

MOTOROLA

Telario Installation Manual

Introduction

Congratulations! You have chosen the Motorola Telario™ Integrated Cordless Telephone and Two-Way Radio System. The Telario System is a state of the art Motorola digital communications system. This product family of 1.9 GHz unlicensed wireless communication equipment is intended for businesses with groups of in-building users. The system supports two types of handsets and utilizes TDMA Control Stations that allow integrated voice services to several communications groups. With Motorola's seamless integration of two-way dispatch services – Group Talk and Private Link, and Full Duplex (toll quality) Cordless Telephone capability – your customer will experience an efficient and productive work environment.

Regulatory Approvals

FCC

*The TS3000 Telario Control Station complies with Part 15 and 68, FCC rules.
FCC Registration Number: ABZ99FT7012
Ringer Equivalence Number:*

This equipment complies with Part 15 and 68 of the FCC Rules. On the bottom of the TS3000 Control Station are labels that contain, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be given to the telephone company.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most, but not all, areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

If your telephone equipment causes harm to the telephone network, the telephone service may discontinue your service temporarily. If possible they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this equipment, please contact your authorized Motorola dealer for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure the equipment is not malfunctioning.

This equipment has been tested and found to comply with the limits for Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and

used in accordance with this installation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

 CAUTION

Caution: If the user makes changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Underwriter's Laboratories (UL)

The UL symbol on the TS3000 Regulatory Label means that the product is listed by Underwriter's Laboratories, Inc. It is designed and manufactured to meet rigid UL safety standards against X-radiation, fire, casualty, and electrical hazards.

The following are statements required for UL certification, related to safety procedures that must be adhered to during installation.

If wiring for a Control Station exits a building, the wiring must be protected at both ends by a Quick Clip Fuse from Reliable Electric, model number RSCP-2.

Follow these general precautions while installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

UTAM

What is UTAM?

UTAM (Unlicensed Transition & Management for Microwave Location) is an organization which is composed of 15 companies in the United States that coordinates the relocation of existing microwave incumbents and manages the unlicensed 1.9 GHz frequency range. UTAM is responsible for establishing and enforcing policies and procedures to ensure that deployment of Unlicensed Personal Communication Systems (UPCS) causes no interference to the incumbent microwave community. It also works to eventually move all microwave users out of the UPCS band.

Motorola was a founding member of the organization and continues to be actively involved.

Zone 1, Zone 2, & Zone 3 Unclassified

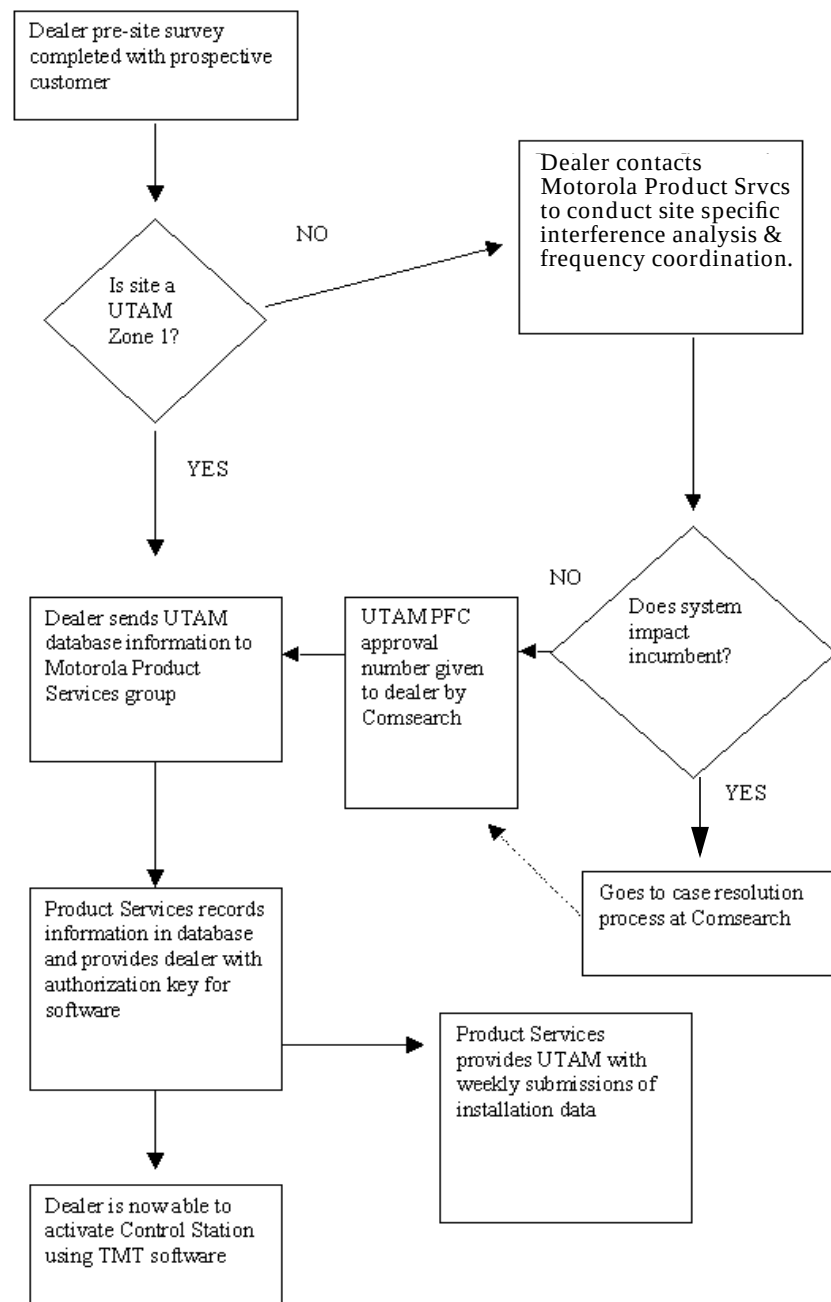
Counties throughout all of the United States are designated as Zone 1, Zone 2 or Zone 3/Unclassified, based on the status of microwave link incumbents within each county. UTAM procedures are both zone dependent & zone independent, and are detailed in the next sections.

