Actall Corporation

ISO 9001:2015 Certified

ATLAS | Installation Manual

Version 5.00

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CONTACT

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Crisis Controller©™ Monitoring Center

The Crisis Controller©™ Alert ATLAS Monitoring Center receives and supervises alarm information from wireless transmitters. Data from these devices is processed by the software and displayed to aid rapid response to alarms and trouble conditions.

Equipment

The ATLAS Alert Monitoring Center consists of a central monitoring computer, which receives data from wireless devices through Gateways connected to the Monitoring Center via Ethernet. The information received from field devices is processed by a location engine that can run on the Monitoring Center CPU (for smaller installations), or by a separate CPU. The software processes location information from Locating Device Nodes (LDNs) positioned throughout your facility, which transmit PMT device IDs to the Monitoring Station, allowing Control Operators to track and locate positions of the individuals wearing the mobile alarm devices.

How Transmitters Communicate with LDNs

Wireless transmitters send coded digital messages to the locating device nodes as they pass underneath the LDN listening antenna. These messages contain data identifying the transmitter. The LDN then transmits the ID information wirelessly over the 902 to 928 MHz frequency range to Gateways (MGEs) who, in turn, relay that information to the location engine via Ethernet.

Heavy Duty Tags

The Heavy Duty Tags (HDTs) used with the ATLAS system work in conjunction with LDNs and Gateways to provide detailed information of location and movement. HDTs transmit their ID information to LDNs via 2.4 GHz; when an alarm is sent, this condition is sent along from the HDT directly to the Gateway device via 900 MHz. The HDT also receives its settings from the Gateway device (over 900MHz) when a connection is made to that device. A Guard Tour software feature permits the system to monitor the time between arrivals at locations on a predetermined route, so that significant variations from the route and times of transit can create alarms.

Common Features of the ATLAS System:

- Push Button Alarm activation
- Battery compartment/Reset switch: After a battery is installed in the HDT, the reset switch must be pressed. The switch is located inside the battery compartment, inside the cover above the battery holder..
- HDTs are powered by a disposable, 3V Lithium Ion battery. Typical battery life is 6 – 9 months.
- Pull Cord Alarm activation
- Man Down Alarm activation (internal tilt switch)
- LED status display indicates network connection, low battery, alarm activation.

Operational procedures should be set in place to test the operation of HDTs on a regular basis.

How LDNs Communicate with Gateways (MGEs)

Locating Device Nodes (LDNs) receive coded digital messages from PMTs and Gateways. With PMTs each message contains data identifying the HDT ID. LDNs should be ceiling mounted on opposite sides of ingress/egress points between secure zones and/or in larger areas where location information is desired. The position of the device and the locating antenna should be set to capture the complete area beneath the device. Each LDN is powered by 12 - 18VDC and has a draw of 155ma. They are often set up in series from an aggregate DC power supply. Each LDN contains three 2.4GHz radios to receive HDT messages and decodes them. The location information is stored and rebroadcast to the Gateway via the radio frequency (RF) 900MHz transmitter. The LDNs also receive setting and operating information from the Gateway. Adjustments to receive strength sensitivity can be made at the Monitoring Center CPU and transmitted to the LDN (via the Gateway), eliminating the need to access the LDN once installed for field adjustments.

Typical (Minimum) Computer System Requirements

Computer:	2.8 GHz P4 (or higher)
Memory:	1 GB RAM
Hard Drive:	40 GB min
Serial Port:	Minimum One
USB Ports:	Minimum two USB 1.1 compliant
Operating System:	Windows XP Pro
PCI Expansion:	Minimum two expansion slots

How to Install the Software

The Crisis Controller©™ software comes installed from the factory on the Monitoring Station. Alternatively, it is available on CD (Upgrades). If upgrading, simply insert the upgrade CD and follow the instructions. Care should be taken to back up all data prior to upgrading. For assistance, call Actall technical support at 1 (800) 598-1745.

The Crisis Controller©™ ATLAS software is typically installed with two CPUs: One server to run the location engine and one server to run Crisis Controller that displays alarms and interfaces to outside systems. On smaller installations, it is possible to use only one server.

