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STARLINK SL-1 WIRELESS BACKUP TELEMETRY UNIT INSTALLATION INSTRUCTIONS

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INTRODUCTION

The StarLink SL-1 is a fully supervised, wireless digital two-way backup subscriber unit supported by an extensive nationwide wireless network. The SL-1 is compatible with virtually any alarm control panel and is easy to install and test. The SL1 transmits alarm signals to the StarLink Control Center which are forwarded to ANY Central Station via standard CS receiver formats, including 4/2 and Contact ID. In addition, the StarLink Control Center will generate and report a Communications Failure signal in the event that the network does not receive the expected supervisory test signal from the Wireless Telemetry Unit during the scheduled period.

StarLink alarm signals are transmitted on the digital data-only Velocita network using Mobitex technology, which is not shared with cell phone users that may cause high traffic at peak times. StarLink alarm signals are always ensured the highest network priority, unlike control channel technology reporting systems.

SPECIFICATIONS

Electrical

Input Voltage: 12.5VDC \pm 15%
Standby Current: 20mA
Maximum Current: 2 AMPS (for less than 1 second)

Physical

Dimensions: 192mm H x 78mm W x 34mm D
(w/o antenna) (7.559" H x 3.07" W x 1.336" D)
Mounting: #6 Screw Holes (4)
Input Connector: 5mm Screw Terminals
Output Connector: 2 mm (.08") Wire Antenna, Mini UHF Option

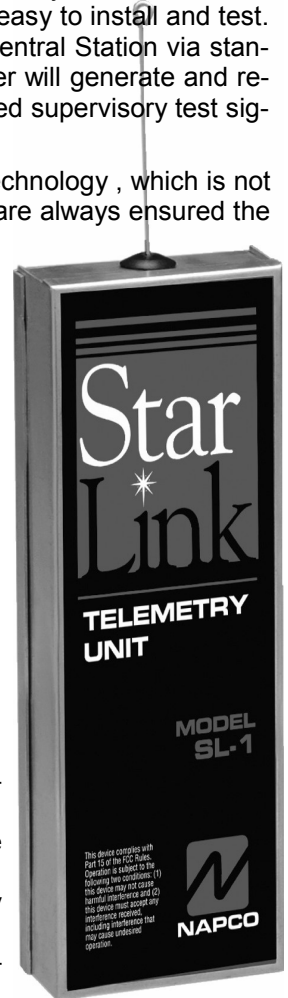
Environmental

Operating
Temperature: -30°C - 55°(-22°F - 131°F)
Humidity: 95% Non-Condensing

Input Channels

3 Channels: Positive Voltage Trigger (4.5 to 14.5) or
Negative Trigger
(750-millisecond integration delay)

Channel 1: Selectable Option - SmartChannel
for Bell Output - reads pulsed or
steady and sends corresponding
code (10-second integration delay)



GENERAL INSTALLATION GUIDELINES

- Since the mounting location can ONLY be selected based on RF performance, it is HIGHLY recommended that the installer carefully follow STEP 2 below BEFORE any wires are installed.
- Generally, high locations are best. DO NOT mount radio in basement or below grade as unpredictable performance may result.
- Whenever possible, DO NOT mount the SL-1 in non-climate controlled environments (i.e. attics may become extremely hot in summer, garages may become extremely cold in winter).
- Avoid mounting locations within 3 feet of AC power lines, fluorescent light fixtures, or large metal objects (air conditioners, metal garage doors, etc.).
- A fair amount of care may be required to mount the SL-1 so as to achieve an optimal RF path. The installer should spend as much time as needed to obtain the highest signal level possible.
- The SL-1 draws a substantial amount of current -- approximately 2 AMPS -- during transmit (less than one second). Therefore, follow the instructions for powering the SL-1 carefully!

STEP 1: ACCOUNT REGISTRATION

To activate the StarLink Subscriber Unit, complete the Subscriber worksheet and then use one of the following StarLink activation methods (it is strongly recommended that the account is registered first to allow complete testing through to central station upon installation):

- Register the account on-line through the StarLink; go to <http://www.napcosecurity.com> and click **STARLINK**. NOTE: new StarLink Dealers must first set up an account by clicking Dealer Registration. Accounts registered via the internet are immediately activated and on-line.
- Fax the completed Subscriber worksheet toll-free to 631-789-9292. Worksheets received via fax are processed within 24 hours from receipt. Monday – Friday, excluding Holidays .
- New accounts may be activated through the StarLink Automated Operator System toll-free at 1-800-645-9445, extension 333. This will provide a reporting account, but complete account details must be either faxed or supplied on-line shortly after activation..

