

T-DAR® TAILGATING / PIGGYBACKING DETECTION SYSTEM

Installation and Operation Manual



One Head Mantrap

T-DAR Model T1010MT

Warning:

Modification of the T-DAR Control Unit by cutting or drilling will VOID the warranty and may require replacement.

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1. INTRODUCTION

The patented T-DAR[®] (Tailgate Detection Alarm and Recording) system uses three-dimensional optical imaging to detect piggybacking and tailgating through mantraps, security vestibules, sally ports, or person traps. The Newton T-DAR system detects persons, differentiates them from carts or other objects inside of the mantrap, utilizing stereo machine vision technology to identify and tag each human within the field of view of the tracking (overhead) camera. Once the status of a passage is determined to be tailgating or piggybacking, the T-DAR system then actuates any number of possible results, all controlled and pre-selected from an easy to use user interface (UI). These alarms and signals range from flashing lights and voice annunciation through remote alarm, real-time delivery of video of the event to security, and activation of internal or existing DVR systems.

2. SYSTEM COMPONENTS

CB110MT Control Unit

Size: H 16 ½ in. X W 14 1/16 in. X D 6.0 in. (419 mm X 360 mm X 152 mm)

Weight: 26lbs (11.7 kg)

Enclosure: Steel; completely enclosed with door

Mounting: Via 4 x ¼ in. (6.35 mm) holes on back panel tabs (optional mounting brackets available)

Standard Operating Temperature: 40° to 90° F (5° - 43 ° C)
(optional high and low temperature systems available)

Storage Temperature: 0° to 125° F (-18° - 52° C)



S100 Annunciator (Optional)

Size: 6.00" x 8.13 in. x 7.19 in. (152 mm X 206 mm X 184 mm)

Weight: 5lbs (2.27 kg)

Enclosure: Bent steel, with high impact plastic indicator

Standard Operating Temperature: 40° to 125° F (5° - 52 ° C)
(optional high and low temperature systems available)

Storage Temperature: 0° to 150° F (-18° - 66 ° C)



DC200LP Stereo Tracking Head

Size: 7.00 in. x 2.50 in. x 2.50 in. (178 mm X 63.5 mm X 63.5 mm)

Weight: 2.2lbs (1 kg)

Enclosure: Bent steel

Mounting: Via 4 x 1/8 in. (3.175 mm) holes on back panel tabs (optional mounting brackets available)

Standard Operating Temperature: 40° to 125° F (5° - 52 ° C)
(optional high and low temperature systems available)

Storage Temperature: 0° to 150° F (-18° - 66 ° C)



(continued)

I100 Door Position Encoder (Optional)

Size: 2.40 in. x 2.50 in. x 2.40 in. (61 mm X 64 mm X 61 mm)
Weight: 13.5 ounces (.38 kg)
Enclosure: Machined Delrin
Mounting: Via 4 x ¼ in. (6.35 mm) holes on back panel (optional mounting brackets available)
Standard Operating Temperature: 40° to 125° F (5° - 52 ° C)
(optional high and low temperature systems available)



WMK-100 Camera Head Wall Mount (Optional)

Size: Length - 2.50 in. X 26.5 in. (63.5 mm X 673.1 mm) Base Plate - 0.25 in. X 6.0 in. X 8.0 in. (.635 mm X 152.4 mm X 203.2 mm)
Weight: 3.4 lbs (1.54 kg)
Material: Aluminum sheet and extruded square tube stock, welded and powder coated
Mounting: Wall Mounting - via 4 x 0.375 in. (9.53 mm) holes on base panel. Camera Mounting - via 4 x 1/8 in. (3.175 mm) holes on arm.



MK200B Stereo Camera Drop-Ceiling Mounting Kit (Optional)

Size: 24¼ in. x 6 in. (61.6 cm X 15.24 cm)
Weight: 2.25lbs (1.02 kg)
Material: Bent steel
Mounting: Once the rails are installed between the grid members of a standard acoustical tile ceiling, the camera holding plate may be moved into the best position.



CMK-200C Stereo Camera Head Ceiling Height Extender (Optional)

A mounting kit designed to raise the camera head when the drop-ceiling height is too low. Mount the camera heads at least 8 ft. 3 in. (2.5m) from the floor.

Size: H 4.7 in. X W 14 in. X L 19 in. (119.38 mm X 355.6 mm X 482.6 mm)
Enclosure: 12 gauge (0.080 in. / 2.032 mm) aluminum sheet riveted and powder coated
Mounting: via 12 x 0.25 in. (6.35 mm) holes (three on each side tab).
Camera Mounting: via 4 x 1/8 in. (3.175 mm) holes on top panel.



3. TIPS FOR A SUCCESSFUL T-DAR INSTALLATION

To ensure the most accurate detection, it is crucial that the final internal dimensions of a T-DAR-equipped mantrap adhere to the measurements that the end-user has provided to Newton Security. The design, performance, and price of this system are based upon those provided characteristics.

Mantrap Location

Locate the mantrap as far away from sunlight as possible. Changes in ambient light levels (day-to-night) in the mantrap may significantly increase false detection and false alarms.

Mantrap Construction

For optimum results, the mantrap should be of opaque, solid wall construction.

When using glass walls in the mantrap construction, Newton Security recommends:

- There should be no ambient sunlight around the mantrap. If the potential exists for sunlight in the mantrap environment, perform the following tests. Turn off all lighting fixtures in and around the mantrap. Point a light meter at the source of the sunlight; it should be less than 50LUX.
- Avoid any direct sunlight in the mantrap, as it will cause erratic performance.
- For the most consistent performance, use the least amount of glass possible for mantrap walls. Avoid using glass doors in the mantrap, to keep from detecting people standing outside the doors (waiting to use the mantrap).
- Avoid using fully glassed walls next to a high traffic area, to keep from detecting people outside the mantrap. When a glass wall is necessary, we suggest installing two sections of glass. One high section and another section near the floor. Place the upper section higher than five feet above the floor, with the lower section three feet and below. The result is solid section, between three and five feet (above floor), which prevents the cameras from detecting a person standing on the other side of the glass. Including a solid section of wall will provide space for mounting access control devices.

Mantrap Height

- The minimum camera height for proper tracking is 2600mm (8.5 ft). Persons taller than 1.9m (6.3 ft) may receive higher false alarm rates in mantraps with camera heights lower than 2600mm (8.5 ft).
- For ceilings between 2410mm (7.9 ft) and 2600m (8.5ft), camera height extending kits are available.
- For low false alarm rates, mount the camera head at 2750mm (9ft) or higher.

Mantrap Size

The mantrap height and the viewing range of the camera lenses limit the size of a mantrap. Do not exceed the size limits specified below. Exceeding the mantrap size limitations will leave a significant gap in tracking, and security. With a mantrap that exceeds the maximum size limit, upgrade the T-DAR to a larger system that will properly cover the mantrap area.

- The maximum length and width of a mantrap with cameras lower than 2.74m (9 ft) is 1.45m (4.75 ft).
- The maximum length and width of a mantrap with cameras above 2.74m (9ft) is 1.50m (5ft)

Cameras

Ensure that the camera is securely mounted and not susceptible to any movement, such as:

- The opening or closing of mantrap doors
- Mount the DC200LP Stereo Camera Head in the center of the mantrap, ensuring the camera is no more than 0.75m (2.5ft) away from any door or wall.

Video Cables

For optimum performance, strong video signals are required.

- For the coaxial camera cables, use compression fittings rather than crimp-on fittings. For example, Paladin-brand compression fittings are a good representative.
- Ensure to separate video cables from any power circuits/cables, solenoid locks, automatic door hardware, motors, and vibrations.
- Run all T-DAR video cable in steel conduit, not shared with other wiring.
- Cable runs must be un-interrupted, with no junction points or splices.

Floor Surface

Avoid reflective or patterned floors in the mantrap.

- Use a light to medium shade floor (any color). A light or medium shade floor will provide a good contrast for dark clothing, while masking dirt buildup on the floor.
- Install carpeted or mat flooring rather than hard/tiled flooring. This will reduce light reflections from the floor.
- Do not install carpet with repeating patterns or stripes
- When a tiled or wood floor is part of the mantrap, ensure that there are no highly visible, repeating seams or patterns.
- Use a flooring material that will not show excessive dirt or tracks.

Hardware & Finishes

Avoid reflective horizontal surfaces as may exist on door hardware and glass frames.

- When selecting door panic hardware inside the mantrap, select hardware with a black or bronzed finish if possible. Apply a non-reflective coating on the top surface if necessary.
- Avoid large horizontal reflective surfaces on frames around glass walls and windows in the mantrap. Glass with large horizontal metal frames may reflect excessive light toward the T-DAR cameras.
- Apply a dark or non-reflective coating to horizontal, flat metal surfaces that may reflect light toward the T-DAR cameras.

Lighting

Adequate and consistent downward lighting is required for accurate monitoring. To detect tailgate violations, the T-DAR requires adequate and consistent downward lighting. Failure to provide adequate lighting will result in increased false alarm rates and reduced security.