A county is designated as Zone 1 because all microwave incumbents have been cleared.

A county is classified as a Zone 2 county when any microwave incumbents have not been cleared and continue to operate in the county.

An Unclassified or Zone 3 county is one that qualifies for Zone 1 status. However, due to a business population being less than 5,000, it has not been scheduled for conversion at this time. Most Unclassified counties will be automatically converted to Zone 1 Status by UTAM when a member initiates a site specific coordination request, with conversion costs to be paid by UTAM.

Overall Process



Time of Sale, End User Contract: All Zones

As a Dealer, it is your responsibility to inform the customer about UTAM, its rules and regulations. This requirement applies to all zones. The following agreement must be included in your sales contract with your customer:

[Customer] hereby acknowledges that the use and operation of any intentional radiator equipment requiring a Part 15.311 FCC label and subject to UTAM clearing fees, the operation of which makes use of any part of the unlicensed personal communications services ("UPCS") frequency spectrum ("UPCS Radiating Part"), is subject to FCC rules and regulations and UTAM requirements and instructions including without limitation rules, regulations, requirements and instructions with respect to interference to licensed fixed microwave facilities and to the relocation of any such UPCS Radiating Part.

[Customer] agrees that [its] use or operation of any UPCS Radiating Part shall comply with all such rules, regulations, requirements and instructions.

Name Of Subscriber: _____

State Of Incorporation: _____

By: _____

Name: _____

Title: _____

Address: _____

Date: _____

Time of Installation, Product Registration & LVP: All Zones

To monitor deployment and power levels, all equipment sales must be registered with Motorola Product Services group at the time of installation. Information is forwarded to UTAM, per its regulations. This procedure, required for all zones, ensures that the band remains coordinated and operational for all authorized vendors and their customers.

The registration form requires the following information:

- Customer name
- Site address
- City, state, zip and county name
- Site coordinates (latitude and longitude)
- UTAM PFC approval number (if the location is a Zone 2 or Zone 3 site)
- Quantity of Control Stations to be installed
- Quantity of handsets to be installed
- Installation date
- Maximum height of installation

- Dealer information (name, contact, phone, fax)
- Control station serial number(s)
- 32 bit random number (request key) obtained from the Telario Management Tool (TMT) software

Once the information is received and input, the Product Services group assigns you an authorization key for the system. The authorization key is valid for all handsets within a system but unique for each Control Station. This authorization key is required by the Telario Management Tool (TMT) software to program the system. The Control Station is the core of the system and the serial number from the Control Station is used to generate the key code. Product Services uses the Control Station serial number and the request key obtained from the TMT software to generate the 18-bit authorization key, which is then returned to the installer. It is important to note that you can not activate the Control Station until you receive an authorization key from Motorola Product Services (1-800-927-2744). The TMT requires entry of a valid authorization key and once this has been entered, the unit can be activated. The unit is then operational upon completion of this programming step. In the event that a Control Station needs to be re-registered (e.g. power down for more than 4 hours) another unique key will be required to program the unit.

