# TELGUARD® DIGITAL

# TG-4

## RESIDENTIAL & SMALL BUSINESS CELLULAR ALARM COMMUNICATOR

## INSTALLATION AND OPERATING INSTRUCTIONS

Revised October 3, 2022

SECURITY SIGNALING
c UL us
LISTED

PROPRIETARY INFORMATION For use by TELGUARD® customers only.

Distribution to others strictly prohibited.

Note: The registration form must be completed before leaving for the installation site. The registration form may be completed online through our 24/7 dealer portal portal.telguard.com.


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# FOREWORD

Dealers purchase Telguard® cellular communicators for the quality, features and total value they represent. The Telguard model TG-4 (p/n TG4LA002) is UL Listed for Household Fire systems, Household Burglary systems and Miscellaneous Supplemental Use. This means that the TG-4 may be used in Household Burglary systems, Household Fire systems or combined Household Burglary & Fire system as the primary or secondary communication path.

# TECHNICAL SUPPORT

Technical support for all Telguard products is available:

Monday - Friday 8am - 8pm ET
Saturday 9am - 5pm ET

Toll Free: 800-229-2326, option 9

# ABOUT THIS MANUAL

This manual assumes that you have basic security system installation skills such as measuring voltages, stripping wire, properly connecting wires together, connecting wires to terminals, and checking phone lines. It also assumes that you have a familiarity with the proper installation and programming tasks related to various alarm panels.

The material and instructions covered in this manual have been carefully checked for accuracy and are presumed to be reliable. However, Telguard assumes no responsibility for inaccuracies and reserves the right to modify and revise this manual without notice.

It is our goal at Telguard to always supply accurate and reliable documentation. If a discrepancy is found in this documentation, please mail or fax a photocopy of the corrected material to:

Telguard Technical Services
3225 Cumberland Blvd, Ste 300
Atlanta, GA USA 30339
Fax: 678-945-1651

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4,658,096
4,737,975
4,775,997
4,868,519
4,922,517

# FCC NOTICES

## EXPOSURE TO RADIO FREQUENCY ENERGY

In 1991, the Institute of Electrical and Electronics Engineers (IEEE), and in 1992, the American National Standards Institute (ANSI), updated the 1982 ANSI Standard for safety levels with respect to human exposure to RF energy. Over 120 scientists, engineers and physicians from universities, government health agencies and industry, after reviewing the available body of research, developed this updated Standard. In March 1993, the U.S. Federal Communications Commission (FCC) proposed the adoption of this updated Standard.

The design of your Telguard complies with this updated Standard. Of course, if you want to limit RF exposure even further than the updated ANSI Standard, you may choose to install the unit in a manner that locates its antenna at an even greater distance from the general public than is recommended as a minimum by the standard.

To ensure compliance with the standard, when selecting a mounting location for your Telguard do not mount it (or its associated antenna) in an area where the general public could reasonably be within 8 inches (20 centimeters) of the antenna.

NOTICE: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

NOTICE: Changes or modifications made to this equipment not expressly approved by Telguard Corporation may void the FCC authorization to operate this equipment.

## EFFICIENT OPERATION

Do not operate your Telguard product when holding the antenna. Be sure to mount the unit such that its antenna is kept a minimum of eight (8) inches (20 centimeters) from the general public.

For the best service quality:

- Keep the antenna free from obstructions and point the antenna straight up.
- Do not mount the unit or antenna in the basement or below ground.

## ANTENNA CARE AND REPLACEMENT

Do not use the unit with a damaged antenna. If a damaged antenna comes into contact with the skin, a minor burn may result. Have your antenna replaced by a qualified technician immediately. Use only a manufacturer-approved antenna. Non-approved antennas, modifications, or attachments could impair service quality, damage the Telguard and violate FCC regulations.


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## ELECTRONIC DEVICES

Most modern electronic equipment is shielded from RF energy. However, RF energy from cellular devices may affect inadequately shielded electronic equipment. RF energy may affect improperly installed or inadequately shielded electronic equipment operating in homes and businesses. Check with the manufacturer or its representative to determine if these systems are adequately shielded from external RF energy. Consult the manufacturer of any personal medical devices (such as pacemakers, hearing aids, etc.) to determine if they are adequately shielded from external RF energy.

NOTICE: 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 into 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.

## BLASTING AREAS

To avoid interfering with blasting operations, turn OFF your unit when in a "blasting area" or in areas posted: "Turn off two-way radio." Construction crews often use remote control RF devices to set off explosives.

## POTENTIALLY EXPLOSIVE ATMOSPHERES

Turn OFF your unit when in any area with a potentially explosive atmosphere. It is rare, but your Telguard Digital or its accessories could generate sparks. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death. Areas with a potentially explosive atmosphere are often, but not always, clearly marked. They include fueling areas such as gas stations; below deck on boats; fuel or chemical transfer or storage facilities; areas where the air contains chemicals or particles, such as grain, dust, or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

Do not transport or store flammable gas, liquid or explosives in the area where your Telguard Digital or its accessories are located.

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (FPA-58). For a copy of this standard, contact the National Fire Protection Association, http://www.nfpa.org/.

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# REPAIR AND WARRANTY

If trouble is experienced with the *Telguard Cellular Alarm Communicator* please contact Telguard Technical Support for trouble shooting, repair and (or) warranty information. The dealer or end user should not attempt any repair to *the Telguard Cellular Alarm Communicator*. Repair of this equipment should only be referred to qualified technical personnel.

Telguard will repair or replace (our option) inoperative units for up to two years from date of manufacture. This excludes damage due to lightning or installer error. Unauthorized modifications void this warranty. Telguard is not responsible for incidental or consequential damages. Liability is limited to the price of the unit. This is the exclusive warranty and no other warranties will be honored, whether expressed or implied.

An RMA must be assigned before returning product. You may obtain an RMA via phone at 800-229-2326 option 1, or via email at returns.telular@ametek.com .

Note: RMA number must be on the outside of box or product will not be accepted.

## FUTURE TESTING AND LIMITATIONS ON USE

Telguard® is part of an advanced design alarm-communication system. It does not offer guaranteed protection against burglary and fire. Any alarm communication system is subject to compromise or failure.

The Telguard® will not work without power. Electrically powered devices will not work if the power supply (AC or DC) is off for any reason, however briefly.

The cellular radio network, needed to transmit alarm signals from protected premises to a central monitoring station, could become inoperable or temporarily out of service. Cellular radio networks are also subject to compromise by sophisticated methods of attack.

This equipment, like any other electrical device is subject to component failure. Although this equipment is designed to be long lasting, the electrical components could fail at any time.

Due to these limitations, we recommend that if the automatic self-test feature is not enabled, other arrangements be made with the user to test the system at least once every three months. Moreover, arrangements should also be made for on-site inspection/test by a licensed alarm installer at least once each year.

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# TERMS AND CONDITIONS FOR USE OF TELGUARD PRODUCT

These Terms and Conditions are a legal contract between you and Telguard for the title to and use of the Product. BY RETAINING AND USING THE PRODUCT YOU AGREE TO THE TERMS AND CONDITIONS INCLUDING WARRANTY DISCLAIMERS, LIMITATIONS OF LIABILITY AND INDEMNIFICATION PROVISIONS BELOW. *IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS, DO NOT USE THE PRODUCT AND IMMEDIATELY RETURN THE UNUSED PRODUCT FOR A COMPLETE REFUND.* You agree to accept sole responsibility for any misuse of the Product by you; and, in addition, any negligent or illegal act or omission of your or your agents, contractors, servants, employees, or other users of the Product so long as the Product was obtained from you, in the use and operation of the Product.

