

# STM-8

## Instructions



**SIEMON™**

U.S. PATENT NO. 5,598,342

# STM-8 INSTRUCTIONS

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# STM-8 INSTRUCTIONS

## PACKAGED PARTS

The **STM-8** packaging includes the following:

- Master unit
- Cushioned carrying case
- Warranty card
- 9V alkaline battery
- 1 Identifiable passive remote unit labeled A [for use with UTP (Unshielded Twisted Pair) cable]\*
- Two 152mm (6 in.) universal modular plug cords wired straight through (plugs into modular 6- or 8-position jacks). **Use of any non-twisted modular cord may cause erroneous split pair detection.**
- The Siemon Company Wiring Reference Guide

The **STM-8-S** packaging includes the following:

- Master unit
- Cushioned carrying case
- Warranty card
- 9V alkaline battery.
- 1 Active remote unit labeled "A" for use with ScTP (Screened Twisted Pair) or UTP cables.
- Two 152mm (6 in.) ScTP modular cords wired straight through
- The Siemon Company Wiring Reference Guide

*\*Additional passive remotes are available.*

*See "Remote Identification" page 16.*

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## VOLTAGE PROTECTION

This tester and the remote units should never be used on lines where voltage is present. The master unit and active remote are designed to withstand and protect against typical telephone live line voltage levels, 48 VDC and 90 VAC.

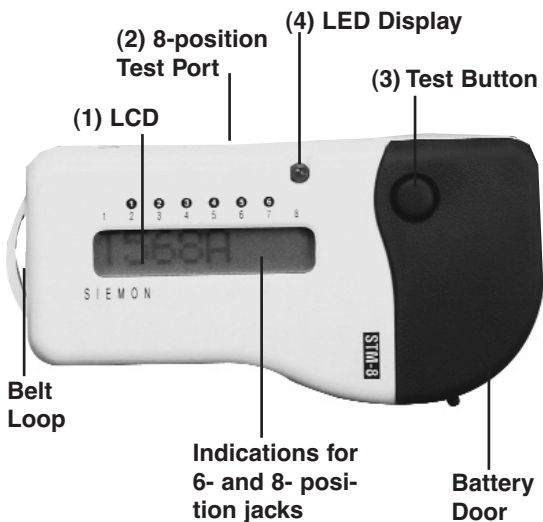
**CAUTION:** If hazardous conditions exist on the input, the master unit will display "**LINE VOLTAGE**" and tests cannot be performed. Disconnect the tester immediately.

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## CONTROLS AND FEATURES

The STM-8 is comprised of one master and one remote unit. The master provides all indications on the LCD screen **(1)**. It has a single 8-wire jack output **(2)** and a button **(3)** to activate the unit. The master unit is also equipped with a green LED **(4)** for visual identification during testing.

### MASTER UNIT



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Passive remotes (for use with UTP cable) are designed to fit six or eight position plugs **(5)** and require no power supply. The active remote (for use with ScTP and UTP cable) is equipped with both a green and red LED **(6)** for visual pass/fail identification and powered by a replaceable lithium battery **(7)**.

## PASSIVE REMOTE

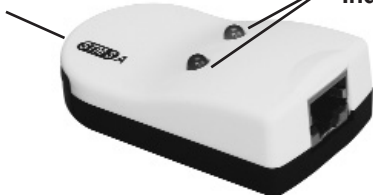


**(5) Fits 6- and 8-position plugs**

## ACTIVE REMOTE

(Sold separately or included with STM-8-S)

**(7) Battery Compartment**



**(6) LED Indicators**

# STM-8 INSTRUCTIONS

## FUNCTIONS

The STM-8 is a microprocessor-based tester which evaluates 1-, 2-, 3- or 4-pair shielded and unshielded cabling for shorts, opens, miswires, reversals, split pairs and cable length. Eight of the twelve test modes are used for testing continuity with known wire schemes (T568A, ScTP568A, T568B, ScTP568B, USOC, 10BASE-T, Token Ring, TP-PMD). The four remaining test modes are Length, FIND, TONE MOD, and TALK BAT.

### TEST PROCEDURE

**Step #1:** Attach a remote to one end (i.e. modular plug/jack) of a cable to be tested.

**Step #2:** Attach the master to the other end of the cable.

**Step #3:** Press the button until the desired test mode is displayed, wait one second and the STM-8 will begin testing.

