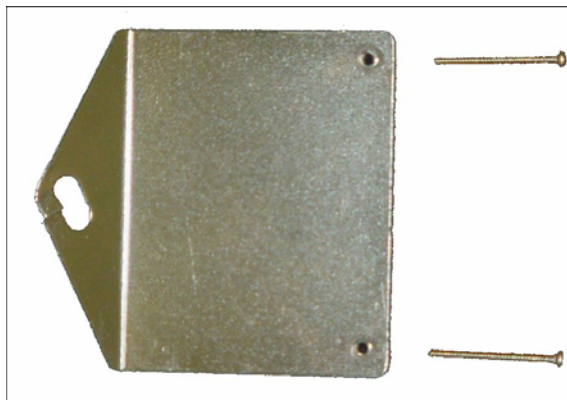
Figure 6:   Hanging cable bracket, TM-216-00

3.7   Installing WhereCall III+ with Hanging Cable Bracket

1. Remove front panel screws as shown in Figure 5. Insert #6 threaded screws provided with bracket through holes in front panel of WhereCall III+.

2. Align the holes in the Hanging Cable Bracket to the screws.

3. Attach hanging cable to Hanging Cable Bracket using cable loop.

Figure 7:   Front & rear view hanging bracket installed

4   OPERATION OF THE WHERECALL III+

The WhereCall III+ is a wireless messaging device that is capable of transmitting simple messages to the WhereNet Infrastructure. These messages can range from a call for parts for line side material replenishment to a request for supervisor assistance. There are three modes of operation:

- Button or Call Tag Mode
- Messaging Tag Mode
- OFF Mode

The WhereCall III+ is shipped in the "OFF" mode. There is also a battery change mode that is used to condition the tag to for installation of replacement batteries.

In Call mode the WhereCall III+ can be used for parts call and other operations that do not require an indication as to whether the request was completed. In this mode, the operator presses the button to send the request message. The display on the WhereCall III+ will flash the word "CALL" for one minute and then start to count up in minutes since the call was made. This lets the operator easily verify how long it has been since they made their request. In the button mode the WhereCall III+ will transmit "switch ID 0".

To turn the WhereCall III+ on when it is "OFF" (the display will show non-flashing OFF). Press the button once and the tag will resume operation in either the Call mode or the Message mode depending on the mode it was in when the off mode was selected.

In Message mode, the display toggles between "-ON" and "-OFF". The normal starting state is "-OFF". If the operator presses the button, then the WhereCall will send a message signaling the change in state and the display will change to "-ON" and transmit "Switch ID 1". The next button press will cause a new message to be sent signaling the change of state and the display will change back to "-OFF" and transmit "Switch ID 0".   In the Message mode the WhereCall III+ will send multiple transmissions at increasing intervals after each button press. The first set of blinks occurs as soon as the button is pressed, then repeats, after 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, and then continues sending a set of blinks every 60 minutes thereafter.

To change modes between Call mode and Switch mode or visa versa; press and hold the button until the display indicates either "b ?" or "S ?". (Do not release the

button while the display shows "8888" rather continue to keep the button depressed.) When either of these is displayed immediately release the button then press and release it again within five seconds; this will change the operational mode.

To turn the tag to the OFF mode from either Call mode or Message mode. Press and hold the button until the display shows 8888. Then release the button the display will indicate a four digit number for a few seconds and then show OFF. The WhereCall III+ is now OFF and all transmissions are disabled.

These messages are displayed on the WhereCall III+'s LCD display. The display has large characters so that it can be read from distances up to 10 feet away. The sturdy push-button is recessed to prevent accidental presses.

A variant of WhereCall III+, the WhereCall III+ PLC, provides for automated call requests by replacing the call button with a sealed connector that can be interfaced to intelligent shop floor equipment.

The WhereCall III+ provides long battery life, typically in excess of 5 years.

Additionally, the batteries are replaceable providing a long product life.