## INDEMNIFICATION OF TELGUARD

YOU SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS TELGUARD FOR ANY OF THE COST, INCLUDING REASONABLE ATTORNEYS' FEES, AND FROM CLAIMS ARISING OUT OF YOU, YOUR CLIENTS' OR OTHER THIRD PARTIES' USE OR OPERATION OF THE PRODUCT: (i) FOR MISUSE OR IN A MANNER NOT CONTEMPLATED BY YOU AND TELGUARD OR INCONSISTENT WITH THE PROVISIONS OF THIS MANUAL; (ii) IN AN ILLEGAL MANNER OR AGAINST PUBLIC POLICY; (iii) IN A MANNER SPECIFICALLY UNAUTHORIZED IN THIS MANUAL; (iv) IN A MANNER HARMFUL OR DANGEROUS TO THIRD PARTIES; (v) FROM CLAIMS BY ANYONE RESPECTING PROBLEMS, ERRORS OR MISTAKES OF THE PRODUCT; OR (vi) COMBINATION OF THE PRODUCT WITH MATERIAL, MODIFICATION OF THE PRODUCT OR USE OF THE PRODUCT IN AN ENVIRONMENT NOT PROVIDED, OR PERMITTED, BY TELGUARD IN WRITING. THE PARTIES SHALL GIVE EACH OTHER PROMPT NOTICE OF ANY SUCH COST OR CLAIMS AND COOPERATE, EACH WITH THE OTHER, TO EFFECTUATE THIS INDEMNIFICATION, DEFENSE AND HOLD HARMLESS.

## WARRANTY; LIMITATIONS

TELGUARD WILL REPAIR OR REPLACE (OUR OPTION) INOPERATIVE UNITS FOR UP TO TWO YEARS FROM DATE OF MANUFACTURE. EXCLUDES DAMAGE DUE TO LIGHTNING OR INSTALLER ERROR AS WELL AS UNITS THAT INCORPORATE MATERIAL, OR USED IN A MANNER OR ENVIRONMENT, NOT SPECIFICALLY AUTHORIZED IN THIS MANUAL. UNAUTHORIZED MODIFICATIONS VOID THIS WARRANTY. NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. LIABILITY LIMITED TO PRICE OF UNIT. THIS IS THE EXCLUSIVE WARRANTY, IN LIEU OF ALL OTHER WARRANTIES INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY, TITLE, DELIVERY, INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE AND NO OTHER WARRANTIES WILL BE HONORED, WHETHER EXPRESSED OR IMPLIED.

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# GENERAL DESCRIPTION AND OPERATION

The Telguard® model TG-4 is a digital cellular radio alarm transmission device used to provide a primary or back-up transmission path (cellular) for alarm panels. Depending on the TG-4 configuration (determined at time of installation), the alarm panel will use the PSTN line or cellular as primary or back-up (secondary) transmission path to deliver alarm messages. When it is configured as a backup, it will provide transparent access from the alarm panel to the central station. When transmitting an alarm signal using the cellular path, the Telguard obtains its data from the alarm panel by way of a Telco line interface. The Telguard will obtain all alarm signal information including monitoring station phone number, account number and all zones for every alarm transmission. The Telguard handshakes with the alarm panel causing it to transmit the alarm data. The Telguard encodes the alarm data and transmits to the Telguard Communication Center (TCC) over the digital cellular network. The TCC performs a function similar to a central station receiver and issues the transmission acknowledgement when the last message in the transmission is received. After decoding and reformatting, the alarm signal is routed to the appropriate alarm company monitoring station for action.

In a cellular back up alarm installation, the incoming Telco line is connected from the premises' RJ-31x jack to the Telguard and then from the Telguard's RJ-45 jack to the alarm panel. Two programmable System Trouble Condition (STC) relays provide supervisory trip outputs for connection to the alarm panel's trip zone input terminals in order to provide a Telguard trouble signal to the alarm panel. Additionally, automatic self-test and remote query signals are transmitted exclusively over the cellular network with all Telco line and cellular monitoring, switching and supervisory functions built in. No extra modules are required. The Telguard TG-4 has its own power supply which keeps the Telguard battery charged. In addition, the TG-4 has an optional connection to receive its operating power from the host alarm panel (eliminating the need for the adapter/battery connections).

The UL Listed equipment at the TCC plays a key role in the operation of every Telguard. All Telguard units utilize the TCC due to the panel alarm signal format encoding and decoding requirements used in packet-data transmissions over the digital cellular network. The TCC also manages the real-time databases for cellular accounts and a complete history of every Telguard's operating conditions. These conditions include programming setup information, cellular alarm transmission information, supervisory trouble information, remote query information, and automatic self-test information.

# FEATURES

This section summarizes the key features of the Telguard TG-4.

## OPERATING MODE

The Telguard is a digital cellular data/SMS transmission device that is installed at the protected premises to provide alarm transmission for security systems. The Telguard TG-4 transmits alarm signals over the nationwide digital cellular network if the

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telephone line or data network has been disrupted, compromised or when there is no wire line service available.

## MULTIPLE ALARM FORMAT SUPPORT

Telguard TG-4 default program setting is for Auto Detection of the panel alarm format. Auto Format Detect feature allows the Telguard to adapt to receive any listed format on every alarm transmission. If the alarm format is changed for whatever reason, the Telguard will sense the new format and accept the alarm signal.

In order for the alarm panel to be compatible with the Telguard, the alarm panel must be programmed to transmit alarm messages to the central station using one of the following non-extended formats:

- Pulse Formats:
  - 3+1 pulse; 10pps, Double Round, 1400Hz ack
  - 3+1 pulse; 20pps, Double Round, 2300Hz ack
  - 3+1 pulse; 40pps, Double Round, 2300Hz ack
  - 4+2 pulse; 20pps, Double Round, 1400Hz ack
  - 4+2 pulse; 20pps, Double Round, 2300Hz ack
  - 4+2 pulse; 40pps, Double Round, 2300Hz ack
- Contact ID
- Radionics Modem IIe/IIIa$^2$/4
- SIA2 (SIA-DC-03 level 2 release at 300 baud)
- DMP

Hexadecimal account numbers can be used with 3+1 or 4+2 formats, as well as Contact ID (4 or 10 digits) and Modem IIe, IIIa2, or 4 (4 digits).

## COMPLETE SUPERVISION OF COMMUNICATION PATH

The Telguard TG-4 continuously supervises both the Telco and cellular communication paths. If either communication path becomes inoperative, the Telguard generates a relay trip output that can be connected to a zone input of the host alarm panel and/or used to control remote annunciation devices.

### *STANDARD LINE SECURITY*

The Telguard TG-4 meets the requirements for Standard Line Security (equivalent to previously known AA Grade security) when used with a UL Listed compatible alarm panel and when monitored using the 200-second Supervision cellular service plan. The 200-second supervision is required to meet Standard Line Security. Once the TG-4 model is provisioned with the 200-second supervision, the TCC constantly monitors the cellular path and sends a specific message to the central station if the path is broken. After the initial account activation is done, the installer must verify the Standard Line Security by turning off the device for 200 seconds and making sure an alarm with the specific code is delivered to the central station.