### SELECTING TEST MODE:

To select a new test mode or turn off the unit, either wait until the end of one test cycle and press the button repeatedly or hold the button down during mid-cycle of the current test mode. Release the button when the desired mode appears or continue manually cycling through test mode choices by pressing button repeatedly.



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## PAUSE:

Testing can be paused by pressing the button once during a test cycle. The LCD display will flash the information on the pair being tested at the time the test was paused. Pressing the button again resumes the test. A test may be ended at any time by holding the button down for one second. This will bring you back to the start of the test mode selected.

## AUTOMATIC POWER DOWN:

Power down will result under the following conditions:

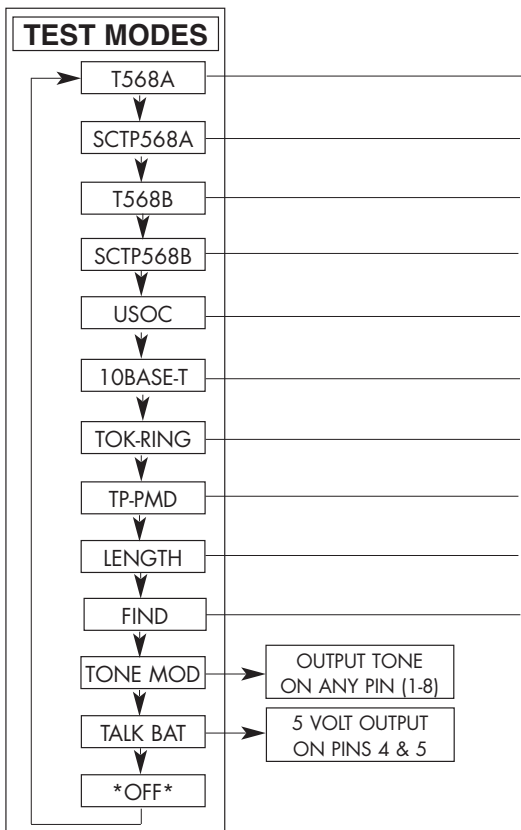
- Five minutes of idle operation with fail conditions or suspended operation
- Fifteen minutes of no change in display, connection or settings
- One hour in the TONE and TALK BAT modes

## RESUME TESTING:

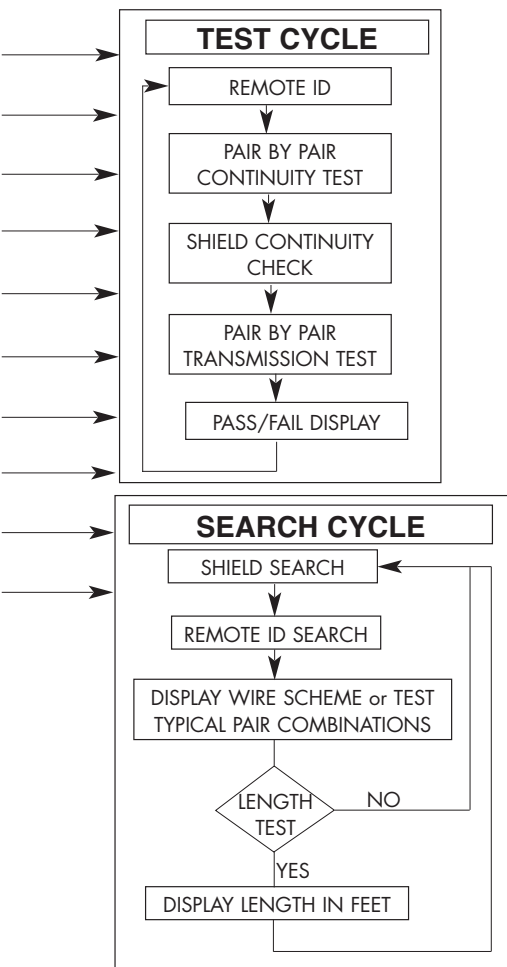
The master can be reactivated by pressing the button and the STM-8 will resume testing in the last test mode used.

The following flow chart illustrates the display control and test sequence of the STM-8:

# STM-8 INSTRUCTIONS



# STM-8 INSTRUCTIONS



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## TESTING CAPABILITIES

### CONTINUITY TESTING:

Continuity testing may be performed on any 22 to 26 AWG (0.40mm - 0.63mm) cable under 900 meters (2950 feet) long, with the remote connected at the far end.