Display Message	Display Meaning	Keep Alive Blinks	Comments	Action required
"CALL" (blinking)	Button blinks are being transmitted.	Yes	This mode will continue for 60 seconds following a button press.	None
"HH:MM" Colon flashing	This dispay follows the Call" display and indicates the elapsed time from the last button press.	Yes	The time advances until it reaches 24:00 then holds until the button is pressed.	None
"CALL" displayed for more than 60 seconds.	If the button is pressed while the display indicates CALL, the display will reset for another 60 seconds.	Yes	The WhereCall will send a "Button Blink" for each button press. (the tag will buffer up to 3 presses)	None
"-ON" Message mode (blinking)	Message mode where the tag will transmit Switch ID 1.	Yes	Once in Message mode, each button press will toggle from "-OFF" to "-ON" and vice versa.	None
"b ?" mode change from Message mode back to call mode (not blinking)	Indicates that the user can now change modes if desired.. To change modes you must release then press the button again within 5 seconds. Releasing the button without pressing it again will cause firmware date code to display and the WhereCall III+ to enter the "OFF" mode.	Yes	The button must be held for several seconds during which time the "8888" code will be momentarily displayed. Pressing the button again will generate a "CALL" response.	Press the button to initiate "CALL" operation.
"S ?" mode change from call mode to Message mode (not blinking)	Indicates that the user can now change modes if desired.. To change modes you must release then press the button again within 5 seconds. Releasing the button without pressing it again will cause firmware date code to display and the WhereCall III+ to enter the "OFF" mode.	Yes	The button must be held for several seconds during which time the "8888" code will be momentarily displayed. Pressing the button again will generate a "OFF/ON" response.	Press the button to initiate "OFF/ON" Message operation.

Display Message	Display Meaning	Keep Alive Blinks	Comments	Action required
"OFF" (not blinking)	The WhereCall III+ has been set to the Off mode. Holding the button down for more than five (5) seconds sets the unit OFF.	No	This mode must be used to ship the WhereCall III+ and it may be used during storage.	Press the button to restore the unit to normal operation.
"8888"	Diagnostic check.	N/A	Display during mode change operations.	None
"NNNN"	Firmware date code	N/A	Display during mode change operation.	None
BAT?	The WhereCall is in battery change mode.	No	The battery change may be aborted by pressing the button once to return the WhereCall its previous state.	Replace the batteries. See section entitled Battery Change Procedure.

5   SPECIFICATIONS: WHERECALL III+ DEVICE

Specifications are subject to change without notice.

Mechanical

Dimensions	2.9 x 4.9 x 1.4 Inches (7.8 cm x 12.5 cm x 3.6 cm)
Weight	6.4 Ounces (181.5 g) check the weight
Color	High Visibility Yellow and Gray
Attachments	Mounting devices
Form Factor	Wall Mounted-Rugged Aesthetics

Durability

Drop	4 feet to concrete
Temperature	+32°F to +122°F, (0° to +50°C)
Humidity	0% to 100% condensing
Pressure Wash	Unit to withstand windblown dust and rain (IP 54)
Button	Functional after 1 million cycles
ESD	Functional per IEC-1000-4-2 Level 4

Battery

Battery Type	Two, "AA" Lithium Thionyl Chloride Cells
Battery Life	Typical 5 years (Batteries are customer replaceable)

Connector (used with WhereCall III+ PLC)

Connector	Waterproof, 4 pin, mates with Turck RS-44T or compatible..

Configurable Parameters

Configuration Frame	Some functions can be changed via a WhereWand. Contact your WhereNet service representative for more information.
Button Function	Push button 1st time, Tag emits 3 DSSS blinks with status bit 1 set (xxlx). Sub-blinks per blink as configured. The LCD timer starts, counts up to 24:00 and then holds. Push button 2nd time, the timer clears, cycle starts over.
Button Characteristics	A green, .47-inch diameter button, with tactile feedback.

Autonomous Transmission

Characteristics	Device sends one DSSS blink at user's desired blink rate. (Factory preset: to send transmission every 128 seconds) with no status bits set (other than low battery bit, if active).
Purpose	Indicates device is present and functional even if no parts requested.
Configurable	WhereWand or Hand Held Communicator can vary rate of autonomous blinks from 2 seconds to 9 hours. Note: The WhereCall III+ will not communicate with the HHC if the display reads "OFF"

Status Word

Length	4 bits
Battery low bit	bit 0 (xxxl), 'l' = battery low.
Call mode Button Push or Message mode = "ON"	bit 1 (xxlx), 'l' = button 1 pressed.
Message mode = "OFF"	bit 3 (x1xx), 'l' = button 1 pressed.