WARNING: Standard Line Security has only been evaluated between the TG-4 and the TCC. It is the responsibility of the installer to verify Standard Line Security from the Listed control unit to the Listed receiver through the TG-4 as marked on the

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alarm panel and as indicated in the control unit manufacturer's installation instructions.

### *LINE FAULT CONDITION (LFC)*

The Telguard monitors voltage on the incoming Telco line. If an inoperative Telco line is identified, (voltage below –20vdc, on hook) a Telco line fault condition (LFC) is declared. The System Trouble Condition LED (STC LED) will flash 3 times and the STC relay will trip after a programmable delay of 30 or 60 seconds. Upon Telco restoral, the relay and STC LED are returned to normal.

### *NO SERVICE CONDITION (NSC)*

The Telguard declares a no service condition (NSC) when the Telguard device is unable to register with the cellular network.

NSC is programmable to trip the supervisory relay output (STC relay) after a variable period of time. The STC LED will flash 4 times immediately after losing cellular service and independent of the STC assertion and programmed assertion delay. NSC restoral occurs immediately after cellular service has been acquired.

### *RADIO COMMUNICATIONS FAILURE CONDITION (RFC)*

Radio communications failure condition (RFC) is declared when the Telguard is unable to transmit over the cellular network even with acceptable signal strength. When RFC is declared, the STC LED will flash 5 times and the STC relay will trip as programmed. RFC is restored when communication with the TCC is restored.

### *PANEL PRESENCE FAILURE (PPF)*

Panel presence failure condition (PPF) is declared when the Telguard is unable to detect the presence of the alarm panel. PPF is indicated by the STC LED flashing 7 times. PPF is restored immediately after the connection to the panel is restored and maintained for the delay period.

NOTE: The factory default for PPF is Disabled and needs to be Enabled for its use. In order for the PPF feature to work, Tip, Ring, and the return connections for Tip and Ring must be connected between the panel and the Telguard.

### *CONTROL FAILURE TO COMMUNICATE (CFC)*

The Control Failure to Communicate (CFC) feature is an option that allows the Telguard unit to monitor the number of communication attempts the alarm panel makes over Telco before the Telguard becomes the main path of communication. This feature works by monitoring the alarm panel from the time it goes off-hook, and attempts to communicate, to on-hook status, and comes off-hook again. Each change in state by the alarm panel from off-hook to on-hook to off-hook again is considered an attempt. If this continually happens for a specified number of times within a specific time period, then the Telguard seizes the line and takes over as the main communication path for the alarm panel. If the Telguard goes into CFC, then it will not allow the panel to communicate via Telco again until the panel has been on-hook for 10 consecutive minutes.

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Note that the CFC condition causes the Telguard unit to redirect communications to the cellular channel, but it is not indicated on the STC LED, nor does it cause either of the external relays to be tripped.

NOTE: The factory default for CFC is Disabled and needs to be Enabled for its use. When the TG-4 is configured as a Cellular-Only solution, the CFC function is not applicable.

## COMPLETE POWER SUPERVISION

The Telguard supervises and reports status of the backup battery and AC power source. The Telguard has an integrated control and power module which also keeps the Telguard battery charged and performs a battery load test every 24 hours. This battery charger function is also supervised.

### *LOW/MISSING BATTERY CONDITION (LBC)*

The Telguard checks the backup battery voltage on initial power-up and every 60 seconds thereafter. If the battery voltage is less than 11.6 volts, the battery state will change from 'good' to 'bad' leading to declaration of an LBC whereby the STC LED blinks twice, and the STC relay trips. When the battery voltage increases to 12.1 volts, the STC LED and STC relay restore. The Telguard also indicates Low/missing Battery Condition (LBC) when the battery charger fails or when the battery load test fails.

### *AC FAILURE CONDITION (ACFC)*

AC failure condition (ACFC) is detected immediately when the AC power drops below 102 VAC. When this condition is detected, the STC LED blinks once, the AC Power LED turns off, and the STC trip output is activated after 2 hours. When AC power returns to normal (≥106 VAC), the AC Power LED turns on immediately and the STC trip output restores after 60 seconds.

NOTE: If the Telguard is being powered through its DC connection, a Low Power Failure (LPF) will occur if the DC power drops below 5.1VDC and restore after reaching >5.6VDC. LPF will present itself in the same manner as the ACFC.

### *DIAL TONE FAILURE (DTF)*

The Telguard continuously monitors the subscriber line interface circuit that provides dial tone to the alarm panel. A Dial Tone Failure (DTF) is declared when the line interface while the alarm panel is on-hook. The STC LED will flash 6 times and the STC relay will trip.

Note: This condition will require contacting Telguard Technical Support for resolution.

### *CATASTROPHIC FAILURE (CF)*

Catastrophic Failure (CF) is any condition that causes the Telguard to stop functioning at all levels. The most common cause for CF is AC power failure followed by a complete discharge of the backup battery. The STC1 and STC2 trip outputs are activated and the visible indication is loss of all LED activity. Total loss of power to the Telguard does not prevent transmission of alarm messages from the alarm panel "through" the Telguard

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and out over an operative phone line. If power is connected properly to the unit when a CF occurs, please contact Telguard Technical Support for resolution.

## Telguard Automatic Self-test Report

The automatic self-test signal is programmed to a daily, weekly or monthly schedule as prescribed when the Telguard is registered. The central station receives the automatic self-test report in the same format that the alarm panel normally uses for communication over the Telco line. The self-test code and testing frequency are set during registration, and can accommodate any code the Central Station expects. The TCC captures all current and historical data pertaining to the operation of the Telguard when it processes the automatic self-test signal. This data contains current operational status (C.O.S.) of the Telguard such as "All OK", "AC fail condition", "low/missing battery condition", or any combination of these as well as the current signal strength. In addition, the data also contains historical data for supervisory events that occurred since the last self-test or remote query report signal was transmitted. This data includes the number of occurrences of AC fail conditions, low battery conditions, line fault conditions, communications failure conditions and no cellular service conditions. This additional information is available by contacting Telguard Technical Support or by visiting portal.telguard.com (dealer log-in credentials required).

## Telguard Remote Query Capability

Although the Telguard has the capability for a daily, weekly, or monthly automatic self-test, a separate feature is provided for determining the current operational status of every Telguard. This feature is called Remote Query and is used to provide real-time operational status for the Telguard on-demand. It is useful in resolving STC events that are reported by the alarm panel to the central station. The Remote Query is available via portal.telguard.com. The Remote Query causes the Telguard to upload current operational status data and historical data, just as the automatic self-test described above, except that the query signal is controlled by the one who initiates it. The query signal is held in the Telguard database at the TCC for review and is not forwarded on to the central station.

## Programmable Supervisory Trip Output (STC) Relays

The Telguard has two supervisory relay trip outputs (STC1 normally open and STC2 normally closed) and both are energized in a powered-up state when no system troubles exist. This enables a supervisory trouble code to be transmitted to the central station when connected to an alarm panel's 24-hour instant input zone. The STC relays are programmable, using portal.telguard.com, to meet virtually any installation requirement.

The following supervisory features or combination of features are programmable to trip the STC relays in order to meet a variety of installation requirements:

- Trips on AC fail condition (ACFC)—or Low Power Failure (LPF) if powered from a DC source.
- Trips on low or missing battery condition (LBC).
- Trips on no service condition (NSC).
- Trips on line fault condition (LFC).
- Trips on radio communication failure condition (RFC).