### SPLIT PAIR DETECTION:

Split pairs define cables that have correct continuity but have either untwisted pairs a majority of the length in the jacket, or have identical miswires (see split pair illustration on page 26) on both ends of the link for the pin/pair scheme selected. The STM-8 will use the transmission test to detect faulty pair-to-pin assignments. If the pair-to-pin cabling scheme is correct, the STM-8 will display **T**s in the appropriate positions for each pair of the selected cabling scheme. If the pair-to-pin cabling scheme is not followed, it will result in a display of **X**s for each pair. The transmission test will only be performed if the cable passes the continuity test. If the cable under test is not long enough, the STM-8 will display **X**s in the appropriate positions, and then display: **TOO SHORT**.

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## SHIELD CONTINUITY:

To verify shield continuity in a shielded cable or link, the test must be performed in either the ScTP568A mode or the ScTP568B mode. This test will also require the use of the active remote (STM8-RA-S). In the ScTP mode, the STM-8 will test for shield continuity in addition to the cable continuity test and transmission test. The STM-8 will perform the shield continuity test immediately following the pin to pin continuity test. The active remote will:

- Flash green during the testing cycle
- Light steady green at end of cycle if all tests have passed.

If any of the tests fail the unit will respond with either a **FAIL CNT, NoShield**, or **FAIL TRN** display. The remote will indicate a failed shield continuity test with a steady red light.

*Note: The LED displays in the active remote may not operate with some older versions of the STM-8, however the test can still be performed and all other features will function properly.*

## LENGTH:

By selecting **LENGTH**, the unit will search for the appropriate pair/pin configuration and estimate the corresponding length  $\pm 10\%$  ft. A cable under 1 meter (3ft.) may or may not be detected and will respond as not valid.

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## FIND MODE:

In the **FIND** mode, the STM-8 will detect and identify which cabling scheme is correctly wired in the cable under test, providing the cable under test is at least 1 meter (3 ft.) long and the pair-to-pin cabling follows one of the stored cabling schemes. It identifies the pair/pin configuration as **T568; 1-, 2-, 3-or 4-pair USOC; 10BASE-T; TOK-RING;** or **TP-PMD**. It also identifies the remote and display's **Shielded** if the link has a continuous shield and the active remote is used. If a typical wiring scheme is not found, the STM-8 will run a test on typical pin combinations (i.e. pins 4 & 5, 3 & 6, 1 & 2, 7 & 8, and then 2 & 7 and 1 & 8 for T568 and USOC wiring schemes).

*Note: The STM-8 **FIND** mode is not able to differentiate between the T568A and T568B cabling schemes, since the only difference between the two schemes is the color of the insulation on pairs 2 and 3.*

## TONE MODE:

In **TONE MOD**, the STM-8 is capable of generating tone on any pin. This mode applies an alternating tone to ONE pin at a time. Once **TONE MOD** has been displayed for one second, the STM-8 will allow the user to select

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from **TONE-1** through **TONE-8**. Once **TONE-(pin #)** has been displayed for one second, the unit will begin applying tone to the specified pin. The use of a tone receiver, such as a tone sniffer or butt set, at the far end will assist in locating the tone from the STM-8 master that is generating the tone.

## TALK BATTERY:

The **TALK BAT** mode applies Talk Battery voltage (approximately 5V) between the center two pins of a modular connector to allow telephone communications on that pair. This function requires an additional device, such as a telephone or butt set.

## REMOTE (A, B, C & D) IDENTIFICATION:

During the test cycle, the STM-8 will identify the remote. The standard package includes a passive remote labeled A. Three additional remotes (B, C & D) are available for multiple port identification. The user can then test from one area and identify each location being tested as either remote A, B, C, or D. The three additional remotes are currently only available in the passive style.

*Note: The 10BASE-T and TP-PMD modes will not identify the remote.*

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## INDICATIONS

The STM-8 tests by pairs and the LCD screen will display readings in groups of two. See the following table for indications. Indications are displayed in the LCD pin location that corresponds to the pair/pin under test. Numbers 1 through 8 on the front of the master unit represent pin locations for an eight position jack, while numbers 1 through 6 represent pin locations for a six position jack.