- To provide consistent light levels across the entire mantrap, use at least one fluorescent panel in the mantrap. Florescent lighting creates an evenly lit environment and reduces bright reflections.
- If low-frequency fluorescent lighting is used, a line-lock signal is required.
 - If the lighting in the mantrap consists of low frequency (older style) fluorescents, use the AC wall-mounted transformer that is included with the T-DAR system. This will ensure proper operation of the T-DAR system.
 - This transformer, or another low voltage AC source of 6 to 30VAC, will provide the correct line locking of the T-Dar system to the environmental lighting.
- Newton Security highly discourages the use of direct lighting, such as can-style fixtures, or filament-style bulbs. Direct lighting may create excessive reflection.
- If the mantrap has a tiled and/or polished floor, take care that the lighting is highly diffuse, creating no reflections that affect the cameras.
- The Illuminating Engineer Society of North America (IESNA) bases lighting specifications on data for *Performance of Visual Tasks*. High contrast, calls for approximately 300 to 600 LUX.
- The minimum acceptable amount of lighting for proper operation of the T-DAR system is 300LUX. Add illumination if the levels are below this point. Record downward light measured approximately 40 inches (1m) above the floor.
- The maximum acceptable amount of lighting in any area of the mantrap is 800 LUX. Record downward light measured approximately 40 inches, (1m) above the floor.
- If sunlight is a factor, take all light measurements after dark (with lights on) to ensure light levels meet or exceed 300LUX.

Power

T-DAR requires a 24VDC power supply for operation.

- An external 24V DC power supply with a peak current of 10 Amps is required.
- A power supply is NOT included with the T-DAR system.

Additional Installation Tips

When using electric solenoid locks, place reverse voltage diodes across the solenoid terminals to reduce voltage feedback to the T-DAR controller. When using external relays, use reverse voltage diodes across the solenoid of the relay to reduce voltage feedback to the T-DAR controller.

WARNING: When mounting the TDAR on the wall or cabinet, ensure that there is at least 150mm (6in) between the TDAR and any other physical barrier for proper ventilation. Do not mount one T-DAR control unit with its heated exhaust directed toward the fan intake of a neighboring T-DAR control unit.

Light the area under the cameras well. Be sure that lighting conditions do not change over time. If lighting conditions do change, recalibrate the T-DAR to accept the new lighting conditions.

If the mantrap lighting consists of low frequency fluorescents, use a line lock transformer (provided with the T-DAR system). Failure to use a line lock transformer with low frequency fluorescent lighting may result in erratic system performance.

Mantrap Operation

Understanding the basic operation of the T-DAR mantrap will aid in a quicker installation period.

Standard Entry Procedure in a mantrap with manual doors

- The secure door remains locked in the initial rest state.
- A person first enters through the public door. Depending on the mode of operation, the public door may be access controlled or left unlocked when the mantrap is not in use. With bidirectional tracking enabled, the T-DAR will not allow entry through the public door, with the mantrap occupied or the secure door open.
- The T-DAR scans the environment while the public door is open. If two people enter, the system will alarm. After an alarm, the occupant(s) must exit.
- When the public door closes after entry, a person will access the Secure Door, Public Side reader, initiating a static scan.
- The T-DAR scans the environment. If a single person is detected the secure door will unlock.
- If there are multiple people detected in the mantrap, the system will alarm and the secure door will remain locked. The occupants must exit through the public door.

Standard Egress Procedure in a mantrap with manual doors and bidirectional tracking

- The secure door remains locked in the initial reset state.
- A person will first access the Secure Door, Secure Side reader to unlock the secure door. The public door will lock or remain locked if it is access controlled.
- After an access grant, the person will enter the mantrap through the secure door. Accessing the Secure door, Secure side reader with the mantrap occupied will not unlock the door.
- The T-DAR scans the environment while the secure door is open. If two people enter, the system will alarm. After an alarm, the occupant(s) must exit.
- Depending on the mode of operation, when the secure door closes after entry, the occupant may be required to access a reader. The secure side reader will be accessed or the Public door, Secure side reader if there are two readers in the mantrap.
- If an access grant is required, the system will perform a static scan after the access read. If no access read is required, the system automatically scans.
- If a single person is detected the secure door will unlock.
- If there are multiple people detected in the mantrap, the system will alarm and the secure door will remain locked. The occupants must then exit through the secure door.

4. BASIC INSTALLATION

Outputs

There are various relay outputs on the T-DAR mantrap controller:

- A public door lock output relay
- A secure door lock output relay
- Three configurable outputs relays for various status or alarm scenarios

Inputs

The T-DAR controller contains inputs for door closures and access control devices

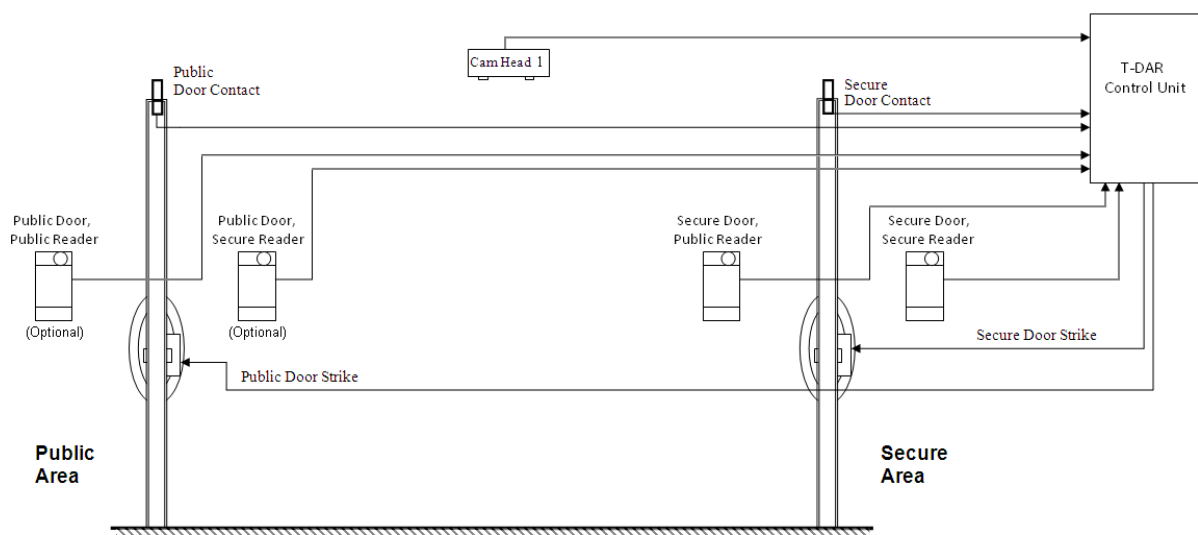
- Override input
- Two door contact switches
- Two to four valid access signals

The Secure door, Public side reader is located on the public side of the secure door. The Secure door, Secure side reader is located on the secure side of the secure door. The Public door, Public side reader (optional) is located on the public side of the public door. The Public door, Secure side reader (optional) is located on the secure side of the public door.

WARNING: Do not mount the Secure door, Public side reader in the centre of the mantrap. Mount the reader on the wall directly under a camera head where tracking accuracy is highest.

- All inputs terminate across a specific input terminal to ground.
- A reference voltage for all inputs is generated via a jumper between “input common” and +12VDC. The system will not operate without a reference jumper for each input.

Sensors and Access Control Hardware



Typical T-DAR inputs and outputs - Note the position of the Secure Door Public Reader

Component Mounting

Before any installation begins, make sure that the proposed location provides adequate room for all electrical conduits that may be necessary. You may find dimensions for the specific components in the components section of this manual.

Local Device Placement

- Place components such as the camera head and annunciator unit within a certain distance of the controller to minimize the effects of voltage drop.
- For cameras, do not exceed a distance of 45m (150ft), unless using a Cable Extender/Amplifier unit. Information about costs and part numbers of the Cable Extender/Amplifier is available from Newton Security.
- For the Annunciator, do not exceed a distance of 90m (300ft).
- Allow adequate clearance for installing conduit and accessing the Annunciator volume knob, etc.

Control Unit Placement

The Control Unit should be located in a place that allows for access to the unit, is clean and affords the unit protection from damage or vandalism. Whenever possible, install on the secure side, outside of the mantrap, to reduce the risk of tampering or vandalism.

WARNING: When mounting the TDAR on the wall or cabinet, ensure that there is at least six inches between each TDAR unit and other physical barriers, for proper ventilation. Do not mount one T-DAR control unit in a location where its heated exhaust passes to the intake fan of a neighboring T-DAR control unit. This will lead to the rapid overheating and failure of the T-DAR ingesting the exhaust.

- Use care when drilling holes in other adjacent fixtures that no metal dust or chips falls onto the T-DAR controller.
- The unit is equipped with mounting tabs that will accommodate ¼-inch mounting hardware.
- The unit should be located in an area that provides an isolated 24VDC power at 10Amps.
- Mount and ground the unit in accordance with National Electrical Code (NEC) guidelines.
- The control unit should be located within an acceptable distance to the access control system so that inter-system communications and signals do not significantly diminish by voltage drop.
- Maintain adequate clearance on the sides and top of the unit to facilitate the installation of conduit. The clearance at the front of the unit should meet the requirements established for electrical panels by the National Electrical Code (NEC).
- Place the Control Unit in a location free from excessive moisture and contaminants, as environmental conditions can damage the controller.

WARNING: Do not modify the T-DAR control unit, by cutting or drilling, as this will void the warranty. Cutting or drilling will likely damage the unit by spreading debris to external/internal connection ports and other internal components. If new or larger conduit holes are required, contact Newton Security, Inc.