Use of the random hardware serial number and authorization key assures that the Location Verification Process (LVP) is specific to each unique system each time the LVP is used. The Motorola Product Services Group submits application and registration information to UTAM on a weekly basis. This information will also be kept on the database at Motorola.

LVP is applicable for two main cases:

1) Initial site installation:

Units received by the dealer will be non-operational. The location verification process and assignment of key code to the site system is required for operation. Therefore, this process must occur at all initial installations.

2) Site relocation:

In the event that a Control Station (and associated handsets) is moved to a different location, the dealer must again go through the LVP. The Telario system ensures this through the system design. The Control Station hardware and software are designed so that if a Control Station is moved (i.e. both power and phone line are disconnected) and more than 4 hours elapse, the Control Station resets. This means that the Control Station goes back to its initial state, which requires a new authorization code and activation for system operation.

Compliance to Part 15.307 (e), (h)

FCC Part 15.307 (e) and (h) deal with methods to restrict site mobility. UTAM requires a method to ensure that the system will be non-operational if it is disconnected for more than 4 hours. The intent of this is to limit the system mobility and thereby reduce the opportunity for relocated systems from being established without UTAM authorization. The Telario system complies with this requirement.

Important Safety Information

Read this information before installing and operating the Telario Control Station. For safe and efficient operation observe these guidelines.

Exposure to Radio Frequency Energy **National and International Standards and Guidelines**

Your Motorola Telario Control Station and handsets, which generate and radiate radio frequency (RF) electromagnetic energy (EME), are designed to comply with the following national and international standards and guidelines regarding exposure of human beings to radio frequency electromagnetic energy:

- Federal Communications Commission Report and Order No. FCC 96-326 (August 1996)
- American National Standards Institute (C95-1-1992)
- National Council on Radiation Protection and Measurements (NCRP - 1986)
- International Commission on Non-Ionizing Radiation Protection (ICNRP - 1986)
- European Committee for Electrotechnical Standardization (CENELEC)
 - Env. 50166 - 1 1995E - Human Exposure to Electromagnetic Fields Low Frequency (0 Hz to 10 kHz)
 - Env. 50166 - 2 1995E - Human Exposure to Electromagnetic Fields High Frequency (10k Hz to 300 GHz)
 - Proceedings of SC211 / 8 1996 - Safety Considerations for Human Exposure to E.M.Fs from Mobile Telecommunications Equipment (M.T.E.) in the Frequency Range 30 MHz - 6 GHz (E.M.F - Electromagnetic Fields)

Electromagnetic Interference/ Compatibility

NOTE

Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed or otherwise configured for electromagnetic compatibility.

- To avoid electromagnetic interference and /or compatibility conflicts, turn off your handset in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.

Operational Warnings



Potentially Explosive Atmospheres

Turn off your handset when you are in any area with a potentially explosive atmosphere, unless it is a radio type especially qualified for use in such areas (for example, Factory Mutual Approved). Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death.

Blasting Caps and Areas

To avoid possible interference with blasting operations, turn off your handset when you are near electrical blasting caps, in a blasting area, or in areas posted: "Turn off two-way radio". Obey all signs and instructions.

NOTE

The areas with potentially explosive atmospheres referred to above include fueling areas such as: below decks on boats; fuel or chemical transfer or storage facilities; areas where the air contains chemicals or particles, such as grain, dust or metal pow-

ders; and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often but not always posted.

Operational Cautions



Damaged Antennas

Do not use any handset or Control Station that has a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result.

Batteries

All batteries can cause property damage and /or bodily injury such as burns if a conductive material touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot.

Antenna Safety



DANGER

Death can result if the antenna comes near or in contact with electric power lines.

DO NOT allow the antenna to touch exposed parts of the body, especially the face or eyes, while the Control Stations is powered on.