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- Trips on dial tone failure(DTF)

The following system trouble features are embedded in the Telguard for tripping the STC relay and cannot be changed:

- Tripped when unit is not activated at the TCC
- Trips on c*atastrophic failure* (CF) if all power is lost.
- Trips on *transmit-disable command* from the TCC. This radio command disables only the Telguard transmitter and would be used, for example, to shut down the Telguard due to a runaway dialer.

## DIAGNOSTIC AND STATUS LEDS

Six active LEDs are provided as a useful aid during installation and give installers an immediate visual indication of system status. The LEDs serve as indicators for activation, system trouble conditions, AC power, and communication indicators. They can also be used to provide a signal strength indication, similar to the signal strength bars on a cellular phone. See the installation section for details.

## DC OPERATION (PANEL POWER)

TG-4 can be operated solely by DC Power Source (for example, power coming from the alarm panel's auxiliary output). This will eliminate the need for a separate AC outlet at the protected premises. Connect the panel power to DC Input and ground on the TG-4 and the TG will operate normally. Telguard's operational range is 6.2V - 16V DC.

Note: When using DC power, the Telguard should not be connected to a battery or AC power source. Because there is no AC connection, the AC LED will be OFF when operating in DC mode. Battery will not charge on DC power.

## COMPLETE FACTORY RESET OPTION

A special function within the TG-4 allows you to perform a complete Factory Reset on the unit. This reset will change all unit settings back to a factory default configuration.

Note: Never attempt to do a Complete Factory Reset on an active account.

To begin the factory reset, wait for the unit to initialize and hold down the RSSI button for 15 seconds. After 15 seconds, the LEDs will begin to sequentially turn on and off in a cascading pattern. This is your indication that the factory reset is taking place. After the reset has concluded, the LEDs will go back to normal status (deactivated, factory default configuration).

## UL LISTINGS

Model TG-4 meets the requirements for all Household Burglary, Household Fire, and Combined Household Burglary/Fire installations. It has a plastic enclosure and dipole antenna. TG-4 is UL Listed for the following:

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- UL Household Burglary
- UL Household Fire
- UL Household Burg/Fire Combination
- UL 365 and 1610 – Commercial Burglary*
- Standard Line Security

*Not listed for Bank Vault or Safe Applications

UL Note: The compatible control unit must also be listed for the appropriate categories listed above.

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# GETTING READY

The Telguard can only be activated when all the necessary accounting information has been entered into the customer database located at the TCC (i.e. the unit has been registered). The database includes information about the customer account, unit location, and system test plan information.

## DEALER ACCOUNT ESTABLISHMENT

A Dealer Account must be established prior to registration of any Telguard unit. This can be accomplished by visiting portal.telguard.com and completing the necessary information under "Dealer Signup". This is a one-time event and an acknowledgment from Telguard Customer Service will include a Dealer Account Number that will be used for all Telguard Digital registrations. Telguard units can be registered and activated once the Dealer Account has been established.

## PRE-INSTALLATION CHECKLIST

Before attempting to connect Telguard to the host alarm panel, please note the following:

Be sure you have all the proper parts before you go to the job site. The following items are shipped with each Telguard:

- Telguard Cellular Communicator
- UL Listed plug-in transformer.
- Cellular Antenna.
- 7-foot RJ45 plug to plug cord
- Pluggable screw terminal blocks (2,3 & 6 position)
- Quick Install Guide
- Registration form

Note: The Telguard registration must be completed in advance to avoid installation delays

You must also have certain installation test tools:

- Screws and a screwdriver will be required to attach the unit and antenna to the wall.
- In order to connect the STC relay outputs and trip input to the alarm panel, solid or stranded electrical wire will be required. The terminal strips can accommodate solid or stranded wire from 14 to 22 gauge in size.
- A standard telephone or lineman's butt-set is recommended for verifying communication between the panel and the Telguard.

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# INSTALLATION

## SUMMARY

The following are steps necessary to install the Telguard properly.

NOTE: IF YOU DO NOT PROCEED IN THE ORDER AND MANNER PRESCRIBED, YOU MAY NOT COMPLETE THE INSTALLATION IN THE TIME DESIRED.

These steps are summarized below and explained in detail in the remainder of this manual.

1. Register for Telguard service
2. Locate Unit and measure signal strength
3. Transmit an alarm over the Telco connection
4. Activate and transmit alarm panel alarms over the cellular connection
5. Connect supervisory trip outputs
6. Connect trip input (optional)
7. Complete installation

This seven-step installation approach provides the alarm installer with the easiest and fastest method of properly installing your Telguard TG-4. Please follow the instructions carefully and if you should need assistance or have any questions, call Telguard TECHNICAL SUPPORT at 1-800-229-2326 extension 9.

## STEP 1: REGISTER THE TELGUARD UNIT

Installation Tip: Register for Telguard service prior to leaving for the job site to avoid a second trip.

The registration form may be completed online through our 24/7 dealer portal portal.telguard.com.

The desired features and programmable options for any installation are selected during the registration process. This includes STC strategy, Trip-Input enabling, and added value services like HomeControl Flex and Standard Line Security.

### *DECIDE ON A STC TRIP OUTPUT STRATEGY*

The Telguard provides the host alarm panel with two supervisory trip outputs for reporting a Telguard system trouble code to the central station. The supervisory trip outputs are programmable to suit various installation requirements. The programming options for these supervisory trip outputs can be any combination of the following:

- Always Off: Disables all relay supervisory functions.
- ACFC: Trips 2 hours (programmable for up to 24 hours) after loss of AC power. Restores 60 seconds after AC power is restored.
- LBC: Trips within 60 seconds on low battery condition. Restores when battery voltage ≥ 12.1 vdc.

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- LFC: Trips after 60 seconds on Telco line fault condition. Restores 60 seconds after Telco line restores.
- NSC: Trips after specified delay time (determined by POTS programming value 852) on no service condition due to loss of RF signal strength. Restores after RF signal strength is available.
- RFC: Trips on radio failure to communicate with the TCC
- DTF: Trips on an internal failure in the dial tone circuitry within the TG-4

### *Optional Trip Input*

When the input is tripped, a supervisory message is sent to the central station via the TCC. This allows an external relay, separate from the alarm panel, to be connected to the Telguard unit in order to provide independent sensor input for other functions, such as tamper detection.

The message that is sent from the TCC to the central station is configurable in Telguard Online. The TG-4 unit will automatically be configured with a unit template that allows configuration of the trip input feature, including the message that is sent to the central station. There is a default event configured for each alarm format, so that if the Telguard is configured with the butt-set to send trip input events to the TCC, a default notification will be sent to the central station. If the Telguard is configured to report restorals, the contact closure will also be reported.

### *Swinger Function*

The swinger function is designed to reduce the incidence of excessive messaging and alarms due to faulty equipment or installation. If enabled, the swinger function will discontinue sending trip input messages to the TCC once 10 trip events are detected within a 10 minute period. The Telguard device will resume sending trip input messages to the TCC after a 10 minute period without trip events.

## Step 2: Locate Unit and Measure Signal Strength (RSSI)

### *Locate Unit*

Temporarily place the Telguard unit near the alarm panel. Permanent mounting should only be done after determining the optimum cellular reception location.

### *Connect Power*

#### Option 1: Backup Battery and AC Power Transformer

To apply power to the Telguard using this option, attach a battery to the battery connector (labeled BATT) or to the 3-pin terminal block labeled (BATT - +). Backup battery must be sized appropriately to meet installation requirements. Please make sure the battery wires are at least ¼ inch apart from the other wiring in the system.