Stereo Tracking Head Mounting

- Mount the camera head directly to a ceiling utilizing the mounting tabs that accommodate up to a number 12 screw or use a Newton MK200 ceiling mount kit designed to work in a variety of applications such as drop tile ceiling or hard ceiling.
- Take care to ensure adequate access to the connection ports on the back of the unit. Mount the stereo tracking head in the ceiling, in the centre of the mantrap as shown in the diagram on the following page.
- Ensure that there are no low objects in the mantrap, large enough to allow a person to hide from the view of the cameras, such as power door hardware or large electrical panels.
- With the camera head lower than 2.74m (9ft), the mantrap should be no larger than 1.45m (4.75ft) square. With the camera head above 2.74m (9ft), the mantrap should be no larger than 1.50m (5ft) square.

Annunciator Unit Placement

Locate the Annunciator unit within the mantrap to announce violations to the occupant as well as persons in the secure area. The Annunciator unit is fitted with conduit knockouts on the sides of the unit. Maintain adequate clearance on the sides of the unit to facilitate conduit installation. Additionally, adequate clearance is required on the front of the unit to allow for adjustment of the volume control.

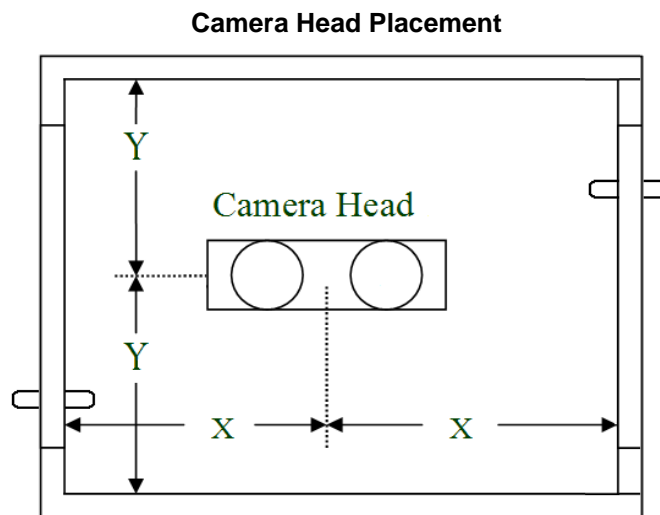
Stereo Camera Head

Choosing Camera Heads

There are two camera types for different country standards, PAL and NTSC. There are two additional camera types for various ceiling heights. Cameras mounted above 3.0m (10ft) will require a 2.5mm lens type and cameras mounted below 3.0m (10ft) will require a 1.9mm lens type.

Camera Head Placement

Center the stereo camera head in the ceiling, in accordance with the diagram shown below. When recording distances, measure from the face of the camera, the center point of the camera head (between two lenses). Note that the distance from the wall (or door) cannot be more than 762mm (2.5ft). With the camera head mounted under 2.75m (9ft), the distance between camera and the wall cannot be more than 0.69m (2.25ft). Ensure that the camera head is level and positioned square to the walls.



Mantrap - top view

Cabling

Camera Head

- Run two video coaxial cables (75 Ohm) with BNC connectors.
- Run a single CAT-5 (Ethernet) cable.

Annunciator Connection

Connect the Annunciator to the T-DAR control unit using a CAT-5 cable. Plug the RJ45 into the "Annunc1" port of the T-DAR controller. Do not use "Annunc2" port.

Cable Terminations

For the Camera Head, install and terminate two video coaxial cables (75 Ohm) with BNC connectors. Use compression crimps on both ends of the coaxial cables.

- On the coaxial cables, label the both ends so that cameras A and B are easily distinguishable from one another. Note that inserting junction points in the coaxial cables will degrade the video signal and is not recommended.
- For the camera head, install and terminate a CAT-5 cable (straight through) from the camera head to the T-DAR control box. Do not use a crossover cable to connect the camera head, as this will damage the camera. Inserting junction points in the CAT-5 connection will degrade the sync signal and video quality.

5. Modes of Operation

Bidirectional Tailgate Detection

A mantrap with bidirectional tailgate detection will stop tailgating on egress, as well as entry. A bidirectional mantrap will utilize the same access control hardware as a mantrap with single direction detection, including door locks, door contacts, and access readers. A mantrap with only single direction tailgate detection will allow egress of multiple people at one time.

Depending on the installation, there are three optional methods of egress in a bidirectional mantrap. In the first method, there is only one reader inside the mantrap. In this setup, a valid access grant on the inside reader will initiate a scan and open the public door. In the second method, there are two readers inside the mantrap. In this setup, a valid access grant on the Public door/Secure side reader (inside the mantrap) will initiate a scan and open the public door. A third option for egress does not use an internal access grant, but scans the mantrap automatically on egress.

A mantrap with bidirectional detection may utilize the same access control hardware as a mantrap with single direction tailgate detection, such as door locks, door contacts, and access readers. In other words, you may switch from unidirectional to bidirectional mode without changing hardware or wiring. When no access grant is required inside the mantrap during egress, the system will scan automatically as soon as the secure door closes. The override functionality is the same in the entry direction as in the egress direction.

Automatic Door Control

The T-DAR can provide outputs for automatic door control. There is a dry contact relay output for the public side door and another for the secure side door. Each relay is customizable, providing a rising edge or closing edge to open the doors. When signaling the doors to open, the relay outputs will be momentary, resetting immediately or after the door opens.

With automatic door control enabled, the T-DAR will require two access devices on the secure door. An access reader will be located on both sides of the secure door. The T-DAR will open the secure door after receiving a signal from either of these two access control devices (provided there is a proper headcount in the mantrap). The secure door should open after receiving a pulse from the T-DAR unit.

An access reader is required on both sides of the public door. The access reader on the public side will provide access to the door. An access device such as a button is required on the inside of the mantrap. This device will allow a person locked inside without valid access credentials to exit the mantrap. If the person without valid access credentials entered through the public door, then using the button will open the public door. If the person without valid access credentials entered through the secure door, then using the button will open the secure door.

Number of Access Control Devices

The mantrap may contain two or four access control devices, depending on the desired mode of operation. In this manual, the reader positions will be designated as Secure door/Secure side, Secure door/Public side, Public door/Secure side, and Public door/Public side. The Public door/Secure side access device is commonly a button.

Option 1 – Two access control devices

Utilizing only two access control devices on the mantrap, the public door will not be access controlled by T-DAR (an alternate system may provide access control for the public door). There will be one access control device on each side of the secure door. With the proper headcount detected, T-DAR opens the secure door after receiving a signal from either device. The access control device on the outside of the mantrap (secure door) will only allow access to the mantrap when the public door is closed and the mantrap is empty.

Option 2 – Three access control devices

Utilizing three access control devices on the mantrap, there will be only one access reader inside the mantrap. Depending on the direction of travel, the access reader inside the mantrap will send signals to the T-DAR controller for opening the public or secure doors. An access device such as a button is required on the inside of the mantrap. This device will allow a person locked inside without valid access credentials to exit the mantrap. The two access control devices on the outside of the mantrap (each door) will allow access to the mantrap when the mantrap is empty.

With one person in the mantrap during entry (doors closed), the internal reader will unlock the secure door. With one person in the mantrap during egress (doors closed), the internal reader will unlock the public door. The public door will unlock during egress when there is one person in the mantrap or the system is set as unidirectional (no detection on egress).

Option 3 – Four access control devices

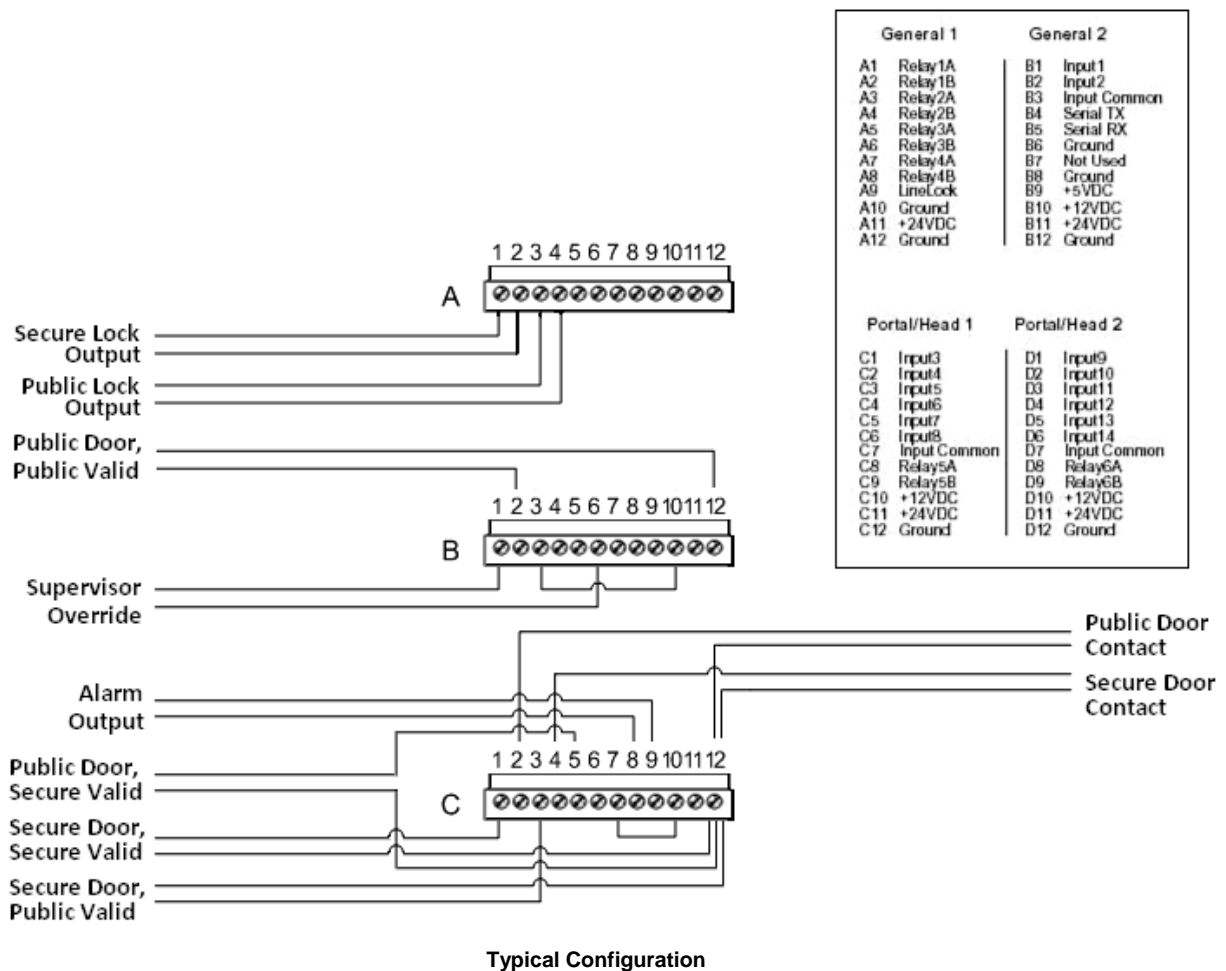
Utilizing four access control devices on the mantrap, there will be two access readers on each door. Two internal access control devices are used, one for entry and the other for egress. The access control device on the inside of the public door can be a button. The access control devices on the outside of the mantrap (each door) will allow access to the mantrap when the doors are closed and the mantrap is not occupied.