DO NOT operate the Control Station with a damaged antenna or antenna board. Replace a damaged antenna or board immediately or contact your Motorola dealer or the Motorola Service Repair Center.

Unauthorized antennas, modifications, or attachments could damage the Control Station and may violate UTAM regulations. Use only the Motorola approved antenna or antenna board.

General Control Station Care

Your Control Station is made and tested to meet exacting safety standards. It meets both UL and FCC requirements.



WARNING

To reduce the risk of fire or electric shock, do not expose the Control Station to rain or moisture.

Careful attention is devoted to quality standards in the manufacture of your Control Station, and safety is a major factor in its design. However, safety is also your responsibility.

This section lists important information that will help you properly use and enjoy your Control Station. Read all the included safety and operating instructions before using your Control Station.

Cleaning – Use only a damp cloth for cleaning. *Do Not* use liquid or aerosol cleaners.

Attachments – Do not use attachments / accessories not recommended by Motorola, as they might create a hazard.

Water and Moisture – Do not use this product near water (for example - near a bathtub, washbowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool).

Power Sources – Operate the Control Station using only the power source indicated on its marking label. If you are not sure of your power type, consult your authorized Motorola dealer. **Important: The power source for the Control Station must provide a continuous source of power for this equipment.**

Power receptacles that are controlled by switches or timers should not be used.

Power-Cord Protection – Route power-supply cords so they are not likely to be walked on or pinched by items placed on or against them, paying particular attention to cords at plugs, AC outlets, and the points where they exit from the product.

Overloading – Do not overload AC outlets or extension cords, as this can result in a risk of fire or electric shock.

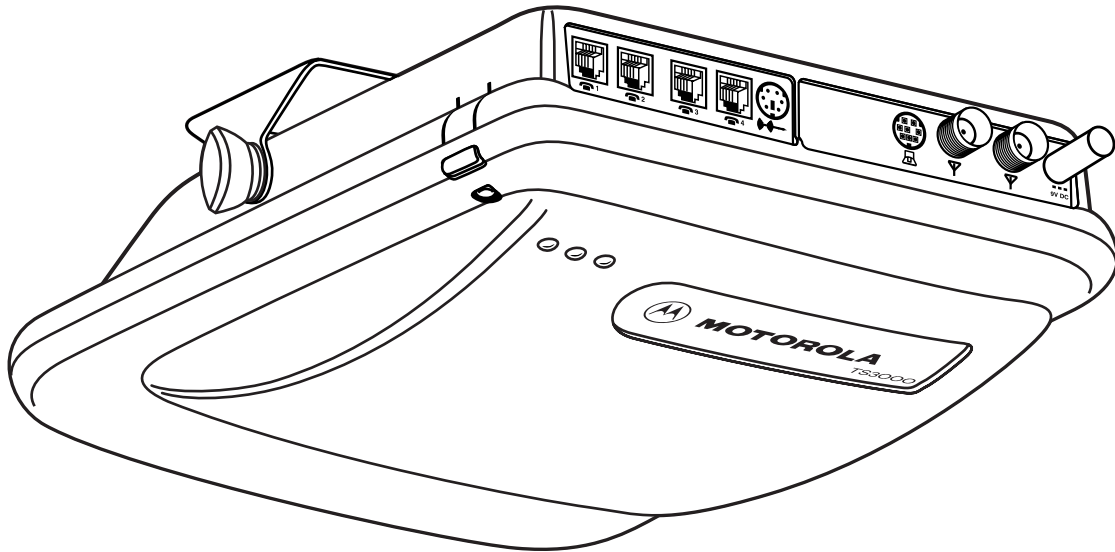
Objects and Liquids – Never push objects of any kind into this product through openings, as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the Control Station.

Servicing – In each or any of the following conditions, contact qualified personnel or your authorized Motorola dealer immediately.