WARNING:

All Hardware Keys must remain on the machines where they were initially installed a nd never relocated or removed for any reason. Doing so will cause undesired results and void all warranties implied or otherwise, unless specifically directed by Actall® Technical Support.

All connections in a Crisis Controller©™ networked system should be capable of no less than 100 Mb. In addition, all machines should be connected using a hub (or switch) rated at no less than 100 Mb).

CLIENT/SERVER NETWORK CONFIGURATIONS

Crisis Controller can also be configured to run in a Client/Server environment for large installations requiring this type of performance. An Actall Technician should be consulted prior to installing this type of network setup.

All Crisis Controller©™ ATLAS systems will have at least one Gateway and a number of LDNs and HDTs. Every system must have an Alert Monitoring Hardware Key installed at all times. Other devices may or may not be used, depending on the application.

Hardware Key

The Alert Monitoring Hardware Key is a USB connector with pre-set coded configuration that is also attached to an open USB slot on the PC. The Hardware Key must be installed before attempting to install or activate the system. It cannot be removed after installation, as this will cause the monitoring system to terminate.

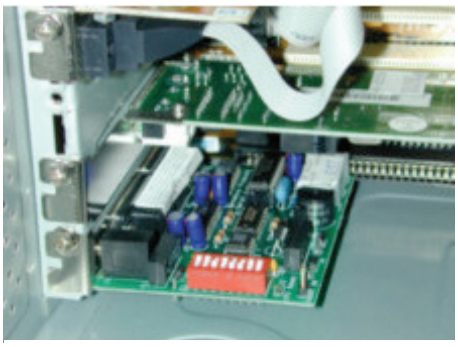
On network systems, Hardware Keys cannot be moved from machine to machine. Hardware Keys must remain on the machine on which they are originally installed.

Serial Watchdog

The Serial Watchdog is a serial device that verifies the continued operation of a machine while monitoring. It is attached only by the card bracket; it is not in a card slot.

Installation:

The Serial Watchdog is installed into an open slot bracket on the monitoring system (not a slot in the motherboard). It is a throughput device, so the Serial Receiver attaches to the Serial Watchdog (if present) and the Serial Watchdog attaches to the serial port that is programmed for the Serial Receiver. [See page 10 for Serial Receiver installation information.] Connect the 2-pin reset header from the Serial Watchdog to the CPU RESET (pin 1 to pin 1 - watch orientation). If there is already a connector attached from the Reset button to the CPU RESET, you may attach it to the auxiliary connection on the Serial Watchdog controller. Connect the Serial Watchdog's supplied 4-pin Molex power connector to any available disk drive power receptacle.



Installed Serial Watchdog

Serial Watchdog DB9 Connectors

The Serial Watchdog includes an expansion unit that has a built in enunciator. It is set to 'ON' from the factory. To deactivate it, remove the shunt marked 'AUDIBLE'. If additional actions are required, should the watchdog activate, a Form 'C' reed relay is available. This relay is only rated for 100m VDC, so if a higher rating is required, an additional relay must be attached. Attach the expansion unit via the stereo jack to the Serial Watchdog. Attach the female DB9 connector to the computer serial port. Attach the male DB9 connector to the Serial Receiver, if present.

Once the Serial Watchdog has been activated, it will remain activated until Alarm Monitoring has been exited using the correct methodology.