The Public door/Secure side access device will only unlock the public door if there is one person in the mantrap or the system is set as unidirectional (no detection on egress). With one person detected in the mantrap during entry and the public door closed, the Secure door/Public reader will unlock the secure door.

6. INTEGRATION WITH THE ACCESS CONTROL SYSTEM

Relay Output Connections

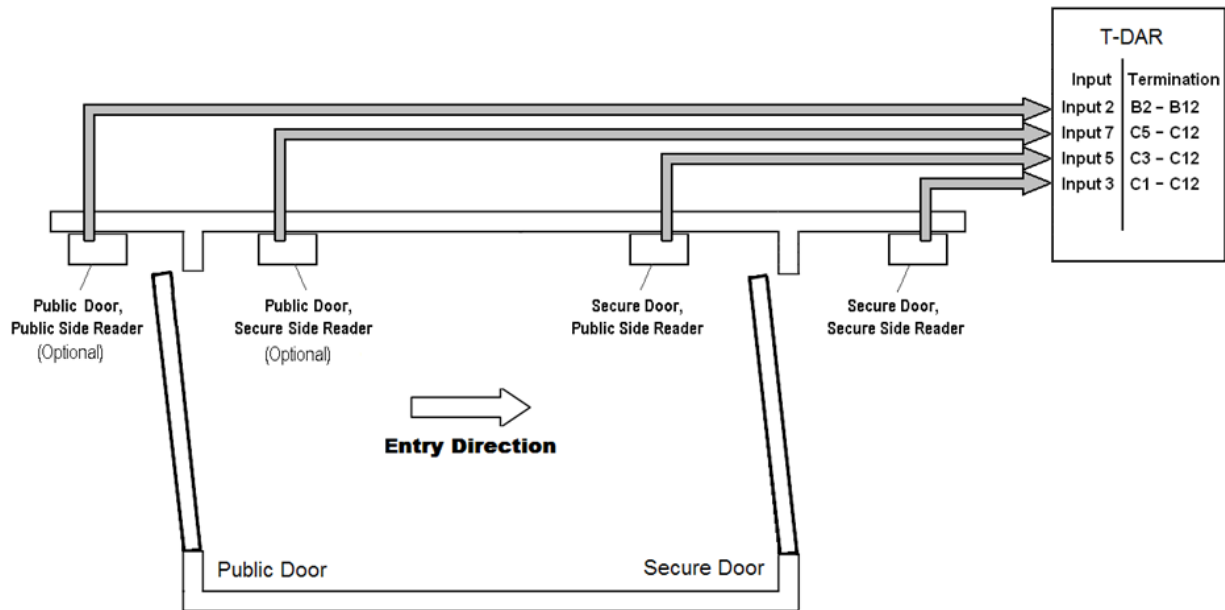
The T-DAR T-1010 control unit is equipped with four relays on the General 1 connector (A), plus one relay on each of the portal connectors (B and C). Relays one and two are dedicated to secure door and public door operation, respectively. Use relays three, four, and five to signal various alarm conditions based on user configurable options in the user interface. Relay outputs have no polarity and are dry. Various degrees of customization are possible through the user interface. The customizable relays are single pole/single throw, and normally open.



Notes:

- The door lock relays can be configured as normally open or normally closed
- All input grounds are common to one another
- A jumper between +12VDC and Common will generate a reference voltage for all inputs

Access Readers



Door Lock Control

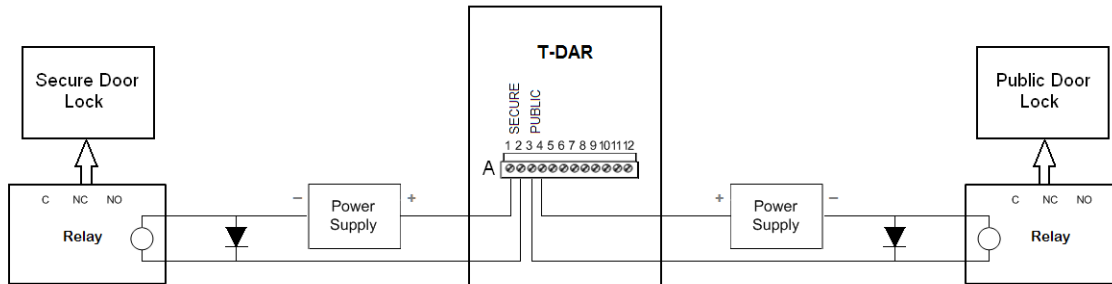
Two relays on the T-DAR unit control locking of the mantrap doors. These relays can be set normally open or normally closed. The T-DAR locking relays terminate at 1a/1b and 2a/2b on the "A" Phoenix connector.

Note: If power to the T-DAR unit is lost, all T-DAR relays will open, potentially unlocking the doors (this is dependent on the door lock integration).

Protect T-DAR from Door Lock Feedback

Use external relays to isolate the T-DAR from door locking voltage feedback. Use diodes across the solenoid terminals of the external relays to stop voltage feedback to the T-DAR (shown below). Power for the T-DAR controller should be isolated from door locks or any motorized door hardware. The T-DAR controller requires 24VDC at 10amps.

WARNING: Failure to use external relays with the Chexit, or similar solenoid locks, can damage the T-DAR control box.



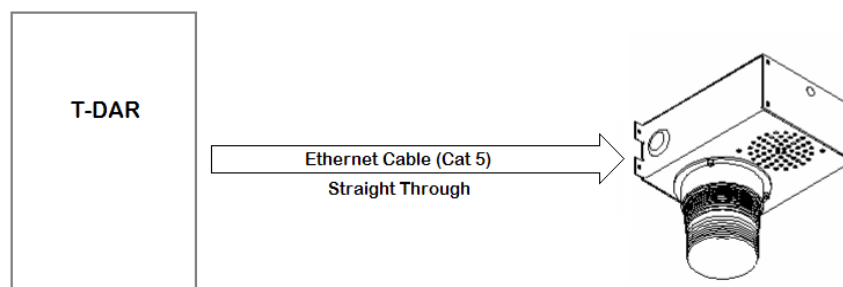
Note: there is no polarity on the T-DAR output relays.

Annunciator Unit

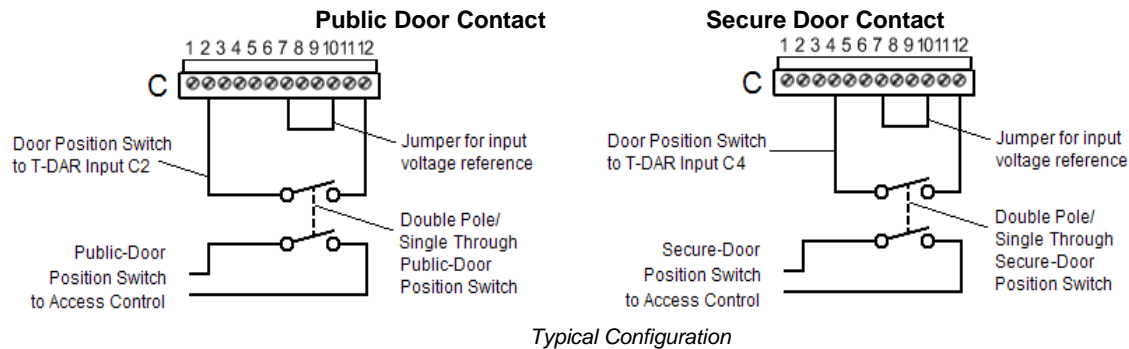
Place the Annunciator inside the mantrap to notify the occupant(s) of a violation.