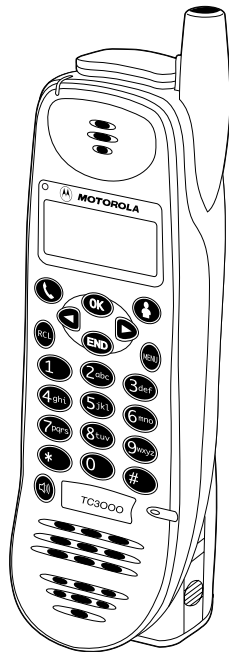
- When the power-supply cord or plug is damaged.
- If liquid has been spilled or objects have fallen into the Control Station or the power supply.
- If the Control Station or the power supply has been exposed to rain or water.
- If the Control Station does not operate normally when following the operation instructions.
- If the Control Station or the power supply has been dropped or damaged in any way.
- When the Control Station exhibits a distinct change in performance.
- **Heat** – The Control Station should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
- If the Control Station power and telephone line connections have been interrupted or disconnected for more than four (4) hours.
- If the Control Station Red LED lights.

System Components

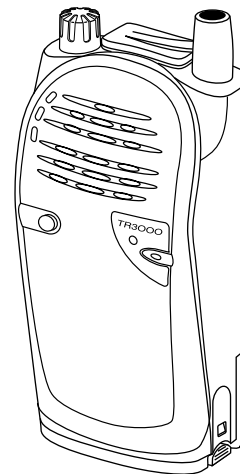
- Telario TS3000 Control Station
- Telario TC3000 Communicator
- Telario TR3000 Radio



TS3000 Control Station



TC3000 Communicator



TR3000 Radio

Standard Shipping Package Inspection

- Trunnion Kit – Kit Number HLN9789
- Power Supply – Part Number 2580427B06
- Line Cord – Part Number 3085714L01
- Installation Manual - Part Number 6880906Z38

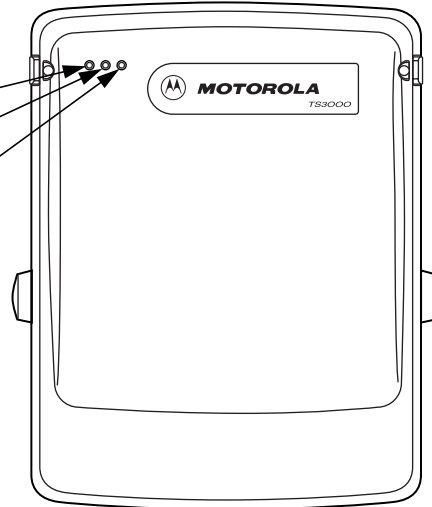
Control Station Profile

LED Definitions

Green - Indicates the Control Station is powered.

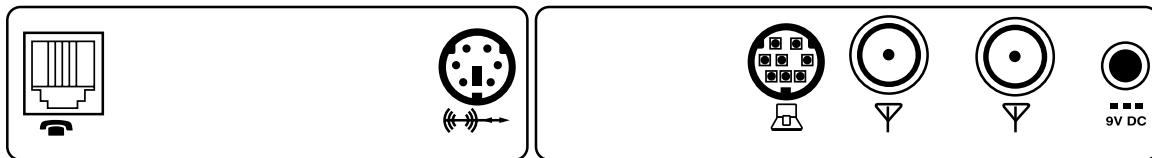
Amber - Indicates phone operation is in progress.

Red - System malfunction. Attention needed!

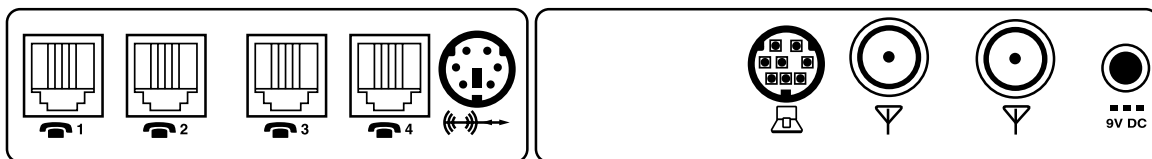


Control Connector Panels

1 Phone
Line
Model



4 Phone
Line
Model



Phone Lines

Audio
In/Out

Programming

Remote Mount
Antenna

Installation

Telario installations follow a seven-step process, starting with a pre-sale site survey and ending with training users working on a tested system.

Pre-Sale Site Survey

The first thing you need to do is visit your customer's site, verify that a Telario system will meet the customers' requirements, and verify that the site qualifies for Telario coverage. A single Telario Control Station can cover up to 250,000 square feet on a single floor. Once this is confirmed, you will need to make a note of what the longitude and latitude is for the site (www.mapblast.com). This information is required for UTAM, and for the system programming. Additionally, you will need to determine if the county your customer site resides in is a Zone 1 or Zone 2 county. If the site is designated as Zone 2, you must follow the UTAM coordination procedures (refer to UTAM section starting on page 2).