Timer and Display Characteristics

Number of Digits	4
Format	Hours and minutes (HH:MM) Colon flashes
Function	Check previous page
Digit Size	.32 inch
Back Lit	No

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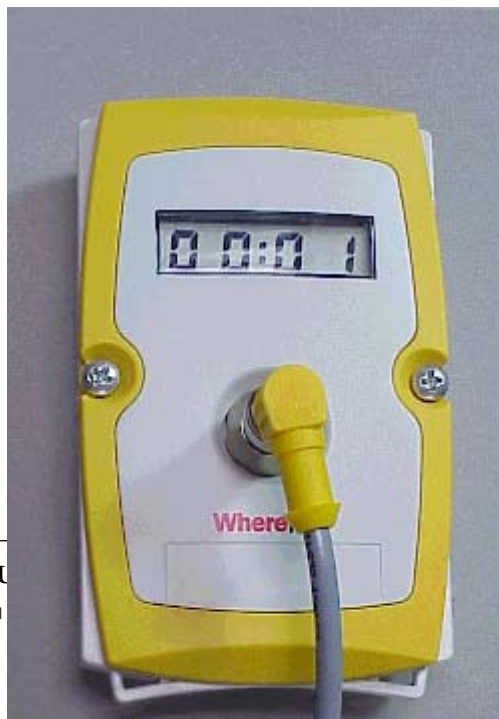
6 WHERECALL III+ PLC FCC REQUIREMENTS

This device must operate in compliance with Federal Communications Commission (FCC) Rules and Regulations Parts 15. See FCC registration label, located on the bottom of the equipment, for the FCC registration.

This equipment has been tested and found to comply with the limits for both Class A and Class B devices, pursuant to Part 15 of the FCC Rules.

This device complies with FCC ID: Approval Pending

This ISM device complies with Canadian ICES-001.
Cet appareil ISM est conforme à la norme pendant du Canada.

Radio Type Approval No………Approval Pendng

RF Notice

Any changes or modifications to WhereNet Corp. equipment not expressly approved by WhereNet Corp. could void the user's authority to operate the equipment.

7   WHERECALL III+ PLC OVERVIEW

This document describes how to mount and interface the WhereCall III+ PLC to your equipment via the external industrial connector.

The WhereCall III+ PLC is a variation of the standard WhereCall III+. It allows the call tag to be used with a remote switch in external equipment. The external equipment can "press the button" to initiate a call. This enables the WhereCall III+ PLC and the user equipment to operate unattended and to send a call message via the WhereNet system.

Figure 1 Photograph of the WhereCall III+ PLC with an interface cable attached. (This cable is not included with the WhereCall III+ PLC.)

For more information regarding the operation and installation of the WhereCall III+PLC please refer to the WhereCall III+ User Guide.

In this document the Terms WhereCall III+ PLC and TFF-2201 are used interchangeably and will have the same meaning.

8   WHERECALL III+ PLC INSTALLATION & MOUNTING

The WhereCall III+ PLC may be mounted in a work area with removable fasteners, double-coated foam tape, hanging brackets, or with mounting screws. Overhead installation is also possible using cable mounting.

Each WhereCall III+ PLC must be mounted in a location to provide an unobstructed view to a location antenna in at least one direction. To maintain communication with the Location Antennas, do not install the WhereCall III+ PLC inside a metal enclosure such as a metal cabinet.

Note   **In selecting the mounting location keep in mind that the cable from the equipment to the WhereCall III+ PLC must not exceed 3 meters (10 feet).**

9 CONNECTING THE WHERECALL III+ PLC

The WhereCall III+ PLC can be connected to a remotely mounted switch that is used to initiate a "button blink". This product works very much like the WhereCall III+ except that "button" actuation is provided from another device.

9.1 WhereCall III+ PLC Cable and Connector.

The TFF-2201 is to be connected using a Turck, RS 4.4T-X cord-set. The length of the cable is limited to 3.0M (10 feet). When this cord set is used the connection will be watertight.

This cord-set can be purchased from:

Turck USA
3000 Campus Drive
Minneapolis, MN 55441
1-800-588-8725

WWW.TURCK.COM

Other Turck locations are listed on the web sit.

The cable length between the TFF-2201 and the remote device must not exceed 3.0 Meters (10 feet).

Note

WhereNet does not supply the cord sets and connectors for the WhereCall III+ PLC.