- Ensure an adequate volume level by adjusting the volume on the Annunciator. The volume knob is located on the top of the unit, under the black plastic plug.
- Install and terminate one Ethernet cable (straight through) on the Annunciator, leading directly to the 'Annunc 1' connector on the T-DAR control unit.
- T-DAR mantraps use one Annunciator. The 'Annunc 2' port is not used.
- If the Annunciator is not activating, or is not playing the proper recordings, use the test buttons on the "Advanced" tab in the user interface to test the functionality.
- If the strobe and/or voices do not play using the test buttons, check the CAT-6 cable using a network cable tester, (unplug the cable from the T-DAR before testing).
- **The maximum distance for running from the T-DAR controller to the Annunciator is 30m (100ft).**

WARNING: plugging in a camera head (CAT-6 cable) into an annunciator port or using a crossover cable to connect a camera or annunciator, may damage the control unit or connected components.



Door Contact Switch



The door contact switch should be independent of the access control system to allow for proper operation. This will typically require the installation of a double pole/double throw door switch, or the addition of a second door contact.

WARNING: Failure to use isolated circuits or using access control system outputs/relays to simulate door contact activity can result in poor system performance. In addition, improperly mounted door contacts or access programming delays may allow doors to open without a valid access grant.

- There can be no latency in the receipt of door contact signals by T-DAR.
- The door position switch will connect to the Door Contact terminal and ground.
- Ensure that the distance from the control unit to the door contact switch is less than 60m (200ft). Contact Newton Security for guidance on longer distances.
- A jumper between +12VDC and common sets the reference voltage for all inputs
- All input grounds are common.

Supervisor Override (bypass)

The supervisor override is an input that allows multiple persons and objects to pass through the mantrap without alarming or preventing passage. With supervisor override enabled, the T-DAR will not unlock any doors. Reader access is required during override.

- T-DAR override is typically operated by a remote button, or as a key switch near the mantrap.
- While holding the override signal, the strobe will continue to flash on the Annunciator.
- Supervisor override is input 1, which corresponds to B1 on the front T-DAR panel.
- Holding the supervisor override switch will halt all Annunciator statements until the override signal ceases.
- Normal validation of mantrap readers is required for passage through the mantrap using supervisor override.
- If the end user requires that both doors open at the same time (e.g. during an emergency), external wiring or programming must be used to bypass the T-DAR locking output.
- To stop presently running Annunciator alarms and put the mantrap in a reset state, provide a momentary override signal to the T-DAR controller.
- Hold the supervisor override signal continuously to turn off tracking for one complete passage.

7. INSTALLING SOFTWARE

The T-DAR Software CD-ROM contains an installer for the user interface application and a loader program for the T-DAR Control Unit. These applications are contained on a disk included with the T-DAR system. The Control Unit software is preloaded on the T-DAR control unit and does not need to be loaded from the disk.

User Interface

The user interface provides adjustment of mantrap T-DAR parameters. In the User Interface, you will be able to load camera calibrations, calibrate the mantrap environment, set regions for tracking, and set the mode of operation of the system.

There should be only one Newton Security user interface installed on a computer at any time. If you are having trouble running T-DAR software it may be a result of version conflicts with previously installed T-DAR software. When suspecting a version conflict, uninstall all versions of T-DAR software and then reinstall the required version.

Warning: Before removing existing Newton Security software, be sure that you have access to the installer files of this software. Before removing installed software, save the settings of the mantraps that you have access to. After uninstalling Newton Security software, be sure that there are no Newton Security directories left in the program files on the host computer.

Future setup personnel may require the user interface and control unit software. Before removing software, make a record of the user interface version and control box version of each mantrap. Store these records for each T-DAR system in an easily accessible location on your computer and (if possible) inside the door of the T-DAR controller.

Installing the User Interface

1. Insert the T-DAR Software CD-ROM into the host PC.
2. Browse to the CD-ROM drive and execute setup.exe.
3. Follow the on-screen instructions.
4. After the software is loaded, launch the UI from the start menu on the host computer.

Connection to Computer

Configuring the Host TCP/IP Connection

1. The factory-set TCP/IP connection on the host computer is typically set to "automatic". Changing these settings will establish a connection to the Newton Security Inc. T-DAR, but may disconnect or even conflict with your current network system. Please check with your network administrator if you have any questions.
2. From the desktop right click "My Network Places" and select "Properties". In the window that opens, select "Local Area Connection" and click "Properties" from the new selection. A new window will open, select "Internet Protocol" (TCP-IP) and click its "Properties".
3. You will see a selection box labeled "Use Following IP Address". Select this option.

4. Enter the following information according to the IP on the T-DAR door:
IP: 10.3.11.x (use a number, one higher; if x is 51, use 52)
Subnet: 255.0.0.0
Gateway 10.0.0.1 (this field may be left blank)
5. Apply these changes and return to the desktop. You may have to reboot your host computer before the changes take effect.
6. Connect the T-DAR to the host computer using an Ethernet cable. A crossover cable may be required when connecting directly. Ensure that LED 2 on the front of the control displays a green light. If there is no green light, there is no connection.
7. Ping the unit by typing, "ping -t" followed by the IP address of the control unit (the IP address is labeled on the inside of the door of the T-DAR control unit). If the IP address is: "10.3.11.51", type: "ping -t 10.3.11.51". You should see: "Reply..."

Connecting via the User Interface

1. Select Connection then Configure Connection from the menu bar.
2. Enter the pre-configured IP address in the IP address field. If the IP address of the control unit has changed from its original value, then enter the latest address. The serial number and factory-set IP address of each vision system is on the inside lower corner of the door of the control unit.
3. Select Connection then Connect from the menu bar.
4. A connection via Ethernet should establish. If no connection results, see the troubleshooting portion of this manual.

Note: If the IP address of the vision system is changed, the information printed on the control unit will no longer be valid.

Configure Connection Window



Upgrading the T-DAR Control Box Application

1. Connect to the T-DAR Control Unit using an Ethernet cable and ensure you can ping the unit.
2. Insert the T-DAR Software CD-ROM into the host PC and locate the control box directory, designated by "cb".
3. Run update.exe.
4. When prompted, enter the IP address of the control box. Locate the IP address on the inside of the door of the control unit. If the IP address of the control unit has changed, enter the latest address.
5. Follow the on-screen instructions.

Note: the T-DAR controller ships with the control box application preinstalled

8. CONFIGURATION AND SETUP OF T-DAR SOFTWARE

Components Needed For Setup:

- A computer running the latest T-DAR mantrap user interface software
- A video monitor or VGA monitor with associated cabling
- The camera calibration CD's, included with the system
- An Ethernet cable, straight or crossover

Connect and Verify Camera Functionality

1. Connect to the T-DAR controller using the IP address located on the inside of the T-DAR door. The lower left corner of the user interface displays the connection status.
2. On the monitor tab in the user interface, change the Display Demo to 'Show camera views'.
3. Observe the bottom two video images on the monitor. If any video signals are shifting (slightly) vertically or have interference, refer to the troubleshooting section for assistance.

Configuring the T-DAR System

Use the T-DAR user interface (UI) to setup and optimize the performance of the system. The following instructions provide guidelines that enable the installer to adjust the T-DAR parameters.

Viewing Images

Select the Show Camera Views view from the monitor page. This will show a "four image" display on the CCTV (or VGA) monitor showing the tracking image, event camera video, and tracking camera views 'a' (1) and 'b' (2) from a single camera head. Cameras 'b' (2) and 'a' (1) are visible on the bottom, left and right respectively. The upper left portion of the screen will show the stereo tracking image from the camera head. Using the video image, the installer is able see what the system is viewing in real time.

Calibration

After the mantrap construction is complete and the environment is finalized, calibrate the mantrap. The purpose of the calibration is to "teach" the system what the environment looks like when the area is empty of people.

- The secure camera head (camera 1) and the public camera head (camera 2) will both need calibration, separately.
- Remove objects that are not normally in the mantrap such as carts, parcels, tools, etc. during calibration.
- Be sure that the doors are closed and that the lights are on during calibration.

This base calibration will allow the system to recognize new objects introduced into the scene and track them, while ignoring objects that are normal to the scene.

Testing the Mantraps

Test the units periodically to ensure that they are calibrated and functioning properly. Accomplished this by having two people walk into the mantrap through the public door. With two people passing through the public door, a local and remote alarm should be generated. The Annunciator warning (spoken) should say, "Only one person at a time allowed through door". If the system does not operate correctly, verify that all access readers and door contacts are sending the proper signals to T-DAR. Monitor the inputs and outputs on the video output screen. To view the I/O select "I/O Display" from Monitor tab of the user interface.

Check that the system is calibrated by viewing the tracking image for the camera head. Monitor the tracking view on the upper left of the video output. The tracking view should be almost entirely black. The tracking view is accessible by going to the Monitor tab of the user interface and selecting show camera views. If the image is not black, calibrate the camera head. Check the two raw video images on the lower half of the monitor. Both images should be completely stable with no distortion. Watch the video screens for roughly ten seconds and ensure that the images do not shift vertically.

Check both camera heads by using the drop down menu. If the system still does not operate correctly, refer to the troubleshooting section of the manual or call Newton Security or your integrator for additional support.