Follow-Up Sales Call

Once you've verified that your customer site matches the Telario System coverage capabilities, specific user needs and how those needs match up with the Telario System capabilities must be identified. Be sure to document all this information carefully because it will be needed for system programming.

Some examples of questions you will need to answer to assist in system configuration preparation:

- How many work groups are required?
- Who will be in each work group?
- Who needs telephone capability, and with what restrictions?
- Who needs just a radio?
- What, if any, accessories will be needed?
- How many TC3000 Communicators and TR3000 Radios are needed?

Pre-Installation Site Survey

A pre-installation site survey is critical to the success of the Telario System installation and will require technical support in addition to sales.

Identify Coverage Needs

As part of your pre-installation site survey, coverage needs should be determined and tested. In planning RF coverage for a site, create a simple site map – an RF coverage floor plan. Regardless of facility size, create a rough sketch of the exterior dimensions, including ceiling height. Then, walk the site. Identify any metal walls, racks or other metal structures and their height and draw them on the map. Identify all of these on the map. Your goal is to spot possible Control Station locations and identify the worst-case coverage locations.

Control Station Placement

Generally, consider the following rules for the Control Station placement:

- as high as possible
- nearest the center of the building
- in a wide open space
- visible to windows or doors on all sides of the building
- in plain sight
- no metal within 12 inches of the Control Station non-mounting surfaces (sides and top)

If the customer requires coverage of an area outside of the building – like a parking lot or yard area – be sure there is a propagation path to the area. Large

glassed doorways and window areas will usually provide sufficient signal strength to the area.

Important Guidelines

Here are some important guidelines that you will want to keep in mind when preparing to install a Telario System.

- Know the building fire codes.
- Keep Control Stations separated by more than 1 meter.
- Operating Control Stations must installed be 20 meters or more from people.
- Be sure mounting components meet building standards.
- Follow UL regulations.

First, as an installer, you must have knowledge of the local building and fire codes with regards to permanent installation of electronic equipment in the work place or public facility, including overhead or ceiling mount requirements.

Second, if you are installing more than one Control Station, be sure they are separated by at least 1 meter to insure correct RF performance.

Third, you will need to conduct RF performance tests to verify that the system coverage meets your customer's expectations in all areas within the facility where system access is intended. If special conditions exist, such as metal walls or the presence of large metallic objects within the building or if irregular coverage patterns are encountered, preliminary installation may be necessary to verify operational requirements before the final installation is attempted.

Finally, UL1950 requires that any wall or ceiling mount be capable of supporting 5 times the weight of the equipment. Our standard mounting components can support 25 or more pounds. If you substitute any components, they too must support at least 25 pounds.

UL1950 also focuses on the physical installation and fire safety of the equipment while Article 725 focuses on the power cabling. We fall under Article 725 because we use a Class 2 power supply. A Class 2 power supply must be UL listed, must be inherently current limited, and is generally under 50 Volts. Class 2 circuits generally do not require special handling such as conduit. The major concern is that Class 2 circuits cannot share raceways, cable trays, or enclosures with high power circuits such as branch circuits. Article 725 also states that the cabling must be done in a 'neat and workman-like manner'. They specifically cite ANSI/EIA/TIA "Commercial Building Telecommunication Wiring Standard" 568-1991, and "Commercial Building Standard For Telecommunications Pathways and Spaces" 569-1990 as examples of what would comply.

Coverage Test

Once you have selected the Control Station location, a coverage test is necessary. Place a Control Station into the Error Rate diagnostic mode and position it as close to the preferred installation location as possible. To get the most realistic coverage estimate, you may need to use a telescopic tripod. Then, carry a diagnostic mode enabled handset to all corners of the facility. Control Stations placed in diagnostic mode will transmit a continuous 1 kHz tone to the handset. The tone should remain solid with no dropout in all locations. If coverage is deemed unacceptable in certain areas of the site where it is necessary, choose a new location for the Control Station and repeat.

Telephone System Interfaces

An integral part of the pre-install site survey involves looking over the customer's telephone system.

The Telario System must interface with analog phone lines. This was a deliberate design decision that provides you with as much flexibility as possible in matching the Telario System to a customer's telephone environment.