9.2   WhereCall III+ PLC Electrical Connection.

Pins one (1) and three (3) are to be connected to the remote switch.
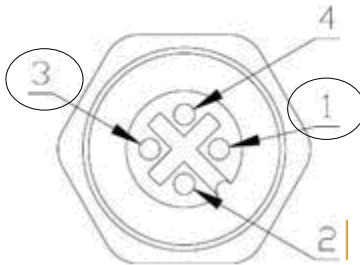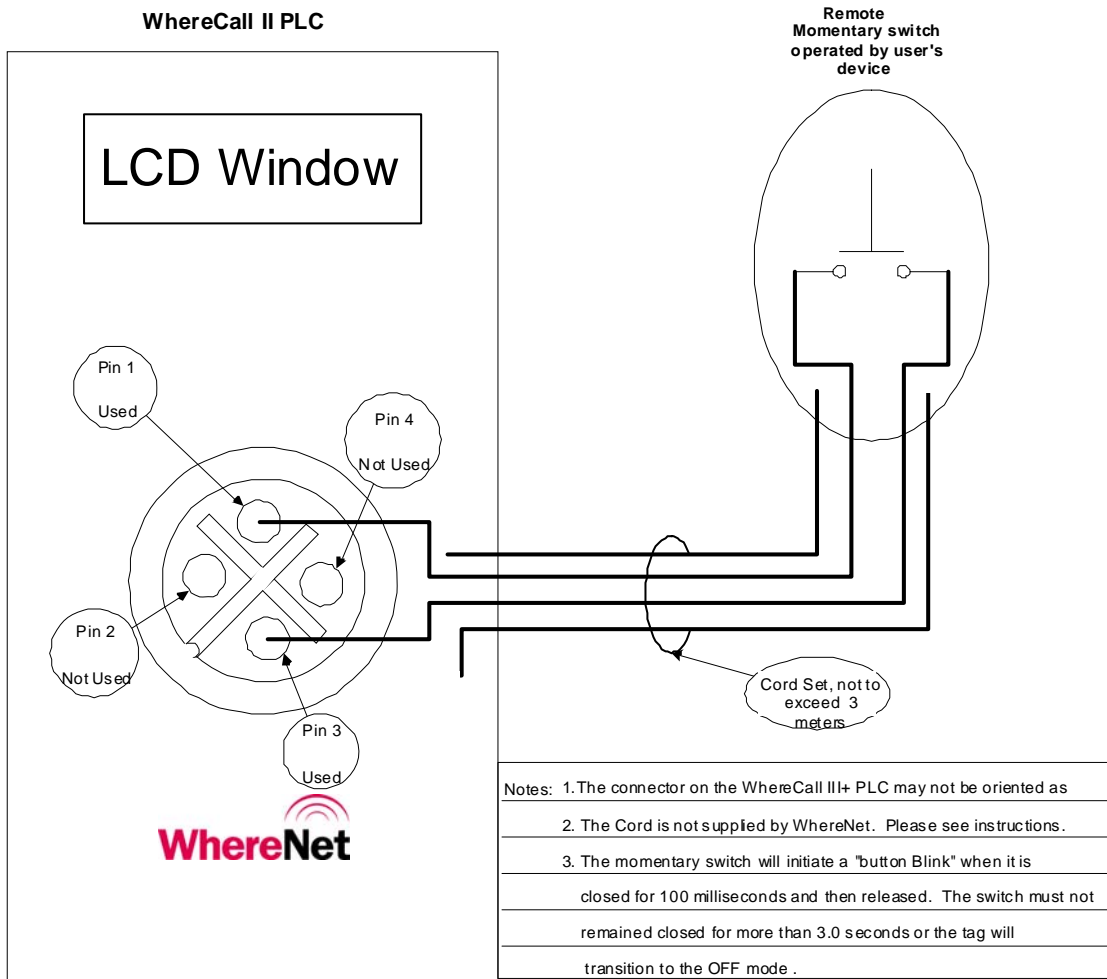

FK 4.4

Figure 9. The external switch is connected across pins 1 and 3

as indicated.

Note

> **Use the reference detail on the connector to identify the pin numbers. The connector may not be oriented the same on all units.**

Electrical Block Diagram

WhereCall II PLC

Remote Momentary switch operated by user's device

LCD Window

Pin 1
Used

Pin 4
Not Used

Pin 2
Not Used

Pin 3
Used

Cord Set, not to exceed 3 meters

WhereNet

Notes:	1. The connector on the WhereCall III+ PLC may not be oriented as
	2. The Cord is not supplied by WhereNet. Please see instructions.
	3. The momentary switch will initiate a "button Blink" when it is
	closed for 100 milliseconds and then released. The switch must not
	remained closed for more than 3.0 seconds or the tag will
	transition to the OFF mode .

The cable should be connected and routed to prevent large voltage spikes and static discharges from being carried into the tag via the switch cable. This may result in false "Button Calls" being generated or in extreme cases the TFF-2201 could be damaged.