STEP 2: SELECT A MOUNTING LOCATION

- Temporarily connect power to the SL-1 from a fully charged 12V (4AH minimum) battery. DO NOT mount the SL-1 at this time. Position the unit in the desired mounting location.
- Press the test button (S1), on the bottom right hand corner; the unit will transmit and display one long blink (see Fig. 1). Observe the coverage LED, count the number of blinks and compare to the Coverage Chart (right). Move the unit as required to achieve the best coverage (signal strength) possible. As needed, re-position the unit, transmit and watch the Coverage LED to indicate change. The unit will not transmit until 15 seconds have passed since last test. There is a 2 second delay between blink cycles.
- Once a location has been selected based on coverage, permanently secure the unit using #6 screws (not supplied) in at least 2 of the 4 mounting holes.

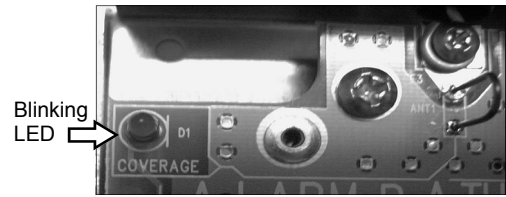


Fig. 1. Testing Signal Strength

# BLINKS	COVERAGE TABLE
0 BLINKS	NO NETWORK--DO NOT INSTALL--Re-position Unit
1 BLINK	VERY WEAK COVERAGE--DO NOT INSTALL--Re-position Unit
2 BLINKS	MARGINAL COVERAGE--Reposition Unit or Use High-Gain Antenna--INSTALL with CAUTION
3 BLINKS	GOOD COVERAGE SIGNAL--OK TO INSTALL
4 BLINKS	VERY GOOD COVERAGE SIGNAL--OK TO INSTALL
5 BLINKS	EXCELLENT COVERAGE--OK TO INSTALL

STEP 3: CONNECT INPUTS – CHANNEL TRIGGERING

NOTE: The SL-1 provides 3 Input channels for triggering alarm communications. While all three channels may be configured to sense positive (default) or negative inputs, Input 1 may be configured for Smart Channel Auto-sense which will report a BURGLAR signal for a steady bell and a FIRE signal for a pulsing bell. All channels configured for positive or negative trigger have a 1 SECOND integration delay. The Smart Channel input will analyze Bell or Siren Driver output to determine if trigger is BURGLAR or FIRE, and has a 7 SECOND integration delay.

! NOTE: DO NOT cut any resistors while the unit is under power.

POSITIVE TRIGGER (INPUT #1, 2 or 3) (DEFAULT)

(For any "POSITIVE" voltage (+4.5 to 14.5VDC) trigger)

- To use this method for INPUT #1, make sure resistor R100 has **NOT** been cut
- Make sure resistor R101, R102, R103 (INPUTS #1, 2, 3 respectively) have **NOT** been cut.
- Connect SL-1 INPUT #1, 2, 3 (as applicable) to Positive trigger (Positive Voltage on alarm)
- INPUTS # 1, 2, 3 send codes 1, 2, 3, respectively

NEGATIVE TRIGGER (INPUT #1, 2 or 3)

(For any "NEGATIVE" or "Pull-to-Ground" trigger, such as NAPCO or DSC PGM lugs)

- To use this method for INPUT #1, make sure resistor R100 has **NOT** been cut
- CUT** resistors R101, R102, R103 (INPUT #1, 2, 3 respectively), as applicable.
- Connect SL-1 INPUT #1, 2, 3 (as applicable) to Negative/Pull-to-Ground trigger (Goes Negative / "Pulls-to-Ground" on alarm)
- INPUT # 1, 2, 3 send codes 1, 2, 3, respectively

SMART CHANNEL TRIGGERING FOR INPUT 1

- To convert Input 1 to Auto Sense Trigger, **CUT** resistor R100

! (remove power from unit before cutting any jumpers.