The Telario System interfaces easily with analog PBX's. If an analog PBX is being used, be sure the PBX has lines available for each telephone line and/or Communicator used in the Telario System. Your customer may need to have the PBX manufacturer install additional line cards. When an analog PBX is used, some of its features may be passed through the Telario System to the handsets. Others may not.

The Telario System can also work with digital PBX equipment in most cases, as long as it is capable of adding analog line cards.

The Telario System can also work with key telephone equipment. This is an older technology characterized by six-button telephones.

Of course, The Telario System can also simply be connected directly to dedicated telephone lines.

Telephone Cabling

Regardless of which type of telephone system you are interfacing, investigate how you or a technician will run the telephone service wiring to the Control Station. You will be expected to provide telephone service wiring terminated with standard RJ-11 outlets for each line. The use of Category 5 wiring and installation techniques are recommended.

Power Cabling

Primary AC power is required to power the Control Station and must be in accordance with applicable electrical codes. The Control Station Power Supply must plug into a fuse or circuit breaker protected outlet rated at no more than 20 amperes. The Control Station power supply cord and the input cord to the Control Station are about 12 feet long. If a greater distance is necessary to reach AC power, one or more Motorola 75 foot Power Extension Cables may be considered. The number of extension cables used depends on the type of Control Station being installed as well as expected system usage or "loading". Refer to Table 0-1 below for guidelines. Be sure to consider future system requirements or upgrades.

Backup Power

As a final activity in your pre-sale work with the customer, discuss battery backup. If the Telario System is used for critical business communications, you'll want to discuss whether backup power is available at the site, or if the Motorola Backup Battery will be required.

Review Table 0-1 below to determine battery back-up time, which is dependent upon the use of the power extension cables and system usage.

Control Station Model	Battery Backup Installed	System Usage or Loading	Number of 75 Ft Power Extension Cables	Average Backup Time (Hours)
Single Phone Line	NO	Light	4	n/a
Single Phone Line	NO	Heavy	3	n/a
Four Phone Line	NO	Light	3	n/a
Four Phone Line	NO	Heavy	3	n/a
Single Phone Line	YES	Light	3	8
Single Phone Line	YES	Heavy	2	3.75
Four Phone Line	YES	Light	2	1.5
Four Phone Line	YES	Heavy	1	1.3

Table 0-1. Power Extension Cable Guidelines and Battery Backup Times

Important Note: The recommended ambient for a Control Station with the backup battery installed is 0 to 40 degrees C (32 to 104 degrees F) and should not exceed -15 to +50 C (5 to 104 degrees F).

Installation Preparation and Programming

Required Tools

- Laptop PC with a Pentium processor, 64 megabytes of RAM, an RS232 port and a CD-ROM.
- Telario Management Tool Kit, kit number H5183, includes the CD, a Getting Started Manual, and programming cables (kit numbers HKN9023 and HKN9024)
- A line tester with a DTMF pad and earpiece, to verify that all telephone lines are functional, is recommended.

Other Materials You Might Need at the Site

- Punchout tool – Motorola part no. 66-80333A39
- Velcro straps
- Tie wraps
- Ladder or lift
- Telescopic tripod
- Beam clamps
- Molly bolts
- Category 5 crimping tool
- Category 5 continuity tester
- Calculator
- Phone connector kit
- Power connector kit
- Wrenches & screwdrivers

Programming

The final step to installation preparation is programming the customer's equipment with the Telario Management Tool (TMT). Refer to the TMT help windows for assistance.

Control Station Installation

Mounting

Ideal mounting choices are the bottom of a horizontal I beam, or on the ceiling with the standard trunnion. The trunnion allows at least 10 degrees of rotation in one plane. For optimal coverage of the facility, the Control Station should be installed horizontally.

Remote Mount Antenna

If you must mount the Control Station in a vertical orientation, coverage could be restricted significantly. For these cases, we suggest using the Motorola Remote Mount Antenna. The Remote Mount Antenna connects to the rear of the Control Station, extending the space diversity antenna system up to four feet, thus allowing for more flexible mounting options, while maintaining system integrity.

Mounting Hardware Alternatives

Depending on the location chosen for mounting the Control Station, you'll need to consider various mounting hardware alternatives to complement the standard trunnion. These might include the choices shown here.