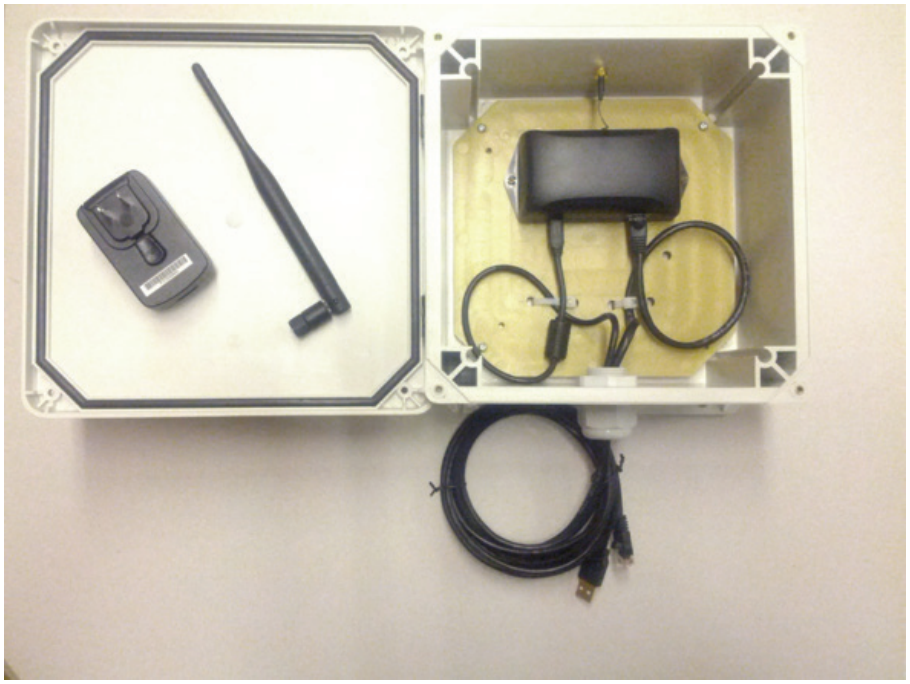
GATEWAYS (MGES)

Gateways connect to the Locating Engine via Ethernet, generally through a switch. The Gateways transmit data received from HDTs and LDNs data for the Location Engine©™ software to interpret and forward to the Crisis Controller software.

INSTALLATION:

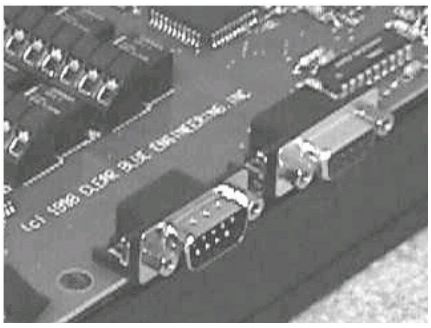
A Gateway is powered via an external 5V power supply and communicates with the Location Engine via Ethernet. The device is mounted inside of a weatherproof enclosure (Actall part #40601. A cable gland is installed on the box for these cables. The external antenna should mount upward once the box is installed; ideally it should be located at the top of the enclosure. The weatherproof enclosure is hinged for easy access.

It is recommended that the antennas should never come near metal objects.



Input /Output Module (SIO32)

The Input/Output Module (SIO32) is an external RS232 device that can be configured for both inputs and outputs. The SIO32 module connects to a serial port on the computer. Up to 8 SIO32s can be attached to each of 8 serial ports, giving users a potential of 2,048 input/output options.



SIO32 Serial Port

Installation:

Remove the housing cover of the SIO32 by removing the two screws from the top of the unit (screws are diagonal with respect to each other). Inserts in the cover can be removed from the Output and the Input end of the board to permit wiring to the terminals. Using the alternate diagonal holes, mount the SIO32 on a flat surface using the screws, washers, and anchors supplied with the unit. Be sure not to over tighten.

SIO32 Power Terminal Block

The SIO32 connects to the PC serial port using a standard serial cable that has a DB9 female connector on one end (which is attached to the SIO32 input marked "IN"), and a DB25 or DB9 male connector on the other (which is attached to the PC). If this unit is to be daisy chained (using the same serial port as a previous SIO32), a DB9 male to DB9 female will be required. Plug the DB9 female end into the previous units Output connector, and plug the DB9 male end into the new units Input connector.