Connect the Telguard AC power transformer (see A3.2 for acceptable UL Listed transformers) to AC terminals using stranded copper insulated wire following wire gauge and length recommendations below:

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| Recommended Wire Size | Length Not to Exceed |
|---|---|
| 18 ga | 20 ft |
| 16 ga | 40 ft |
| 14 ga | 60 ft |

Option 2: DC power

To apply DC power to Telguard from a host alarm panel, connect the panel power and ground connections into the respective DC and GND connections on the TG-4. When using this option, no other power connections (battery or AC) should be wired.

## *CONNECT ANTENNA AND TEMPORARILY PLACE UNIT*

The Telguard unit is supplied with an antenna. In most cases the antenna can be mounted directly to the unit. If necessary, the antenna may be moved to a better signal location using optional cable and bracket accessories. The performance of the antenna may be affected by the wall or materials contained within the wall chosen for mounting. These effects may not be clearly identified by RSSI monitoring alone. The wall materials may have a more pronounced effect on the antenna transmit band performance.

Do not install the Telguard in an area where the general public could reasonably be within 20cm (8 inches) of the antenna.

Note 1: Optimum RF performance can usually be found at the highest point within a building with the fewest number of walls between the Telguard's antenna and the outside of the premises.

Note 2: To avoid interference with other electronic devices operating in the area, avoid mounting the Telguard's antenna near other electronic devices.

Note 3: The Telguard unit's cellular antenna is designed for INDOOR INSTALLATIONS ONLY.

These considerations should be coupled with the best RSSI indication obtainable. Care should be taken to ensure that a large metal object such as a refrigerator or a metal cabinet is not located on the opposite side of the wall.

If moving the TG-4 to a different location is not practical, then you may need a cable and remote the antenna in order to receive adequate radio signal strength. Pick a high, visually secure spot using the guidelines below.

Tips for Improved Radio Signal Reception

- The higher the antenna the better. Start in the drop ceiling above the unit and proceed up from there, to the roof if necessary.
- Remember, the antenna should be as inconspicuous as possible for greatest visual security.
- Try to keep the antenna away from sources of RF interference, including pumps, compressors, ovens, etc., or where metal objects can shield it or otherwise block the cellular radio RF signal.

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- Place the antenna perpendicular to the ground, either right side up or upside down. Do not mount the antenna horizontally.

### *Measure Received Signal Strength (RSSI) for Best Antenna Placement*

Measure the received signal strength by pressing the RSSI button. This switches the LEDs to signal strength mode. Now, slowly move the unit or remote antenna to achieve maximum signal strength. Pick the place where the most LEDs (up to four) are lighted.

LED Function Table – View RSSI Mode (RSSI button)

| RSSI Value | Illuminated LEDs | RF (dBm) |
|---|---|---|
| NO SVC | LED 5 = slow flash, LED 4-2 = off | n/a |
| 1 | LED 5 = on, LED 4-2 = off | ≤ -111 |
| 1½ | LED 5 = on, LED 4 = slow flash<br>LED 3-2 = off | ≥ -110 |
| 2 | LED 5-4 = on, LED 3-2 = off | ≥ -100 (Minimum signal strength required) |
| 2½ | LED 5-4 = on, LED 3 = slow flash<br>LED 2 = off | ≥ -90 |
| 3 | LED 5-3 = on, LED 2 = off | ≥ -80 |
| 3½ | LED 5-3 = on, LED 2 = slow flash | ≥ -70 |
| 4 | LED 5-2 = on | ≥ -60 |

Note: When LED 1 is on this indicates more than one cellular tower within range.

If you cannot obtain a signal strength reading of 2 (TWO LEDS ON SOLID), you will probably need to move the unit and/or remote antenna higher, or switch to a special antenna as described below.

### *Antenna Options*

Antenna issues are unlikely unless the premises are located in a fringe network coverage area, in a building below ground level, or in a metal structure. Telguard offers a variety of high quality low loss antenna cables as well as high gain antennas listed in Appendix 4.

## Step 3: Verify Panel Alarms Over the Telco Connection

Connect alarm panel and Telco line to the Telguard. Plug the modular jack of the alarm panel into the black jack of the Telguard and the incoming Telco connection into gray jack. Trip a zone on the alarm panel and transmit over the Telco line. This step is

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important to verify the panel is programmed with valid account code and central station information before transmitting signals through the cellular network.

## STEP 4: ACTIVATE & TRANSMIT ALARMS OVER CELLULAR NETWORK

Confirm that the Telguard enables the alarm panel to transmit alarm events over the cellular radio network. The Telguard will confirm activation with the TCC if the registration form was submitted prior to installation. Make sure that there is no Telco connection for the panel to use, and trip a zone on the alarm panel. During processing of the first alarm signal over the cellular network the Telguard will transmit all programming parameters along with the information (central station number and account code) from the alarm panel. Once this information is received, the TCC will transmit a message back indicating that the unit is activated. Once this message is received the LEDs on the unit will begin operating in normal mode; Activation LED 1 will be on.

The initial alarm is to confirm registration and activate the Telguard. This alarm will NOT be transmitted to the central station.

### *SPECIAL LED INDICATIONS DURING ACTIVATION*

If the Telguard fails the activation process, it will be displayed on the LEDs.

- If LED 1 and LED 4 are flashing, the Telguard has failed activation. The serial number is not in the database at the TCC. Clear the fault (see note below) and call Telguard Technical Support to verify proper registration before resending an alarm signal.
- If LEDs 1-5 are flashing, there is an activation error. The activation message was NOT received at the TCC. Clear the fault (see note below) and retry transmitting an alarm signal. If Telguard fails a second time to activate, check signal strength. If signal strength is OK, then call Telguard Technical Support for further assistance.

  NOTE: In order to clear the faults listed above, the RSSI button must be pressed twice. After the issue has been resolved and the unit cleared, STEPS 3 AND 4 MUST BE REPEATED OR THE TELGUARD WILL NOT TRANSMIT ANY SIGNALS.

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System Status LEDs Table

| System Status LEDs | Activation Indications |
|---|---|
| LED 1-5 FLASHING | Failed Activation – Signal Too Weak |
| LED 1 & LED 4 FLASHING | Activation Error – Call Telguard Technical Support |
| LED #1 ON | Activation Successful |

System Trouble Condition, STC (LED 2) Table

| Status LED 2 | Indication |
|---|---|
| 1 FLASH | ACFC - AC Low or Missing |
| 2 FLASH | LBC – Low Battery and/or Battery Charger Failure |
| 3 FLASH | LFC – Line Fault |
| 4 FLASH | NSC – No Service |
| 5 FLASH | RFC – Radio Failure |
| 6 FLASH | DTF – Dial Tone Failure |
| 7 FLASH | PPF – Panel Presence Failure |

### *CONNECT ALARM PANEL TO TELGUARD BLACK JACK*

Plug the modular jack of the alarm panel to black jack on the Telguard.

### *VERIFY ALARM SIGNAL TRANSMISSIONS OVER CELLULAR*

Before beginning this step, disconnect the Telco line from the TG-4's gray jack that goes to the incoming Telco connection at the premise.

Trip several alarms on the alarm panel and verify that the central station received them by calling the central station operator. Use a lineman's butt-set in *MONITOR MODE* connected to Telguard's "T" and "R" test pins to "listen" to communications between the alarm panel and Telguard.