Capturing Events on Video

T-DAR can capture and play back event video by connecting an optional security camera.

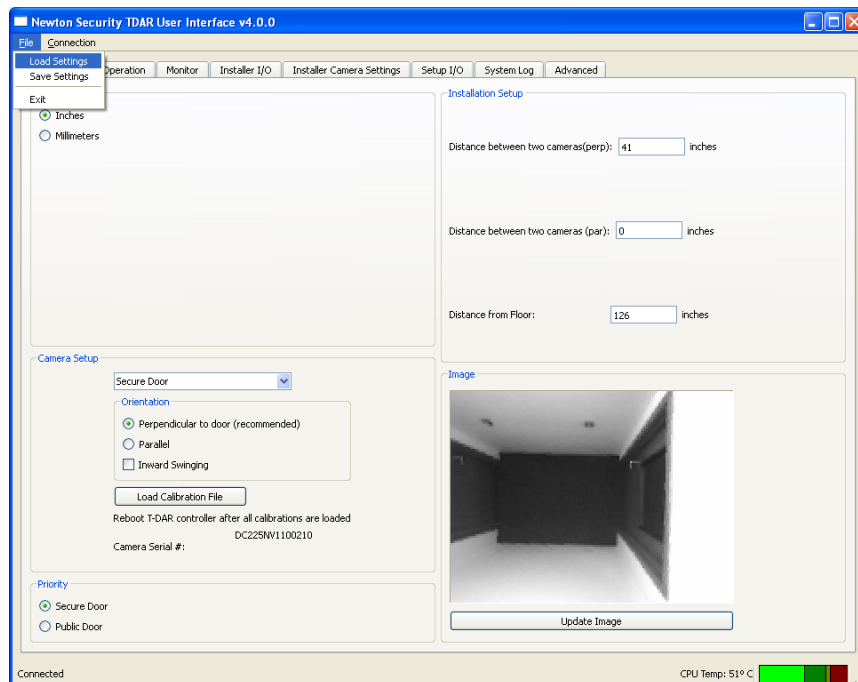
- The video start and stop times can be set, relative to the time of a violation.
- Upon a violation or alarm event, the T-DAR system records the occurrence and immediately outputs the video from the BNC or VGA video port.
- The T-DAR system does not store event video.
- Use an external DVR system when permanent storage of event video is required.

T-Dar User Interface Software

The T-DAR User Interface (UI) software consists of eight tabbed pages labeled as follows; Initial Set-up, Operation, Monitor, Installer I/O, Installer Camera Settings, Setup I/O, System Log, and Advanced. On the tabbed pages, there are settings to control the configuration, setup and monitoring of the system. The menus contain options for configuring connections, saving/loading settings, and performing advanced changes to the system.

File Menu

Selecting the File menu displays options for saving and restoring settings. In the event of having to re-install the software, restore any configuration settings by loading the settings file from the file menu.



Save Settings

The Save Settings option stores all the user configurable settings for system back up. The saved file will have the “.nlc” file extension. Save this file to the computer designated to be the main host for the User Interface. A copy of multiple T-DAR system settings files should be stored, with the latest settings designated. Create user-defined logical names for the file, such as “East Mantrap.nlc” to avoid confusion. If possible, save the latest settings to a disk and keep it with the installation disks, inside the door of the T-DAR unit.

Load Settings

Use Load Settings to perform a system restore from the file saved by using the Save Settings feature. A window will open asking the operator to specify the file location for this unit’s settings. Choose the proper location and load the desired file. Save the latest settings to a disk and store it with the installation disks, inside the door of the T-DAR unit.

Exit

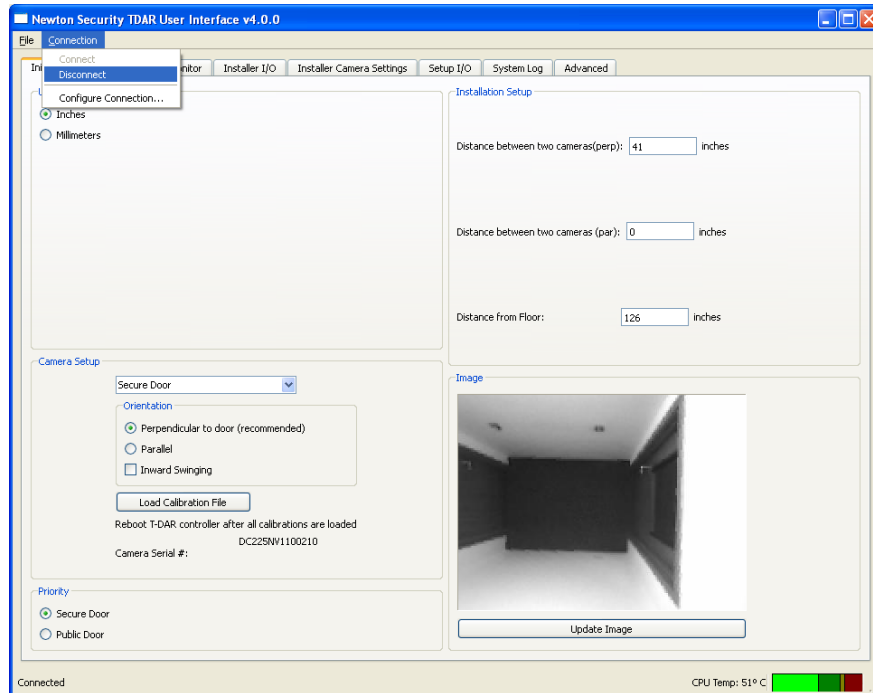
Clicking the Exit button closes the User Interface. The T-DAR will continue operate, even with the user interface disabled. Adjusted settings will persist on the T-DAR control unit after disconnecting. The T-DAR control unit does not require a connection with the host computer under normal operation.

Note: The “Save Settings” and “Update Now” commands do not save (or send) settings to the T-DAR control unit. The T-DAR continually saves any changes made in the user interface.

Connection Menu

Connection

Connect, establishes communication between the UI application and the T-DAR hardware. You must establish a connection before making changes in the user interface. With the T-DAR IP configured, selecting Connect from the menu will allow adjustment of settings in the user interface.



Disconnect

Disconnect may be used to close the connection with the T-DAR unit and disable the User Interface. Find the connection status on the left of the bottom status bar. Use the Disconnect command as the first step in closing an Ethernet connection.

Note: Disconnecting by removing the Ethernet cable will require a reboot of the T-DAR controller before re-connecting is possible.

Configure Connection

This selection allows you to change how the computer connects to the T-DAR control unit. You must connect the User Interface via addressable IP. Always Connect on Start Up is a separate option.

Debug Menu

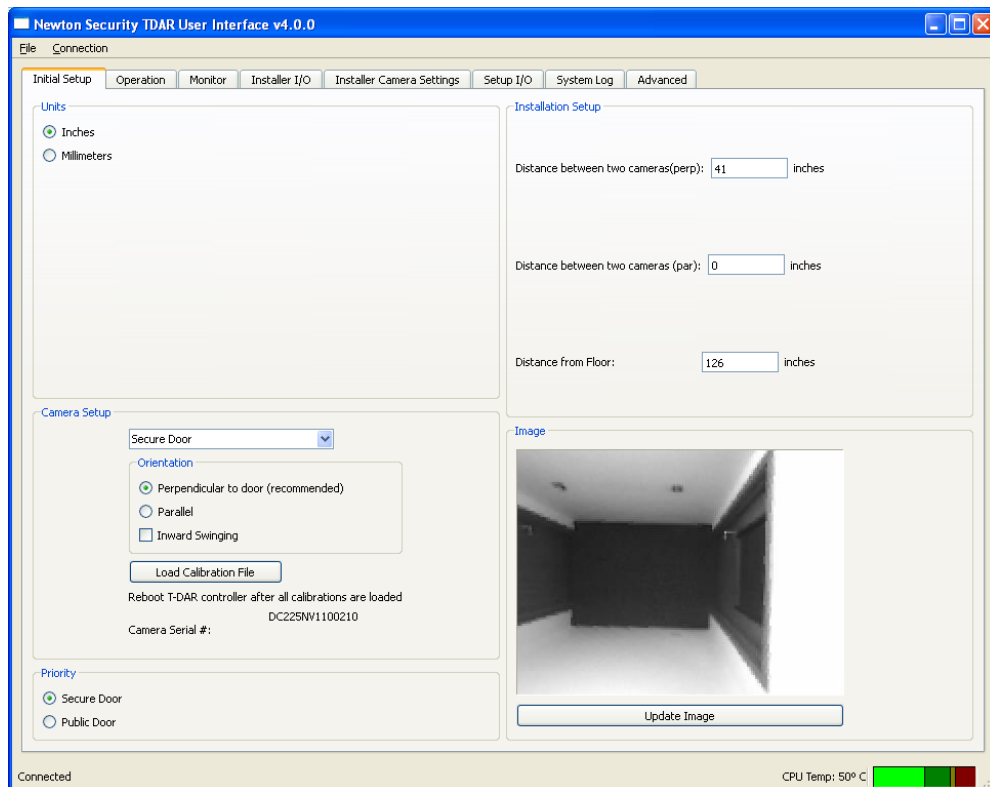
The Debug menu is a normally hidden menu item showing some advanced features. Press CNTR+SHFT+D to display. The Debug menu is not for general use, but designed for use by the system administrator to troubleshoot or make changes to the system. Without proper training, seek assistance before making changes using this menu.