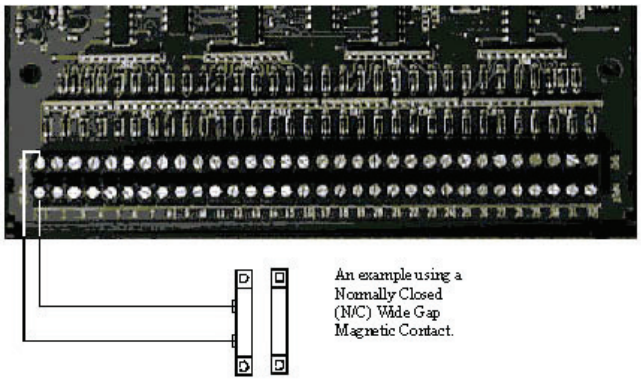
The SIO32 requires a 9 to 35VDC, 700mA power supply if any Outputs are to be used. If only Inputs are used, a power supply that supplies 300mA is acceptable. Connect power source Ground to the SIO32 terminal marked GND. Connect the Positive side of the power source to the terminal marked 9VDC. When power is applied, the PWR LED should light. If this does not occur, remove power and verify the connection. The receiver can be placed up to 25 feet from the PC. For greater distances, serial line drivers can be used.

The SIO32 Output section has 32 Form C relays, with connections arrayed in four rows of terminal blocks with N/O, N/C, and common terminals for each output.

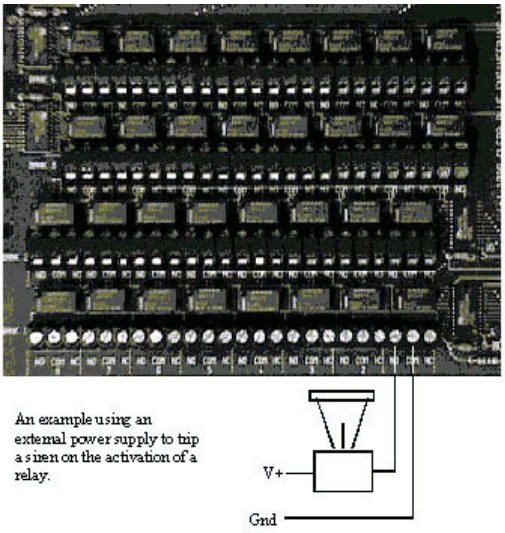
The SIO32 Input section consists of two 32-position terminal strips with inputs on one side and ground terminals for each position on the other (ground terminals are on the inside).

CONFIGURATION:

Configuration of the board is accomplished by setting the 8-position DIP switch.



SIO32 Inputs



SIO32 Outputs

Set Input or Output ("Off"=Output)				Set System ID + 1 ("Off"=0)			
Position 1	Position 2	Position 3	Position 4	Position 5	Position 6	Position 7	Position 8
Bank 1 Terminals 1-8	Bank 2 Terminals 9-16	Bank 3 Terminals 17-24	Bank 4 Terminals 25-32	MSB (Binary value = 4)	— (Binary value = 2)	LSB (Binary value = 1)	Not Used

SIO32 DIP Switch Settings

Positions 1-4 set Input or Output options for the SIO32, in banks of 8. If switches are in the "Off" position, respective points are designated as Outputs. "On" sets them as Inputs.

The same bank cannot be used for both Inputs and Outputs.

The next 3 positions (5 - 7) set the board ID, from 1 to 8. The associated ID is binary based plus 1 (000=1, 001=2, 010=3, 011=4, 100=5, 101=6, 110=7 and 111=8). Boards attached to the same serial port must have different IDs.

Any time DIP switches are changed, the Reset button must be pressed (located next to the DIP switches), or power to the SIO32 must be removed and reapplied.

To program the SIO32, see the Actall® User Manual. Programming identifies the module to the controller, and enables and integrates its function with the system. Outputs can be programmed to toggle states upon activation, or can be set to trip for defined momentary activation periods.

The Crisis Controller©™ software treats SIO32 Inputs like transmitters. They are defined as N/O or N/C (inputs controlled by switches are always pulled high). Switch transitions must be at least 25msec in duration. This permits "de-bouncing" of switches. Inputs can be tripped either by switch closure or by voltage changes. In addition, switches can be programmed to directly trip outputs.