- Plaster Ceiling – 4 molly bolts
- Suspended Ceiling – 2 grid clips
- Horizontal I-beam – 2 beam clamps
- Vertical I-beam – 2 beam clamps
- Wall – 2 molly bolts

Drop Ceiling Mount

If you are mounting the Control Station in an office space, you may encounter a drop ceiling. Talk over the installation, and especially the need for any exposed wiring, with the customer. If mounted on a drop ceiling, UL1459 requires that the entire system be capable of supporting five (5) times the weight of the Control Station. Check with the facility to ensure that the grid is rated to 25 pounds minimum. Also review any local earthquake regulations before attempting a ceiling mount.

If the cabling needs to run in the space above the ceiling grid, then you need to budget for slightly more expensive plenum-rated cable. If aesthetics dictate mounting the Control Station above the tile, then check the tile to be sure it is not foil backed. Foil backed tile will destroy your propagation calculations. A Remote Mount Antenna installed below the tile may be considered in this scenario as well.

Programming Accessibility

If the Control Station is mounted in a difficult location to access or your customer anticipates adding or modifying handsets and system design in the future, you may want to consider adding the Control Station programming cable for reprogramming needs. All cabling must comply with the National Electric Code (NEC) as well as the state, city, county and local building and fire code requirements. You can use EIA / TIA-568 as a beginning point.

UTAM Registration & Mobility Feature

UTAM requires that every installed Telario System is registered. To ensure this is done, the Control Station has a built in mobility feature intended to satisfy the UTAM requirement that a previously installed system shall not be moved to a different location without being re-registered by an authorized Motorola dealer.

Due to this requirement, just prior to or just after the Control Station is actually installed, the Telario Management Tool (TMT) Software must be used to indicate that a particular Control Station has in fact been registered. Refer to UTAM section starting on page 2 for instructions on this process.

Note the following scenarios that are impacted by the UTAM Mobility Feature:

- If the power and phone line 1 are disconnected for more than 4 hours, the Control Station is considered “un-installed” for the intent of moving it and will be non-functional when re-connected, until it is re-registered with the Telario Management Tool.
- If there is a loss of power, but phone line 1 remains connected, for up to five days the Control Station will still be functional when power is restored.
- If the phone line 1 connection is lost, but power is not interrupted, the Control Station will still be functional when phone line 1 is reconnected.
- Using a battery backup will allow the Control Station to be functional during the loss of primary power for up to eight hours (see Table 1, page 14). If

primary AC power is restored during the battery backup period, the Control Station will remain functional. If power is still out when the battery backup is discharged, the Control Station will be functional when primary AC power is restored provided that primary power was not lost for more than five days, and the connection to phone line 1 was maintained during this period.

Telephone Hybrid Adjustment

The telephone interface network in the Control Station is intended to perform optimally with typical telephone line impedances. In some situations, variations in telephone line impedances may be encountered which are sufficient to degrade the sidetone rejection of the interface network. "Sidetone" is the level of your own voice heard in the Communicator's earpiece when speaking into the microphone during a phone call.

If necessary, it is possible to adjust the hybrid balance of the network to minimize the sidetone level. There is one slide switch and adjustment potentiometer on the main circuit board of the Control Station, and three additional switch/potentiometer combinations on the option board in four line models. These are accessible simply by removing the housing cover of the Control Station.

To enable the adjustment capability, the appropriate slide switch lever is moved toward the corresponding adjustment potentiometer. Then, initiate a phone call from another telephone to the Control Station. Using a Communicator to answer the call, adjust the potentiometer with a small screwdriver while speaking into the Communicator's microphone, until the level of your own voice, as heard in the earpiece, is minimized. For four line models, this procedure should be repeated for each of the phone lines, adjusting the appropriate potentiometer for each.

Site System Test

Once the Control Station is installed and all equipment, including handsets, is programmed, complete a system functionality check with the customer. At a minimum, you'll want to perform the following tests.

- Verify that the Control Station powers up and the green LED is lit.
- If battery backup is used, disconnect the power to the Control Station and verify that the system continues to operate, keeping the impact of the UTAM Mobility feature in mind.
- Walk the site to test audio quality and coverage.
- Test all Group Talks and Private Links.
- Finally, test all telephone functionality.

Train the Users of the Telario System

Provide each user with the appropriate handset User Guide and demonstrate the feature functionality.