9.3   WhereCall III+ PLC Switch Operation

The switch used to operate the TFF-2201 must be a momentary type. The TFF-2201 will initiate a "Button Blink" sequence when the switch breaks after having been closed for at least 100 ms and less than 5 seconds. It the switch is closed for less than 100 ms the unit will not react. See Table 1 for more information.

Note   **If the switch remains closed for three (3) seconds or more the unit will change to the "OFF" mode.**

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10   BATTERY REPLACEMENT PROCEDURE

10.1   Description

WhereCall III+ Tags have a nominal battery life of 5 years. After that nominal battery life, it is possible to replace the batteries to extend the life of the tag itself; however, WhereNet does not provide personnel or Services for this process.

To avoid damaging the WhereCall III+ tags, the proper screwdrivers with the correct settings must be used. This procedure must be followed or the WhereCall III+ may become non-operational and there is no field recovery method if this occurs. Batteries should be replaced before they are completely dead.

<u>WhereNet assumes no responsibility for damage to or failure of the WhereCall Tags resulting from this battery replacement procedure</u>.

10.2   Required Materials and Tools

10.2.1   Materials

Qty. 2 per tag   3.6V Lithium battery

 (WhereNet P/N 20057, SAFT P/N LS 14500).

 SAFT 12 company address - rue Sadi Carnot 93170 BAGNOLET - France

 Tel.: +33 (0)1 49 93 19 18   Fax: +33 (0)1 49 93 19 50

Caution: Use only the exact battery and manufacturer specified above.

Note: It is recommended that new batteries be marked with a marker prior to use to avoid inadvertent confusion with old batteries while replacement is being done.

1.1.1   Tools

- One, adjustable torque screwdriver with a # 2 Phillips tip and the torque set to 26 inch pounds for the two screws on the Face of the tag.
- One, adjustable torque screwdriver with a # 1 Phillips tip and the torque set to 6 inch pounds for the four screws in the back of the tag.
- One, "small, pocket size" flat blade screw driver use to remove batteries from the battery holder.
- One, ESD wrist strap or equivalent static protection device.

WhereNet does not provide the required materials and tools for changing batteries in the WhereCall III+ Tags.

10.3   Procedure

Caution: Personnel changing batteries must use an ESD wrist strap to prevent damage of the tag circuit board due to static discharge. Follow the manufacturer's instructions for proper use of the static prevention device.

1. Set the tag into battery change mode:
   a. Set the tag into OFF mode by holding switch for five(5) second, until the display shows 88:88, then release the switch; the display will indicate a four character number then change to OFF.
   b. From the OFF mode; press the button again and hold five(5) seconds; the tag will display a series of options:
      i.   ISO?
      ii. 802?
      iii. duo?
      iv. bat?
   c. When the display indicates bat?, release the button momentarily and them press it again to select the battery change mode. The display will display "bat?" or go blank.
2. Proceed with the battery replacement procedure. Use the #2 Phillips screwdriver to remove the 2 screws from the face of the tag.
3. With the tag sitting face down, use the #1 Phillips screwdriver to remove the 4 screws near the corners on the back of the tag.
4. With the tag face down, grasp the yellow bezel with one hand and remove the white back cover with the other hand. Place the cover aside with the screw points

down noting the orientation for ease of reassembly. Take care not to invert the cover as the screws can fall out and may be lost.

5. Note the positive/negative orientation of one of the batteries and insert the tip of the flat blade screw driver between the Positive (+) end of the battery and the plastic case and gently pry it loose. Insert a new battery insuring the correct positive/negative orientation before removing the second battery. Replace the second battery.

Correct battery Orientation as viewed from the back of the WhereCall tag.
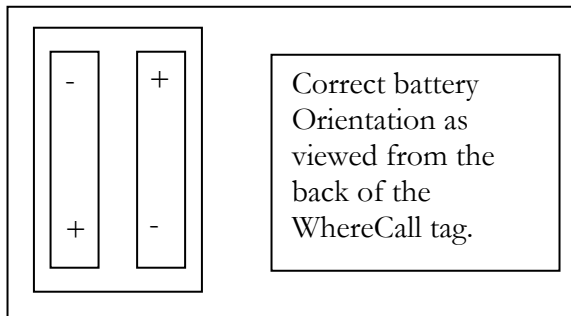
Caution: Inserting a battery with the wrong orientation may damage the tag.

6. Confirm that the display indicates OFF. The confirms that the battery replacement was successful.

7. Reassemble the tag using the screws removed earlier

8. To restore the tag to operation press the button and the tag will resume normal operation.