Paging

The Crisis Controller©™ can automatically respond to alarm or trouble events by automatically communicating with on-site or off-site pagers. Users can also manually activate specific pagers as needed (see Actall® User Manual for additional details).

The system accommodates multiple pager services, with service to all types of pagers. When programmed or manually instructed to send a page, the system calls the pager service assigned to the pager and relays numeric or alphanumeric information. This paging interface requires a connection to the Monitoring Computer via an available COM port.

Installation:

Due to the versatility of the many paging systems available, please see the manufacturer's documentation for hardware installation and programming.

Printer

The Crisis Controller©™ will support a dedicated line printer that will produce real time printouts of system activity, or can be used with a standard printer with reports being requested by Operators or Supervisors.

Installation:

Attach the printer to the parallel port of the PC using a standard USB printer cable. Power should be applied in accordance to the Printer Manufacturer's instructions.

Heavy Duty Tags (HDTs)

Tags should not be mounted on-site until they have been programmed and labeled for easy identification in the field. Transmitters are programmed from the Alert Monitoring Center using a programming cable connected to the Serial Receiver.

LED Indicators:

Two multi color LEDs are available to indicate PMT status:

LED#1 (Green/Amber) – PMT Operation

Green blinking:	heartbeat, good battery
Amber blinking:	heartbeat, low battery

LED# 2 (Red/Blue) – PMT Communication

Blue Solid:	on while device boots
Purple Solid:	on while device acquires network configuration from network
Red Solid:	on for one second after acquisition of network configuration on
Red Solid:	for several seconds. HDT in process of finding new gateway
Blue, blinking ½ second interval:	Indicates alarm condition has been set. LED will continue to blink until alarm has been acknowledged by monitoring computer.

Installation:

Batteries must be installed in transmitters before programming. Specifications and related programming instructions for each type of transmitter are included in the literature packed with the unit.

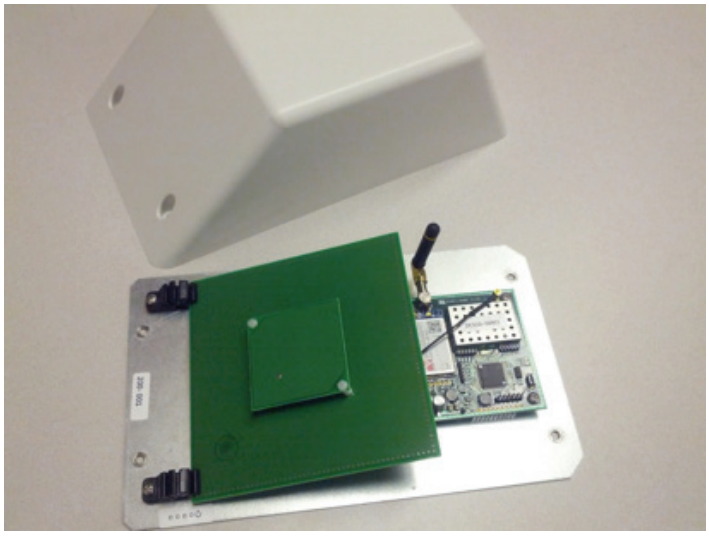
RF signals change with the environment, so signal strength measurements cannot be relied on solely. Complete supervision of the transmitters and frequent testing should be the main course of action to ensure a working system.

Locating Device Nodes (LDNs)

The Crisis Controller©™ software is often used in applications involving mobile transmitters carried for personal protection, by guards or watchmen. In these applications, it is extremely valuable to have a system that not only responds to alarms, but can also provide information on the location of the personnel carrying the transmitters.

LDNs

Locating Device Nodes are RF Transceivers devices that receive ID codes transmitted by the PALS©® ATLAS Heavy Duty Tags (HDTs). LDNs wirelessly transmit identification codes to Gateways (MGEs), which then send the location information to the Location Engine via Ethernet. LDNs ship in three separate parts: 1.) The Backplane, which includes the mounting plate, the LDN board (with 900MHz antenna and 2.4 antenna cable) and the wheel mounts for the 2.4 GHz antenna, 2.) the 2.4 GHz antenna itself, and 3.)The radome cover for the device. Wall mount and ceiling mount devices have different radome covers.