<b>Indications</b>	<b>Meaning of Indication</b>
C	Pair Continuity pass
T	Transmission pass (proper pin-to-pair assignment)
O	Open
R	Reverse polarity
S	Short
?	Unknown miswire (multiple errors) or open on one side of pair
X	Indicated split pairs
LINE VOLTAGE	Plugged into a live line. Disconnect the tester immediately
FAIL CNT	Failed Continuity
PASS	Pass Continuity & Transmission test
PASS CNT	Pass Continuity only (cable too short for transmission test)
TOO SHRT or NOT VALID	Cable length is less than 1 meter
FAIL TRN	Transmission test fail (Split pairs found)
LOW BATT	If no shorts are indicated, replace 9 volt battery.
Shielded	End to end shield continuity
NoShield	Open in shield (ScTP568A & ScTP568B modes only)

*See troubleshooting (section 8) for additional descriptions.*



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## PASS INDICATIONS:

The green LED located above the LCD screen flashes during testing for each screen cycle. When **PASS** is displayed, the LED remains lit for additional visual indication. When the continuity tests and transmission test are passed for a cable wired other than USOC, **PASS** will be displayed. When a USOC cable is tested, an indication of **USOC, 1-, 2-, 3-, or 4-Pair** will be displayed. If using the active remote the green LED on the active remote will also flash during testing but will only remain steady green for one second if a **PASS** indication is displayed.

## FAIL INDICATIONS:

When a **PASS** indication is not encountered, the LED on the master unit flashes rapidly for approximately one second. The STM-8 will not proceed to the shield or transmission test if a cable fails continuity. If using the active remote the red LED on the active remote will illuminate for one second.

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## REPAIRING FAULTS

Multiple errors may require several tests to repair all faults. Reported problems should be repaired in the following order: [1] **S** (short), [2] **O** (open), [3] **R** (reversal), [4] **?** (miswire), [5] **X** (split pairs).

*Note: If testing a cable under 1 meter (3 ft.) and it passes continuity, the STM-8 will display **Xs** in the appropriate locations on the LCD screen for the transmission test and display **TOO SHRT**. This will be followed by **PASS CNT**.*

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## EXAMPLES OF STM-8 DISPLAYS

TEST MODE: T568A

REMOTE IDENTIFIER: A

CABLE LENGTH: OVER 1 METER (3 FT.)

### **T568A**

Indications	Master LCD Segments							
LCD Segment	1	2	3	4	5	6	7	8
Screen 1	<b>T</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>A</b>			
Screen 2	<b>R</b>	<b>E</b>	<b>M</b>	<b>O</b>	<b>T</b>	<b>E</b>		<b>A</b>
Screen 3				<b>C</b>	<b>C</b>			
Screen 4			<b>C</b>			<b>C</b>		
Screen 5	<b>C</b>	<b>C</b>						
Screen 6							<b>C</b>	<b>C</b>
Screen 7				<b>T</b>	<b>T</b>			
Screen 8			<b>T</b>			<b>T</b>		
Screen 9	<b>T</b>	<b>T</b>						
Screen 10							<b>T</b>	<b>T</b>
Screen 11	<b>P</b>	<b>A</b>	<b>S</b>	<b>S</b>				

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TEST MODE: T568A

REMOTE IDENTIFIER: A

CABLE LENGTH: SHORTER THAN 1 M (3 FT.)

Indications	Master LCD Segments							
LCD Segment	1	2	3	4	5	6	7	8
Screen 1	<b>T</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>A</b>			
Screen 2	<b>R</b>	<b>E</b>	<b>M</b>	<b>O</b>	<b>T</b>	<b>E</b>		<b>A</b>
Screen 3				<b>C</b>	<b>C</b>			
Screen 4			<b>C</b>			<b>C</b>		
Screen 5	<b>C</b>	<b>C</b>						
Screen 6							<b>C</b>	<b>C</b>
Screen 7				<b>X</b>	<b>X</b>			
Screen 8			<b>X</b>			<b>X</b>		
Screen 9	<b>X</b>	<b>X</b>						
Screen 10							<b>X</b>	<b>X</b>
Screen 11	<b>T</b>	<b>O</b>	<b>O</b>		<b>S</b>	<b>H</b>	<b>R</b>	<b>T</b>
Screen 12	<b>P</b>	<b>A</b>	<b>S</b>	<b>S</b>		<b>C</b>	<b>N</b>	<b>T</b>

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TEST MODE: ScTP568A

REMOTE IDENTIFIER: A

CABLE LENGTH: OVER 1 M (3 FT.)