If you are having problems getting reliable alarm signal transmissions, additional adjustments may be necessary.

- Recheck signal strength. You need RSSI = 2½ *(TWO LEDS ON SOLID AND THE THIRD LED FLASHING)* for adequate signal transmission. Also, check antenna connector and make sure it is seated correctly.

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- Call Telguard Technical Support, 1-800-229-2326 extension 9.

At this point reconnect the Telco line to the TG-4's gray jack that goes to the incoming Telco connection at the premise.

## STEP 5: CONNECT SUPERVISORY TRIP OUTPUTS

Connect and test the supervisory trip outputs to the alarm panel.

Enabling of a local alarm or strobe light may be desirable when a trip is declared. The STC trip output can be used directly to activate a local signaling device, provided that the trip output is not needed to trip the host control/communicator at the same time. If both a local signal and a control trip input are required, then external relays are needed to provide additional uncommitted contacts.

NOTE: UL Listed installation of the TG-4 will at a minimum have the trip output to the alarm panel to indicate low AC (ACFC) and low battery (LBC) conditions.

### *REPROGRAM ALARM PANEL TO SEND PROPER CODE*

If necessary, reprogram the alarm panel to send proper alarm code when tripped by the Telguard's supervisory output. Program zone restoral as desired.

### *CHECK PROPER OPERATION OF TELGUARD SUPERVISORY OUTPUT*

Check for proper operation of each programmed supervisory output by causing it to trip the alarm panel and making sure the proper LED illuminates and that the proper trouble code is reported to the central station. Skip the testing of any supervisory functions that have not been enabled. Note that the yellow MODE LED 3 starts to flash when the alarm panel goes off-hook to report the alarm signal over cellular.

- Low Battery Condition (LBC): Disconnect the battery and during the next 60 seconds check to see that the STC LED 2 flashes 2 times indicating that the battery is missing. Check to see that the alarm panel indicates the STC trouble code on the STC LED. Reconnect the battery and check during the next 60 seconds to see that the STC LED 2 goes off, indicating the missing battery condition has been restored.

- Line Fault Condition (LFC): Disconnect Telco cable from the gray jack. LED 2 flashes 3 times and after 60 seconds the panel transmits the STC trouble code (over cellular) to the central station indicating the incoming Telco line is disconnected. Reconnect Telco cable and check to see that the STC LED 2 goes off in 30/60-seconds indicating Telco line restored.

- No Service Condition (NSC): Disconnect the antenna from the Telguard. Check to see that the STC LED 2 flashes 4 times in 60 seconds and the alarm panel transmits the STC trouble code over the Telco line indicating loss of cellular registration. Reconnect the antenna and check to see that the STC LED 2 goes off within 30/60 seconds indicating cellular registration has been restored.

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- AC Fail Condition (ACFC): Disconnect the 12VAC, 10VA transformer and check to see that the AC POWER LED goes out and the STC LED 2 flashes once indicating that AC power is missing. Reconnect the AC transformer and check to see that the AC POWER LED goes on and the STC LED 2 goes off indicating that AC power has been restored. No transmissions will be sent to the central station. The AC power must be off, continuously, for 2 hours before the STC relay causes the alarm panel to send a trouble code.

## STEP 6: CONNECT AND TEST THE TRIP INPUT (OPTIONAL)

The trip input is connected to the external relay by wiring one side of the external relay to the TRIP-IN terminal(pin 6), and the other side to either the TRIP-GND terminal(pin 5) or to the chassis ground on the TG-4 circuit board.

Note that trip inputs are normally wired such that there is a 2.2kΩ resistor in parallel with the external relay, so that a tamper condition (i.e. a cut wire) can be detected.

When the trip input functionality is being used, closing the trip contact will cause the Telguard TG-4 to send a message to the TCC, which in turn will cause the TCC to send a message to the central station. If the Telguard is configured to report restorals, the contact closure will also be reported.

For UL installations, burglary zones shall not be connected to the Trip Input.

## STEP 7: COMPLETE THE TELGUARD INSTALLATION

The last step is to permanently mount the Telguard.

1. Attach earth ground to the grounding screw located on lower right-hand corner of printed circuit board assembly and permanently mount the Telguard enclosure.
2. Install center-mounting screw (not supplied).
3. Slide the enclosure onto this screw.
4. Install two screws in the bottom mounting holes to secure the TG to the wall.

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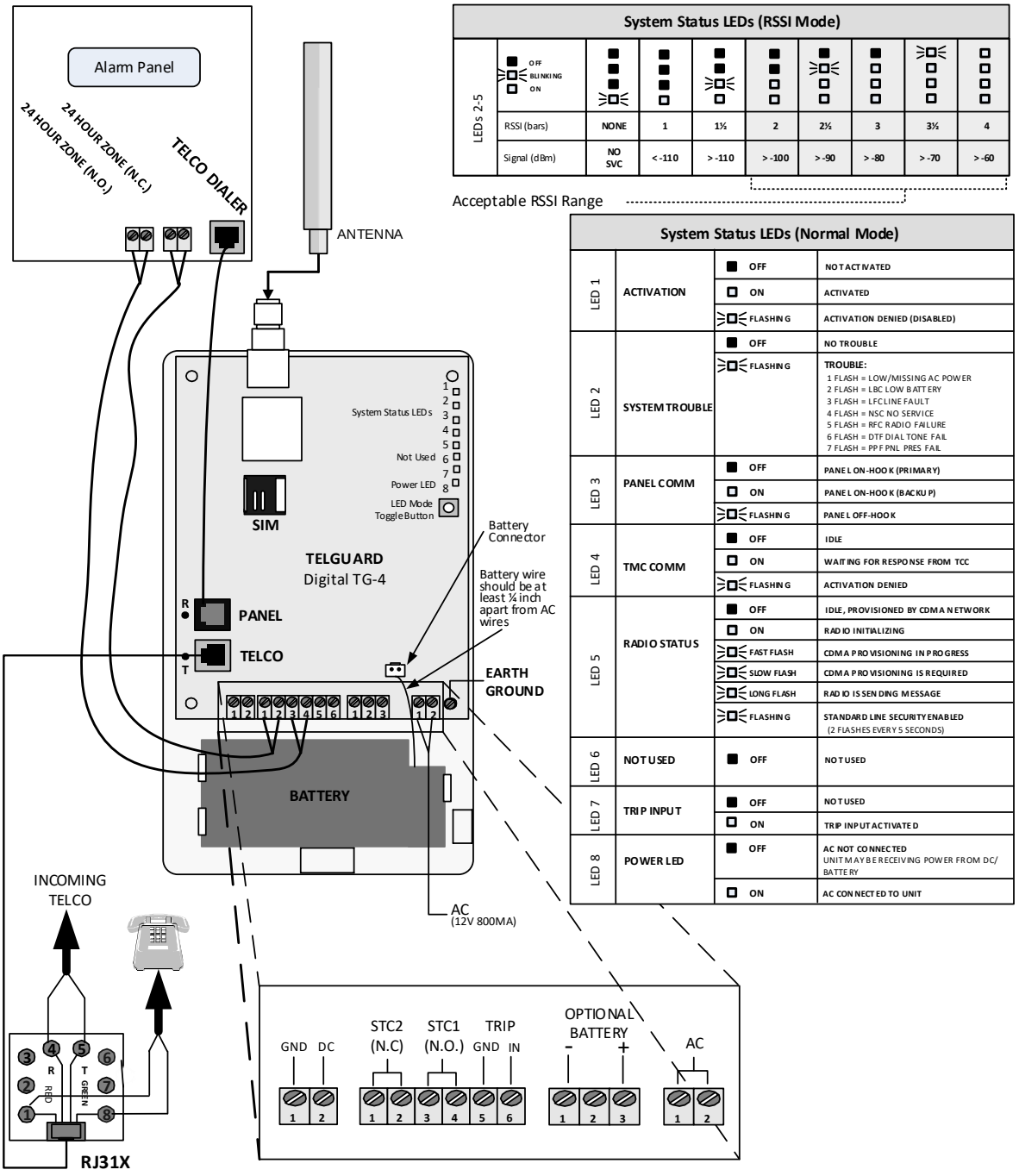
# APPENDIX 1 – CONNECTION GUIDE