The ID code is used to identify the HDT in the zone when the HDT passes underneath the LDN coverage area. Location information is subsequently encoded into the transmissions from the LDN to the Gateway. It is then possible to monitor position and movement of the individuals on-site.

The Location transmissions from the HDT are sent via a low power 2.4GHz radio and received at the LDN on a directional patch antennae designed specifically for this application. The LDN then sends the ID information to the Gateway via a high power 900 MHz radio.

Programming of LDNs:

LDNs come preprogrammed from our facility. Changes to the operating parameters of the device are done via over the air (OTA transmissions from the Monitoring Center (via the Gateways.

2-position terminal block:

Positions are 12VDC '+', and Ground '-', and are marked on the board next to the power block. You will not damage the unit is the polarity is reversed; however, the unit will not power on. LDNs have a orange power-on LED indicator. A single power source can operate a several devices; they are typically installed in series.

Antennae:

LDNs come with two antennae, one for the 900 MHz radio (stubby) and one for the 2.4 GHz radio array (patch antenna). When properly installed, the 900 MHz antenna should be locked in a position perpendicular to the board it is attached to.

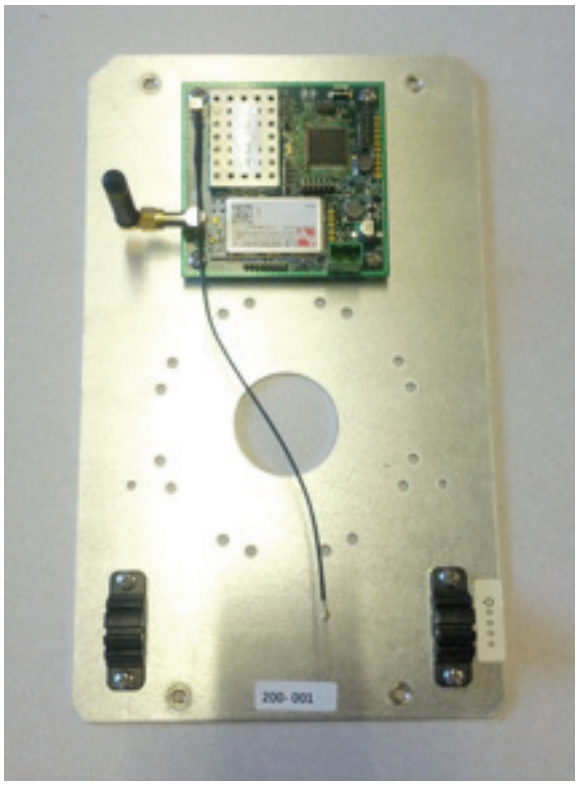
The 2.4 GHz antenna installs into a wheel mount screwed to the LDN back plane. This antenna will ship separately from the backplane itself. The angle required for the antenna is recommended by Actall personnel during the design process and will be marked by a sticker on the side of the antenna wheel mount.

Programming LDNs into Crisis Controller:

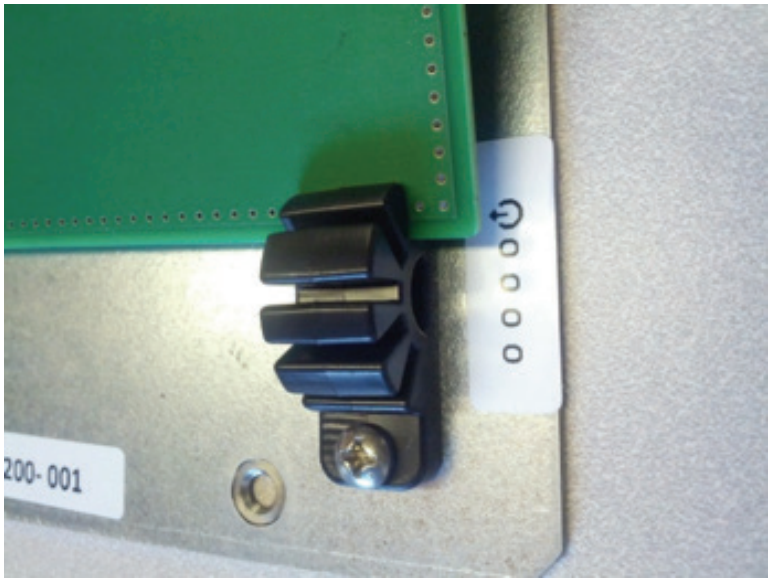
After configuring and wiring the LDNs must be programmed into the Crisis Controller©™ software. Programming identifies the LDN to the controller, and enables and integrates its function and location with the system. Once LDNs have been programmed in the Crisis Controller©™, they are accessible to the Guard Route feature, and can be included in a timed and sequenced patrol path.

INSTALLATION:

The backplane unit screws onto a standard, two-gang, and flush mounted electrical box. A variety of mounting holes are available on the mounting plate. Once mounted, the 900 MHz antenna should be adjusted and locked perpendicular to the board. The 2.4 GHz (patch antenna can then be attached to the open end of the cable extending from the board. Match the male and female connectors and press firmly. You will hear a distinct click when it is attached. Once attached insert the patch antenna into the appropriate slot (as marked) on the wheel mount. The radome can then be attached. Just line up the mounting holes and screw it on. The radome takes a 7/16 #10 screw; standard Phillips heads are available from Actall. If your installation requires specialized (security screws, you will have to provide them. You can also use a ½ #10 screw, although you will need to use a washer also to prevent the screw from going too far in.



The guiding principle of installing LDNs is that the listening area covered by the antenna will receive signals from HDTs via any path taken through the desired coverage area. Several factors must be considered. Distance from the coverage area (ceiling or wall height), width of the detection area and proximity to other LDNs must all be considered. The ideal location will provide superior signal strength data (as compared to adjacent devices) when a HDT is located in the coverage area beneath the device.



After the Crisis Controller©™ software has been successfully installed and tested, routine maintenance tasks can be performed by trained supervisors.

Troubleshooting

Problems that appear related to hardware or programming should be referred to the installer. Below are typical maintenance issues that can arise during operation of the Crisis Controller©™ software. For additional support, operation, or installation difficulties contact Actall® Technical Support at 303-487-4222 Monday through Friday, 8:00 a.m. to 5:00 p.m. Mountain time or Email technicalsupport@actall.com.

HDTs

HDT battery life can be extended by turning the HDT off when not in use (move the slide switch to position 1). When the HDT is off, it continues to report supervision information to the Serial Receiver.

Gateway Problems

Receivers and repeaters are highly reliable. Typically, if there is a problem it appears as a receiver or repeater failure, and is noted in the monitoring log. Failure of power sources and backups, wiring disconnection or inadvertent reassignment of COM ports can all cause a trouble warning to be generated. For improved RF range, make sure to mount the receiver in a location that is RF friendly (no metal back plates or back boxes).

LDNs

Communication between LDNs and HDTs is very reliable. If an IRT is not providing the correct address, make sure the DIP switch is set correctly and the power supply is providing the proper amount of current.

HDT Specifications

Peak Current:	30mA
Frequency:	900MHz/2.4 GHz
Maximum power output:	100 – 250 mW/minimal

Gateway Specifications

Peak Current:	3mA
Connection:	Shielded stereo cable
Conductors:	2 plus shield

LDN Specifications

Supply, Master IRT Locator:	12 – 18 VDC VDC @ 300mA
Current :	50mA

SIO32 Specifications

Supply:	9 VDC to 35 VDC @ 700mA
Form C Relays:	35 VDC @ 1A 120 VAC @ .5A 60 VDC @ .3A
Input sync current:	80mA
Maximum power dissipation:	3 watts
Input Connection:	DB9 Male
Output Connection:	DB9 Female
Maximum # per Serial Port:	8

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