WARNING: Making improper changes to the Debug Menu may result in unexpected behavior.

Initial Setup

The initial Set-up tab is the place to begin the setup process. The initial setup tab contains fields for setting the camera position as well as a button for installing the camera calibration file.

Note: You will not be able to move to other tabs in the UI (to complete the setup) until the proper camera positions and serial numbers have been loaded.



Camera Set-Up

In this tab the technician inputs the distance of the camera heads from the floor and loads the camera calibration file. It will be necessary to check that the camera calibration (and serial number) in the user interface matches the camera serial number in the ceiling. Load the calibration file by clicking “Load Calibration File”. Locate the calibration file on a disk included in the T-DAR camera packaging. Open the camera directory and select “calib.ini”. Remember to re-load the calibration file if and when a camera head is swapped with a new head.

Note: A re-boot of the T-DAR controller is necessary for a new calibration file to take effect.

With the camera head mounted parallel, set ‘Parallel’. The camera head should be mounted in the center of the mantrap, unless there are limitations in space. See the mantrap diagram in the section “Stereo Camera Heads.”

Loading Camera Calibrations

Each stereo camera comes with a specific calibration file, which must be loaded onto the T-DAR control unit before the mantrap is put into use. A CD is shipped with each stereo camera containing the calibration file for that specific camera head. Before a stereo camera will track correctly, the calibration file must be loaded.

To load a camera calibration, connect with the user interface and open the “Initial Setup” tab. Click on the button labeled “Load Calibration File”, then locate the calibration file from the included disk and select it. After loading the calibration file, reboot the T-DAR controller. Note that loading a camera’s calibration file is a different step than calibrating a camera, which is described in the section Installer Camera Settings.

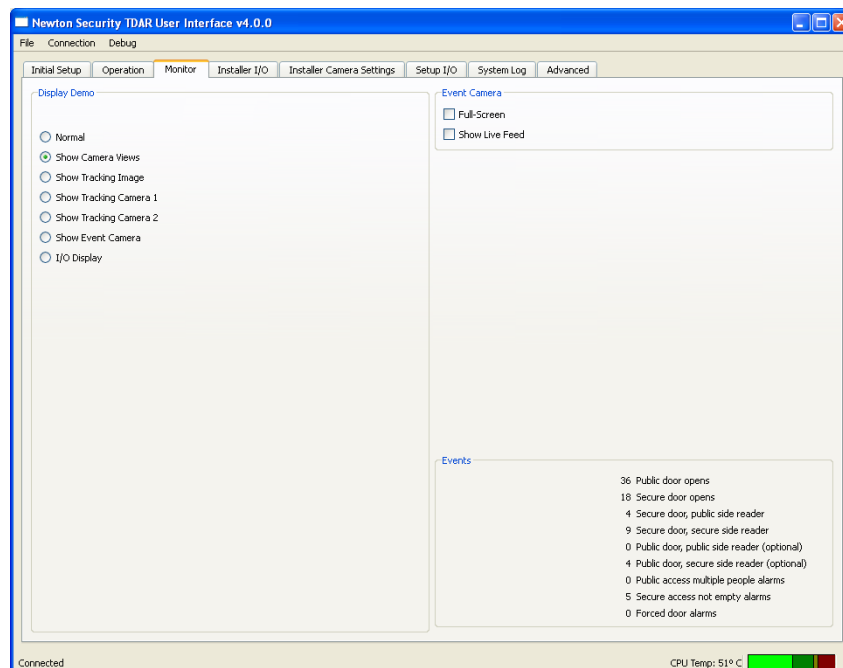
Note: Pressing “Update Now” will refresh the image only; it will not save or update any settings.

Video Modes

This feature does not exist on T-DAR units built after 2011. Setting the video mode allowed the user to change the standard of the video output to NTSC or PAL. New units have NTSC or PAL mode set at the factory. When using a controller newer than 2011, do not adjust this setting. On units built before 2011, choose NTSC or PAL depending on the video output required. Reboot the unit after making changes to this setting.

Monitor Tab

The Monitor screen consists of various menus that allow the user to change between views displayed on the CCTV monitor or VGA screen. A list of output views is available for selection by way of radio buttons. Also on this page is an Alarm Reset button for the Annunciator, as well as mantrap event statistics. Reset the statistics by using the Reset Event Statistics button on the Setup I/O page.



Display Demo

The Display section of this screen controls what video displays on the monitor.

- **Normal** - Event video out during alarm only
- **Show Camera Views** - Four way split screen - Camera Head images a (1) and b (2), tracking image, and event camera
- **Show Tracking Image** - Displays tracking image
- **Show Tracking Camera 1** - Camera Head image a (1)
- **Show Tracking Camera 2** - Camera Head image b (2)
- **Show Event Camera** - Event camera video
- **I/O Display** - Displays the input and output status

Events Counter

The Event Counter is a running log of the security scenarios being monitored by the T-DAR. Included events are access grants, door cycles, and security violations.

Event Camera

Two check boxes are available for changing the properties of the event camera view in the normal display mode. Full screen mode allows the user to select a full sized image for event video display. Show Live Feed mode allows the user to display live video from the event camera until an alarm occurs, at which time the event playback will occur. Once event playback is complete, the image will return to a live format. Unselecting this feature will cause the screen to be blank until a violation occurs.

Note: Once event playback of the violation is complete, the internal video recording is no longer stored. Event video cannot be retrieved at a later time. Newton Security recommends the use of an external DVR system if permanent storage of event video is required.

Inputs and Outputs – Only On Video Output

Connecting a monitor to the video or VGA port of the T-DAR controller allows viewing of the input/output status of the system. Use the input/output status screen during installation, for troubleshooting. Switch the video mode in the user interface to display the input/output screen (shown below). To switch the video mode, connect with the user interface and open the “Monitor” tab. In the “Monitor” tab, under “Display Demo”, select the option “I/O Display”. If nothing is showing on the monitor, reboot the T-DAR controller with the monitor plugged in to the video port.



Relays

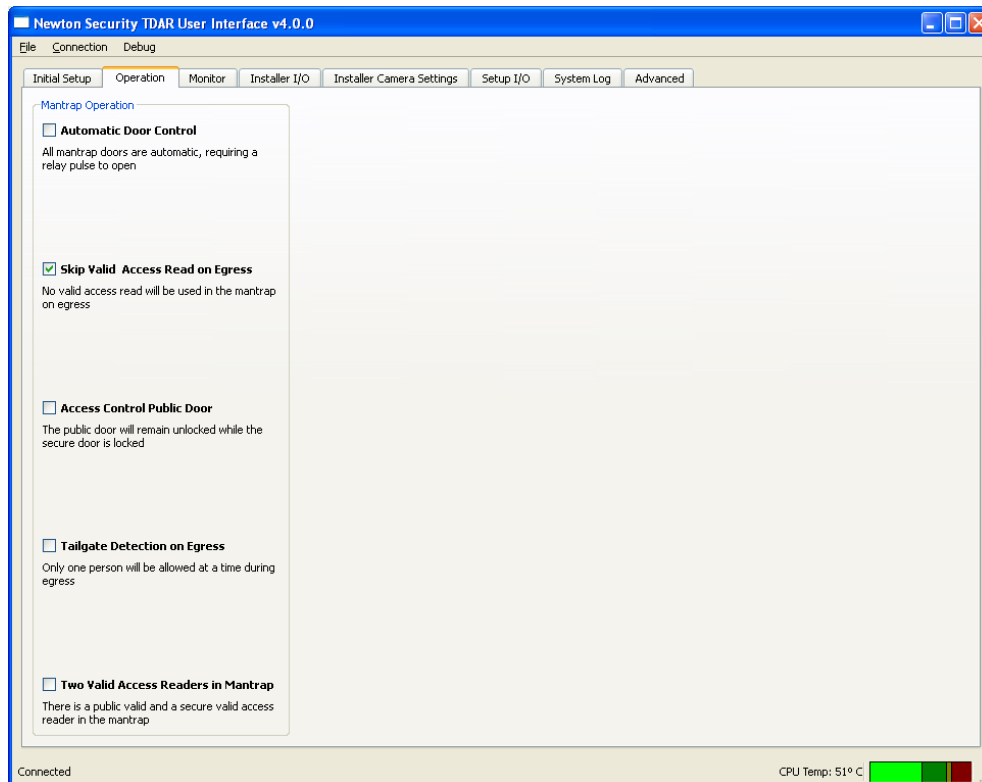
The T-DAR system communicates to access control through dry contact relay outputs. Green squares on the bottom row of the IO display, represent relays that are closed. There are two door lock relays (1 and 2) as well as three alarm output relays, 3, 4, and 5. The output state of the door lock relays can be set to close-to-lock door, or open-to-lock door. To invert an output relay, change the door control setting on the Installer IO tab from opens to lock, or closes to lock. The T-DAR system does not use any of the optically isolated outputs 1-12. Use relays 3, 4, and 5 for status or alarm outputs, such as “mantrap in use”, “mantrap occupied”, or “multiple people in mantrap”.

Inputs

The status of the inputs, such as door contacts and access signals, allow the T-DAR mantrap to operate correctly. The mantrap will not function correctly if the inputs do not signal correctly. A green state on inputs 4 or 6 will always represent a closed public or secure door, respectively. Changing input states, from red to green, on 2, 3, 5 and 7 will represent incoming valid access signals. The normally open/closed status of the inputs is not adjustable in the T-DAR system; use an external relay to invert the input signal.