- Follow the steps below for the desired trigger style.

SMART CHANNEL BELL POSITIVE TRIGGER FOR INPUT 1 (Fig 3)

(For NAPCO, ADEMCO and others with switched "BELL POSITIVE" terminals)

- Make sure resistor R101 has **NOT** been cut
- Connect SL-1 INPUT #1 to Alarm Control Panel BELL + terminal
- Steady Voltage (+4.5 to +14.5VDC) on INPUT #1 sends code 1D (BURGLAR), pulsating Voltage (~800mS – 8 SEC/cycle) sends code 1C (FIRE)

SMART CHANNEL BELL NEGATIVE TRIGGER FOR INPUT 1 (Fig 4)

(For DSC and others with switched "BELL NEGATIVE" terminals)

- CUT** resistor R101 to convert INPUT #1 to Negative Bell trigger
- Connect SL-1 INPUT #1 to Alarm Control Panel BELL – terminal
- Constant Ground on INPUT #1 sends code 1D (BURGLAR), pulsating Ground (~800mS – 8 SEC/cycle) sends code 1C (FIRE)

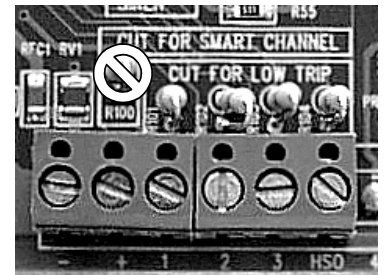


Fig. 3. "Bell Positive" Trigger

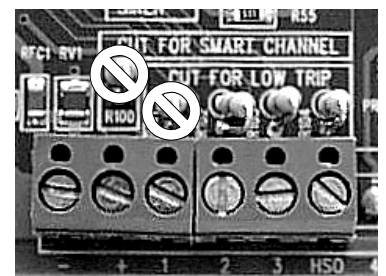


Fig. 4. "Bell Negative" Trigger

SMART CHANNEL SIREN DRIVER TRIGGER FOR INPUT 1 (Fig 5)

(For Alarm Control Panels with built-in siren drivers)

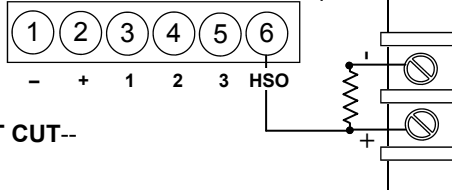
USE THIS METHOD ONLY IF SMART CHANNEL BELL POS OR BELL NEG CANNOT BE USED

- Connect SL-1 INPUT #1 to Alarm Control Panel Built-In Siren Driver terminal.
- Sweeping or Warble Siren Audio Tone (~500hz to 2khz) on INPUT #1 sends code 2D (BURG), Steady Siren Audio Tone (~1khz) sends code 2C (FIRE)
- **NOTE:** Observe LED D2 to determine correct polarity. D2 will light (steady or blinking) when connected to the correct SIREN terminal (see Fig. 5).

SUPERVISED OUTPUT TERMINAL (Optional)

The StarLink SL-1 is a fully self-supervised 2 way radio that is in constant contact with the cell tower. If StarLink detects that it has lost contact with the tower, it will trigger a negative going output that can be connected to a 24 hour zone for a central station radio trouble report.

Wire the supervised output to the positive side of a control panel EOL zone programmed for 24 hour response



Note: Jumper R104 is not used--DO NOT CUT--

STEP 4: APPLY POWER

- The SL-1 requires 12VDC. It draws less than 20mA during standby, and almost 2 AMPS during Transmit (for less than 1 second). It is recommended that the SL-1 be powered directly from the battery (4AH Minimum) of the alarm control panel, with a 3 AMP fuse in series. As the standby current is very low, the alarm control panel charging circuit will not be affected, and the battery is capable of supplying the 2 AMP current on transmit. **DO NOT** power the SL-1 from the aux. output of the control panel.
 - 22-gauge wire may be used if mounted up to 50 feet from panel, and 18-gauge wire should be used for up to 100 feet.
 - Connect power to (-) & (+) screw terminals (see Fig. 2).
- ! DO NOT short wires to metal case.