## WIRING DIAGRAM




| System Status LEDs (RSSI Mode) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| LEDs 2-5 | OFF / BLINKING / ON | | | | | | | | |
| | RSSI (bars) | NONE | 1 | 1½ | 2 | 2½ | 3 | 3½ | 4 |
| | Signal (dBm) | NO SVC | < -110 | > -110 | > -100 | > -90 | > -80 | > -70 | > -60 |

Acceptable RSSI Range

| System Status LEDs (Normal Mode) | | | |
|---|---|---|---|
| LED 1 | ACTIVATION | OFF | NOT ACTIVATED |
| | | ON | ACTIVATED |
| | | FLASHING | ACTIVATION DENIED (DISABLED) |
| LED 2 | SYSTEM TROUBLE | OFF | NO TROUBLE |
| | | FLASHING | TROUBLE:<br>1 FLASH = LOW/MISSING AC POWER<br>2 FLASH = LBC LOW BATTERY<br>3 FLASH = LFC LINE FAULT<br>4 FLASH = NSC NO SERVICE<br>5 FLASH = RFC RADIO FAILURE<br>6 FLASH = DTF DIAL TONE FAIL<br>7 FLASH = PPF PNL PRES FAIL |
| LED 3 | PANEL COMM | OFF | PANEL ON-HOOK (PRIMARY) |
| | | ON | PANEL ON-HOOK (BACKUP) |
| | | FLASHING | PANEL OFF-HOOK |
| LED 4 | TMC COMM | OFF | IDLE |
| | | ON | WAITING FOR RESPONSE FROM TCC |
| | | FLASHING | ACTIVATION DENIED |
| LED 5 | RADIO STATUS | OFF | IDLE, PROVISIONED BY CDMA NETWORK |
| | | ON | RADIO INITIALIZING |
| | | FAST FLASH | CDMA PROVISIONING IN PROGRESS |
| | | SLOW FLASH | CDMA PROVISIONING IS REQUIRED |
| | | LONG FLASH | RADIO IS SENDING MESSAGE |
| | | FLASHING | STANDARD LINE SECURITY ENABLED<br>(2 FLASHES EVERY 5 SECONDS) |
| LED 6 | NOT USED | OFF | NOT USED |
| LED 7 | TRIP INPUT | OFF | NOT USED |
| | | ON | TRIP INPUT ACTIVATED |
| LED 8 | POWER LED | OFF | AC NOT CONNECTED<br>UNIT MAY BE RECEIVING POWER FROM DC/ BATTERY |
| | | ON | AC CONNECTED TO UNIT |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## JACK ASSIGNMENTS

| Jack | Connects To | Pin Assignment | Function | Status LED Reference |
|---|---|---|---|---|
| GRAY (J14) | Incoming Telco RJ-45 jack. | 1 = Brown R1<br>2 = Blue<br>4 = Green R (Ring)<br>5 = Red T (Tip)<br>7 = Orange<br>8 = Gray T1 | Connects Telco line to TG-4. | STC LED 2 will flash 3 times when Telco voltage is lost |
| BLACK (J13) | Digital Dialer input/output of host alarm panel. | 1 = Brown R1<br>2 = Blue<br>4 = Green R (Ring)<br>5 = Red T (Tip)<br>7 = Orange<br>8 = Gray T1 | Connects alarm panel to TG-4 for transmitting alarms to central station. | If PPF is ENABLED STC LED 2 will flash 7 times when alarm panel is not detected |

## MAIN TERMINAL STRIP PIN ASSIGNMENTS

| Terminal Strip Pin | Definition | Connects To | Function | Status LED Reference |
|---|---|---|---|---|
| 1 STC2<br>2 STC2 | Supervisory Relay Trip output for programmable trouble conditions. Normally Closed | 24-hour trip zone input on host alarm panel. | Enables transmission of programmed supervisory trouble code (see diagram or installation section) | STC LED 2 |
| 3 STC1<br>4 STC1 | Supervisory Relay Trip output for programmable trouble conditions. Normally Open | 24-hour trip zone input on host alarm panel. | Enables transmission of programmed supervisory trouble code (see diagram or installation section) | STC LED 2 |
| 5 GND | Trip Ground | External trip relay | Allows an external relay to trigger an alarm signal | |

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| | | | | |
|---|---|---|---|---|
| 6 IN | Trip Power | External trip relay | Allows an external relay to trigger an alarm signal | |

### AC Terminal Strip Pin Assignments

| Terminal Strip Pin | Definition | Connects To | Function | Status LED Reference |
|---|---|---|---|---|
| 1 AC<br>2 AC | AC power input.<br>12 VAC, 10VA. | 120 VAC 60Hz un-switched circuit. | Provides primary operational power to Telguard and battery charging circuit. | AC Power LED ON when AC is normal.<br>AC power LED OFF<br>And<br>STC LED 2 Flashes 1 time when AC is low |

### Compatible Alarm Panels

Any UL Listed Alarm Panels that supports one of the following formats is compatible and may be used withTG-4:

- Pulse Formats:
  - 3+1 pulse; 10pps, Double Round, 1400Hz ack
  - 3+1 pulse; 20pps, Double Round, 2300Hz ack
  - 3+1 pulse; 40pps, Double Round, 2300Hz ack
  - 4+2 pulse; 20pps, Double Round, 1400Hz ack
  - 4+2 pulse; 20pps, Double Round, 2300Hz ack
  - 4+2 pulse; 40pps, Double Round, 2300Hz ack
- Contact ID
- Modem IIe/IIIa$^2$/4
- SIA2 (SIA-DC-03 level 2 release at 300 baud)
- DMP

The installer should verify the complete compatibility at the time installation.

## Appendix 2 – Troubleshooting Guide

This section provides a summary of all LED indications and their meanings, as well as the expected behavior of the TG-4 under various exception conditions.