Indications	Master LCD Segments							
LCD Segment	1	2	3	4	5	6	7	8
Screen 1	<b>S</b>	<b>c</b>	<b>T</b>	<b>P</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>A</b>
Screen 2	<b>R</b>	<b>E</b>	<b>M</b>	<b>O</b>	<b>T</b>	<b>E</b>		<b>A</b>
Screen 3				<b>C</b>	<b>C</b>			
Screen 4			<b>C</b>			<b>C</b>		
Screen 5	<b>C</b>	<b>C</b>						
Screen 6							<b>C</b>	<b>C</b>
Screen 7	<b>S</b>	<b>H</b>	<b>I</b>	<b>E</b>	<b>L</b>	<b>D</b>	<b>E</b>	<b>D</b>
Screen 8				<b>T</b>	<b>T</b>			
Screen 9			<b>T</b>			<b>T</b>		
Screen 10	<b>T</b>	<b>T</b>						
Screen 11							<b>T</b>	<b>T</b>
Screen 12	<b>P</b>	<b>A</b>	<b>S</b>	<b>S</b>				

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## TROUBLESHOOTING

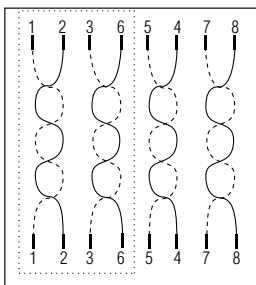
CONDITION	POSSIBLE CAUSE
FIND mode indicates <b>T00 SHRT</b> for correctly wired cable.	Cable under test is too short. Make sure cable is at least 1m (3 feet) in length to function in this mode.
The remotes are not identified.	The center pins are not connected, typically found in 10BASE-T or TP-PMD test modes.
The master unit does not identify remote and displays <b>0</b> in all positions.	Make sure the remote is plugged in at the other end of the cable.
The master unit is displaying <b>?</b> on the LCD display.	There are unknown miswires which need to be corrected or an open on the tip or ring side of the displayed pair.
The master unit is displaying <b>X</b> on the LCD when running the transmission test.	The cable being tested is not twisted pair or there are split pairs found in the cabling.
The master unit is displaying <b>R</b> on the LCD display.	There are pairs wired in reverse or cable may be a reversed configuration, (typically found in some telephone applications).

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CONDITION	POSSIBLE CAUSE
The master unit is displaying the wrong remote name on the LCD display.	May have a short between middle two conductors (pins 4 and 5 of a 4-pair cable).
The LEDs on the active remote unit do not light when performing test.	If lithium battery in the remote is good, you may be using an older version of the STM-8 master unit which will not operate the LEDs. The test can still be performed and all other features will function properly.
The master unit is displaying <b>NoShield</b> with a shielded cable.	Be sure you are using the active (shielded) remote and not the passive remote. Also verify entire link being tested is shielded, not just the cable.
The master unit is displaying <b>NOT VALID</b> .	The cable is under 1 meter (3ft.) or the cable is incorrectly wired.
The master unit is displaying <b>FAIL TRN</b> with a known good cable.	May be an indication that the cable is at a border line length (i.e. some pairs pass and some do not).

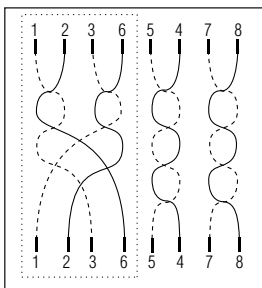
# STM-8 INSTRUCTIONS

## Correct Pairing



Correct connectivity of telecommunications outlet/connectors is defined in TIA-568-A section 10.45 and is illustrated as shown.

## Crossed Pairs

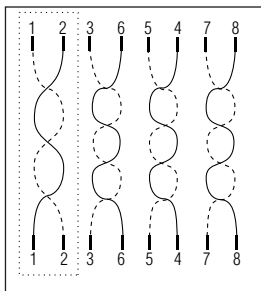


A crossed pair occurs when the two conductors in a wire pair are connected to the position for a different pair at the remote connector.