NOTE: THE SL-1 may be powered directly off the E14 lug of the following NAPCO control panels: GEM-P3200, P9600, X255, MA1008e, MA1016e. Lug E14 provides fused 12V battery power.

STEP 5: SIGNAL VERIFICATION

After triggering channels, use the StarLink Signal Verification to insure that the StarLink Network has properly received the signals.

- To verify that the signals have been received by the StarLink network online, go to <http://www.napcosecurity.com> and select the StarLink option. Enter your company ID number and the unit ID #.
- To verify that the signals have been received by the StarLink network via touch-tone phone, dial 800-645-9445 and press 333, enter SL-1 ID# and select the StarLink Verification option.

! **IMPORTANT** Verify that signals have been transmitted by the SL-1 have been properly received by your central station.

CONSTANT SIGNAL STRENGTH INDICATOR

Every 16 seconds, the SL-1 receiver section turns on and listens to the cell tower. Depending on the signal strength detected, it will flash the Signal Strength LED from 1 to 5 times, providing a signal strength indicator that is updated constantly and always displayed. Refer to Coverage Table on page 2.

WARNING: To ensure user's safety and to satisfy FCC RF exposure requirements, this unit must be installed so that a minimum separation distance of 40 cm or 60 cm is always maintained between the antenna of the transmitting device and nearby persons. Operation closer than this distance is not recommended. Use ONLY the following antenna supplied by StarLink to comply with this warning: Colinear Antenna, PN: HG3DB (60 cm)--or--½ Wave Rigid Whip Antenna, PN: G0DB (40 cm).

NOTE: This equipment has been tested and found to comply with the limits for a Class B Unintentional Radiator, 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 Instruction Manual, 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 of more of the following measures: 1. Reorient or relocate the receiving antenna; 2. Increase the separation between the equipment and receiver; 3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected; 4. Consult the dealer or an experienced radio/TV technician for help.

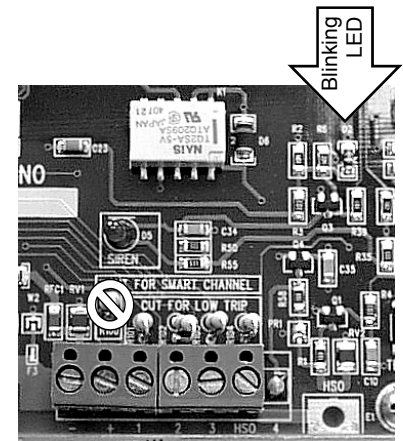


Fig. 5. "Siren Driver" Trigger

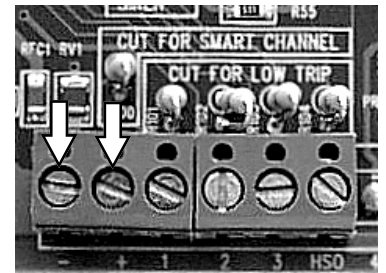


Fig. 2. Apply Power: NEG (-) and POS (+)

NAPCO LIMITED WARRANTY

NAPCO SECURITY SYSTEMS, INC. (NAPCO) warrants its products to be free from manufacturing defects in materials and workmanship for eighteen *months* following the date of manufacture. NAPCO will, within said period, at its option, repair or replace any product failing to operate correctly without charge to the original purchaser or user.

This warranty shall not apply to any equipment, or any part thereof, which has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to acts of God, or on which any serial numbers have been altered, defaced or removed. Seller will not be responsible for any dismantling or reinstallation charges.

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NAPCO RECOMMENDS THAT THE ENTIRE SYSTEM BE COMPLETELY TESTED WEEKLY.

Warning: Despite frequent testing, and due to, but not limited to, any or all of the following; criminal tampering, electrical or communications disruption, it is possible for the system to fail to perform as expected. NAPCO does not represent that the product/system may not be compromised or circumvented; or that the product or system will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; nor that the product or system will in all cases provide adequate warning or protection. A properly installed and maintained alarm may only reduce risk of burglary, robbery, fire or otherwise but it is not insurance or a guarantee that these events will not occur. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE, OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. Therefore, the installer should in turn advise the consumer to take any and all precautions for his or her safety including, but not limited to, fleeing the premises and calling police or fire department, in order to mitigate the possibilities of harm and/or damage.

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