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## LED INDICATOR GUIDE – NORMAL OPERATING MODE

| LED Symbol | Color | Showing | Indication |
|---|---|---|---|
| LED 1<br>Activation | Green | Solid On | Unit is activated at the message center and enabled |
| | | Off | Unit not activated at message center (and disabled) |
| | | Flash* | Unit is activated but disabled |
| LED 2<br>STC<br>(System Trouble Condition) | Red | Off | ALL OK |
| | | 1 Flash* | STC – Low/Missing AC Power |
| | | 2 Flashes* | STC – Low/Missing Battery Condition AND/OR Battery Charger Failure |
| | | 3 Flashes* | STC - LFC |
| | | 4 Flashes* | STC – NSC |
| | | 5 Flashes* | STC – RFC |
| | | 6 Flashes* | STC – DTF |
| | | 7 Flashes* | STC – PPF |
| LED 3<br>MODE | Yellow | Off | Alarm panel idle (TG-4 is primary) |
| | | Flash*(1 sec) | Alarm panel off-hook to transmit signals over cellular. |
| | | Solid On | Alarm panel idle (TG-4 is backup) |
| LED 4<br>Acknowledgement | Red | Solid On | Telguard TG-4 waiting for acknowledgement from Communication Center |
| | | Off | Idle state |
| | | Flash* | When flashing with LED 1, unit has failed activation due to the programming of the panel, CALL TELGUARD TECHNICAL SUPPORT |
| LED 5<br>Radio | Green | Solid On | Telguard initializing with cellular network |
| | | Flash(1 sec) | Radio receiving message |
| | | Flash (2 sec) | Radio receiving message |
| | | Flash (2 flashes every 5 sec) | 5-minute supervision enabled |
| LED 6 | Not used | | |
| LED 7<br>Trip Input | Green | Solid On | Trip input activated |
| | | Off | Trip input not activated or restored |
| LED 8<br>AC Power | Red | Solid On | AC power connected to unit |
| | | Off | AC is disconnected. Unit may be receiving power from battery or other DC power source. |

Note: * means the LED will continuously flash.

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LED Indicator Guide –RSSI Mode

| RSSI Value | LED Indication | RF (dBm) |
|---|---|---|
| NO SVC | LED 5 = slow flash, LED 4-2 = off | n/a |
| 1 | LED 5 = on, LED 4-2 = off | ≤ -111 |
| 1½ | LED 5 = on, LED 4 = slow flash<br>LED 3-2 = off | ≥ -110 |
| 2 | LED 5-4 = on, LED 3-2 = off | ≥ -100<br>(Minimum signal strength required) |
| 2½ | LED 5-4 = on, LED 3 = slow flash<br>LED 2 = off | ≥ -90 |
| 3 | LED 5-3 = on, LED 2 = off | ≥ -80 |
| 3½ | LED 5-3 = on, LED 2 = slow flash | ≥ -70 |
| 4 | LED 5-2 = on | ≥ -60 |

Note: When LED 1 is on this indicates more than one cellular tower within range.

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## TROUBLESHOOTING QUICK REFERENCE TABLE

| Telguard Event | | LED Indication | Relay Output | Radio Message | Internal Action |
|---|---|---|---|---|---|
| STC<br><br>Telguard System Trouble Conditions | ACFC | PWR LED off. STC LED 2 flashes continuously 1 time. | Optional | None | Switch to standby battery if present, monitor battery, monitor AC for restoral. |
| | LBC | STC LED 2 flashes continuously 2 times. | Optional | None | Wait for LBC restoral, charge battery. |
| | LFC | STC LED 2 flashes continuously 3 times. | Optional | None | Transmit alarm via radio if necessary. When Telco is restored, remove LFC condition. |
| | NSC | STC LED 2 flashes continuously 4 times. | Optional | None | Continue to validate signal strength, NSC will restore when signal returns |
| | RFC | STC LED 2 flashes continuously 5 times. | Optional | None | Wait for RFC restoral. |
| | DTF | STC LED 2 flashes continuously 6 times. | Yes | Yes | Internal supply circuit failure. |
| | PPF | STC LED 2 flashes cont.7 times | No | Yes | Wait for PPF restoral. |
| Not Activated | | Activation LED 1 off | Yes | None | Telguard will not function until the first signal is sent through the Telguard to activate the unit |
| Automatic Self-Test | | Radio LED 5 flashes during transmit | None | Yes<br>(Self-test)) | Send Self-test information to central station via TCC, return to ready state |
| Telguard Remote Query – Communication Center Activated by Customer Service. | | Radio LED 5 flashes during transmit | None | Yes<br>(Status data) | Send Status data to TCC for review customer service |
| Telguard Enable and Configuration Upload – | | Radio LED 5 flashes during transmit | None | Configuration Data<br>(Setup data) | Telguard sends setup configuration to the TCC and switches to READY state to begin operation. |
| Disable TX – Communication Center initiated. | | Radio LED 5 flashes when transmitting | Yes | Yes<br>(Status data) | TX capability is disabled until further notice. Telguard can still receive radio signals from TCC. |

Note: If several trouble conditions are present, the STC LED will flash all of the indications in sequence.

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# APPENDIX 3 – DETAILED SPECIFICATIONS

## DIALER TO INTERFACE ELECTRONICS

The patented integrated interface by Telguard, allows digital dialers to dial into the cellular radio network.

- Line voltage: -30 Vdc into standard telephone device when on-hook.
- Dial tone: Precision 350 + 440Hz +/- 1%. 10 digits dial out capability.
- Mode: Loop start only. 25mA +/- 10% off-hook.
- Ringer equivalence: 0.3 REN
- Protected by U.S. Patents: 4,658,096; 4,775,997; 4,922,517; 4,737,975; 4,868,519; 5,134,644.

## POWER

- Maximum AC current draw:
  - 125mA (battery charged)
  - 350mA (battery charging)
- Battery Supply:
  - Maximum full charge DC voltage = 13.8V +/- 0.2V.
  - Battery charging system: Constant current, Electronic short circuit protection
  - Maximum charging current of 240mA
- Transformer Supplied: 12 VAC 10VA, UL, plug-in; acceptable transformers:
  - GlobTek part number: WA1E800J00-N-GTGTAB
  - Tri-Mag part number: WTD-1208-C
- Average DC current draw:
  - 6.2VDC 64mA (idle), 265mA (transmitting)
  - 12VDC 34mA (idle), 121mA (transmitting)
  - 16VDC 28mA (idle), 117mA (transmitting)

## DIGITAL CELLULAR RADIO

The Telguard TG-4 radio provides data connectivity on LTE networks. The TG-4 transceiver is FCC compliant, meeting all requirements of Part 15 and 27 testing. It is also compliant to the PTCRB requirements.

- Supported Bands: 3G B2/B5, LTE B2/B4/B5/B17
- Antenna Port: TNC connector (female), 50-ohm
- RF performances are compliant with 3GPP recommendation TS 36.101.
- FCC ID: N7NHL7688
- Physical Size: 9.5"H x 4.5"W x 1.75"D.
- Shipping weight: 5 lbs.
- Operating Environment: 0˚C to +49˚C; 0 - 85% humidity (non-condensing).

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# APPENDIX 4 – PARTS LIST

| Basic Hardware: | |
|---|---|
| Model TG-4<br>p/n TG4LA002 | Model TG-4 (p/n TG4LA002) meets the requirements for Household Burglary, Household Fire, and Combination Burglary/Fire installations. It has a plastic enclosure, and cellular antenna. TG-4 is UL Listed for the following:<br>• UL 1023 – Household Burglary<br>• UL 985 – Household Fire<br>• UL Household Burg/Fire Combination<br>• UL 365 and 1610 – Commercial Burglary*<br>• Standard Line Security<br>*Not listed for Bank Vault or Safe applications |
| **General Accessories:** | |
| ACD-12 | 12 feet of antenna cable and mounting bracket |
| ACD-35 | 35 feet of low loss high performance antenna cable and mounting bracket |
| ACD-50 | 50 feet of low loss high performance antenna cable and mounting bracket |
| ACD-100 | 100 feet of low loss high performance antenna cable and mounting bracket |
| HGDL-0 | High Gain Directional Antenna |
| EXDL-0 | External Omni-directional Antenna |

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