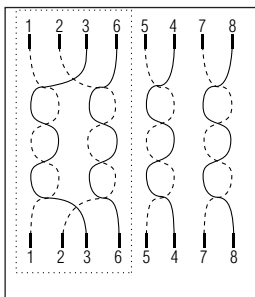
# STM-8 INSTRUCTIONS

## Reversed Pairs



A reversed pair occurs when the polarity of one wire pair is reversed at one end of the link (also called tip/ring reversal).

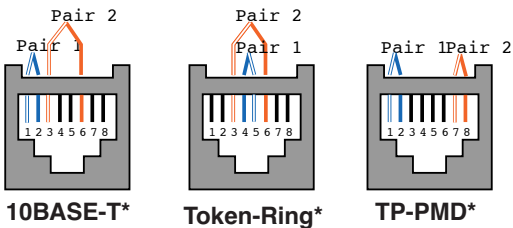
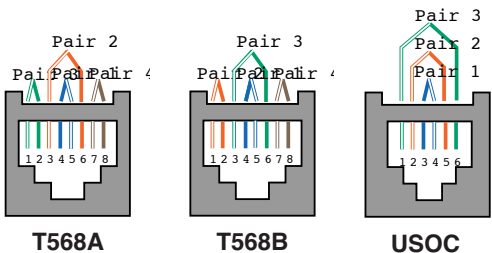
## Split Pairs



Split pairs occur when pin-to-pin continuity is maintained, but physical pairs are separated.

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## JACK CONFIGURATIONS



==== Denotes Tip

—— Denotes Ring

\*The pin-to-pair charts for 2-pair LAN applications shown above depict active pairs only. Termination requirements for unused pairs are specified by the equipment manufacturer.

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## BATTERY INSTALLATION

### Master Unit

1



Rotate the bottom of the battery door away from the tester housing.

2



Remove door from tester housing by unsnapping from pivot point and pull the 9V connector out of the battery compartment.

*Note: Replace the battery when **LOW BATT** is displayed. One alkaline battery will operate the unit for approximately 25 hours continuously in any mode other than **TALK BAT**, which will operate for approximately 10 hours continuously.*

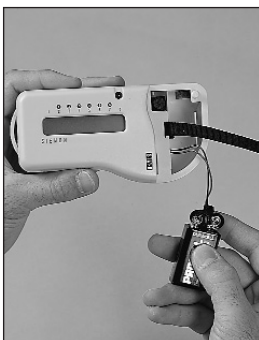
# STM-8 INSTRUCTIONS

3



Lay the battery ribbon across compartment which will allow for easy removal of battery.

4



Connect new 9V alkaline battery to connector.

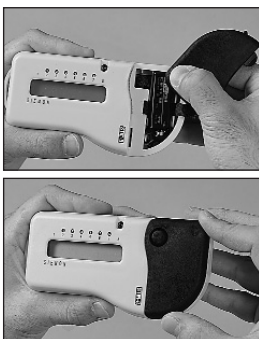
# STM-8 INSTRUCTIONS

5



Place into battery compartment as shown on the battery orientation diagram engraved in the battery compartment.

6



Reattach the battery door to pivot point on housing and rotate door to its closed position.

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## Active Remote

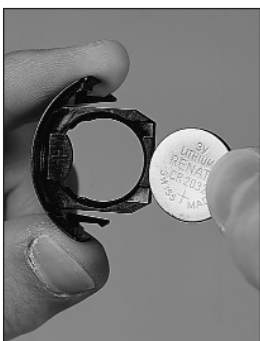
(Sold separately or included with STM-8-S)

1



The battery for the active remote (factory-installed) can be easily replaced. Insert screw driver in slot on bottom end of unit and twist open the battery compartment drawer.

2



Slide battery compartment out of remote, remove battery from drawer and replace with new 3 volt lithium battery (Duracell P/N DL2032 or equivalent). Battery will only fit into the battery drawer with positive side facing up.

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3



*Note: The battery for the active remote has a shelf life of approximately 3 years and will operate the remote for approximately 340 hours in continuous use. Replace the battery when the LEDs fail to illuminate properly.*

Slide battery compartment back onto remote housing.

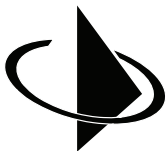
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## TECHNICAL SUPPORT

For Technical Support, call (860)945-4385  
or fax (860)945-8550  
or e-mail at the following address:  
[techsupport@siemon.com](mailto:techsupport@siemon.com)







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