Operation

Use the Operation tab to configure how the mantrap operates. The Operation tab provides various settings for direction control, number of readers, and operation during egress.



Automatic Door Control

The T-DAR can provide control of automatic doors. Using automatic door control, the T-DAR system will provide outputs to open the public or secure door. This feature requires both an automatic public door and an automatic secure door. Use relays one and two to operate the secure and public doors, respectively.

To open an automatic door, the T-DAR provides a momentary signal. This signal will cease once the door opens. The output signal from the T-DAR is a dry contact relay. When opening a door, the T-DAR relay will close, signaling the door to open. Once the door opens, the relay will return to its original state. The normally open or normally closed state of these relays is configurable in the Installer I/O tab.

Skip Valid Access Read on Egress

In some mantrap systems, a valid access read will be required on egress. Bidirectional tracking mantraps will sometimes use an additional access reader on the inside of the mantrap to open the public door during egress. If there is one access reader in the mantrap, use this for validation in both directions. If there are two access readers in the mantrap, use the reader near the public door for accessing the public door on egress.

Select “Skip Valid Access Read on Egress” when not using an access reader inside the mantrap during egress. When not using a reader for egress, a person will enter into the mantrap and as the secure door closes, the T-DAR system will unlock the public door without requiring an access read.

Access Control Public Door

In some mantraps, the public door will remain access controlled. When time is a factor and high throughput is required, the mantrap may be setup with no access control on the public door. When the public door is not access controlled, the T-DAR system will continue to interlock both doors. Having a public door that remains unlocked is one method to increase mantrap throughput.

With “Access Control Public Door” turned off, the public door remains unlocked while the mantrap is not in use. This allows persons to quickly entry the mantrap without receiving a valid access grant on the public door. The public door will lock when required, when the secure reader is accessed or the secure door is open. Once the mantrap resets itself, the public door will unlock. With automatic door control enabled, the public door will always require an access device on both sides of the door (typically a button on the secure side).

Tailgate Detection on Egress

A mantrap with bidirectional tailgate detection will stop tailgating during egress (as well as entry). A mantrap with bi-directional tailgate detection may utilize the same access control hardware as a mantrap with single direction tailgate detection, such as door locks, door contacts, and access readers.

To permanently allow egress of multiple people at one time, turn off “Tailgate Detection on Egress”. With “Tailgate Detection on Egress” unselected, there will be no alarming on egress, unless there is an entry (into the mantrap) through the public door. When the public door is open, the system will alarm on potential crawlers or low objects coming into the mantrap through the public door. Until the mantrap resets, there will be no alarming while the public door is open and two people enter.

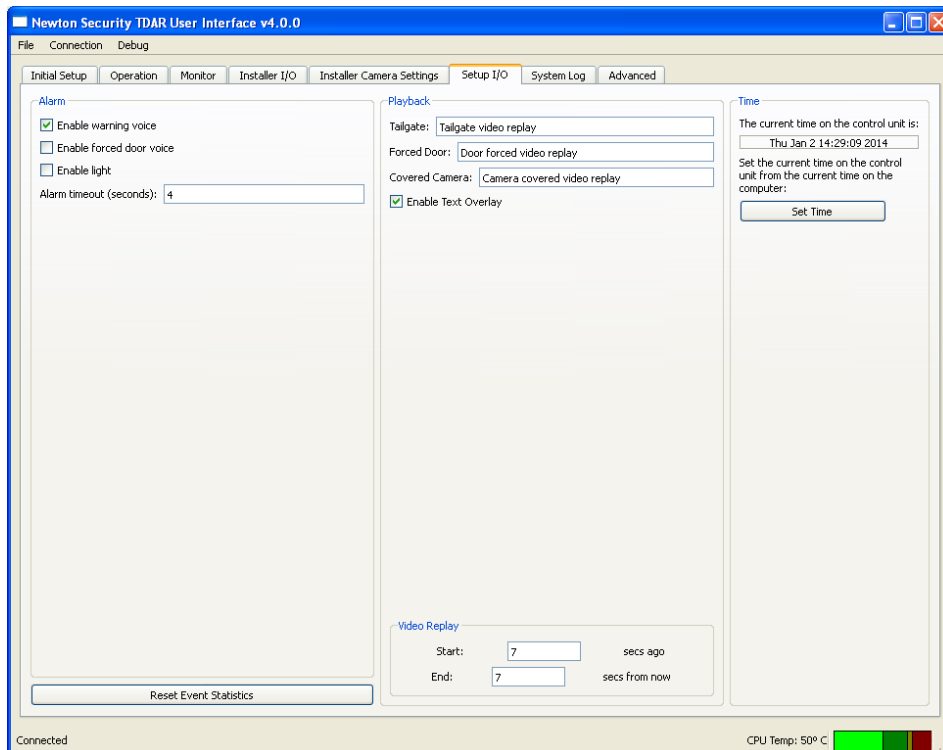
Two Access Readers in Mantrap

Utilize one or two access readers in the mantrap. With one access reader selected, use the same reader in the entry direction, as in the egress direction. Another method of operation using one reader is to access the reader only on entry and skip the reader on egress. Skipping the reader on egress is a common method in a uni-directional mantrap, as the T-DAR performs no tailgate detection in this direction. Mantraps set up to use only one internal reader may have an internal button for use on egress. Use the internal button to unlock the public door or to open the public door if it is automatic. Use an internal button so that a person without valid credentials may exit the mantrap at any time. The occupant will leave through whichever door they entered.

With two access readers enabled, use the reader near the secure door for entry and the reader near the public door for egress. With two internal readers, the mantrap will have symmetric operation in both directions, so the method of entry will be the same as the method of egress. Only bi-directional mantraps require two access readers inside the mantrap. A uni-directional mantrap does not perform tailgate detection on egress and therefore does not require a second internal access reader for egress. Place a button inside a mantrap with only access readers, so that a person without valid credentials cannot be locked inside the mantrap. The T-DAR system cannot accommodate two access readers and a button. When a button is required along with two internal readers, wire the button independent of the T-DAR system, to open the appropriate door.

Setup I/O

The Setup I/O screen consists of an Alarm section, Playback section, and a Time section. Resetting Event Statistics and changing the Administrator Password are also available. See these items detailed below.



Alarm

The alarm section consists of check boxes that allow the user to disable all of the various announcements provided by the Annunciator. In addition, an Alarm Timeout box defines how long the unit will annunciate for before resetting. Setting this value to zero causes the unit to be in manual reset mode, with no local alarming.

Playback

The Playback section lists the three types of alarms that will cause the T-DAR system to generate an event video replay. Next to each of these titles is a text box where the user can enter specific text to display over the event playback video. Additionally, there is a check box, used to enable text overlay of the user specified text as opposed to the default text as set by the manufacturer.

Video Replay

The Video Replay section allows the user to specify the length of the event video that is played upon a violation. The event video is played only once, at the moment of the violation. The event video will play at the same time the alarm signal is sent to access control. The Start time defines the beginning of the event video relative to the time of the violation. The End time defines the end of the event video relative to the time of the violation.

Time

The Time section allows the user to set the internal time of the T-DAR controller. Clicking the Set Time button will set the time on the control unit to that of the PC running the User Interface. Perform corrections for the beginning or ending of Daylight Savings Time manually.

Reset Event Statistics

Use Reset Event Statistics to reset the Event counter, located on the Monitor page.

Installer Camera Settings

The Installer Camera Settings screen consists of an Image Type section, an Update Now button, a Viewing Window, a Physical Setup section, a Sensitivity Section, and a Configuration Section. See the Installer Camera Settings detailed below.

Image Type

Use the image type section to select which camera to view in the image below. Select various images using the associated radio buttons.

Image

Use the Image Type section to select views shown in the image at the bottom left of the user interface. A red box may be shown in the image that outlines the scan area that the T-DAR uses for tracking. The T-DAR system ignores the areas outside the scan regions. The Viewing Window allows for modification of the scan regions by clicking and dragging directly in the image. The scan zones may also be moved by adjusting the Left, Top, Right, and Bottom fields in the Configuration section.

To draw a region (red box) in the Viewing Window, the image displayed must be one of the two unwarped images (in the Image type section). Use un-warped image “1” or “2”, as they are similar. Position the mouse pointer over the top left corner of the area around which you would like to draw the box. Click and hold the left mouse button and drag the pointer to the location that sets the “red box” to the appropriate size and position. Changing the region will open a confirmation window, asking if the change is valid. To erase a region from the Viewing Window, click anywhere in the window or enter zeros in the Configuration section.

Note: When referencing the image, be sure to update the image. Update the image by clicking on “Update Now”. Update Image does not update any settings, only the Image.

Configuration

Use the configuration section to define the regions of interest for tracking. Select the region by clicking on the corresponding radio button and then drawing a box in the viewing window. Draw a scan region in the viewing window by clicking and dragging with the mouse. Alternatively, enter the values in the numeric fields adjacent to each radio button (Left, Right, Top, and Bottom). See the section entitled Viewing Window on the previous page for more information on adjusting region area.

Update Now

Update the image by clicking on “Update Now”. The update now button updates the image in the Viewing Window. Updating affects the viewing window only, no settings are updated. Ensure that the image is current each time the picture is referenced.

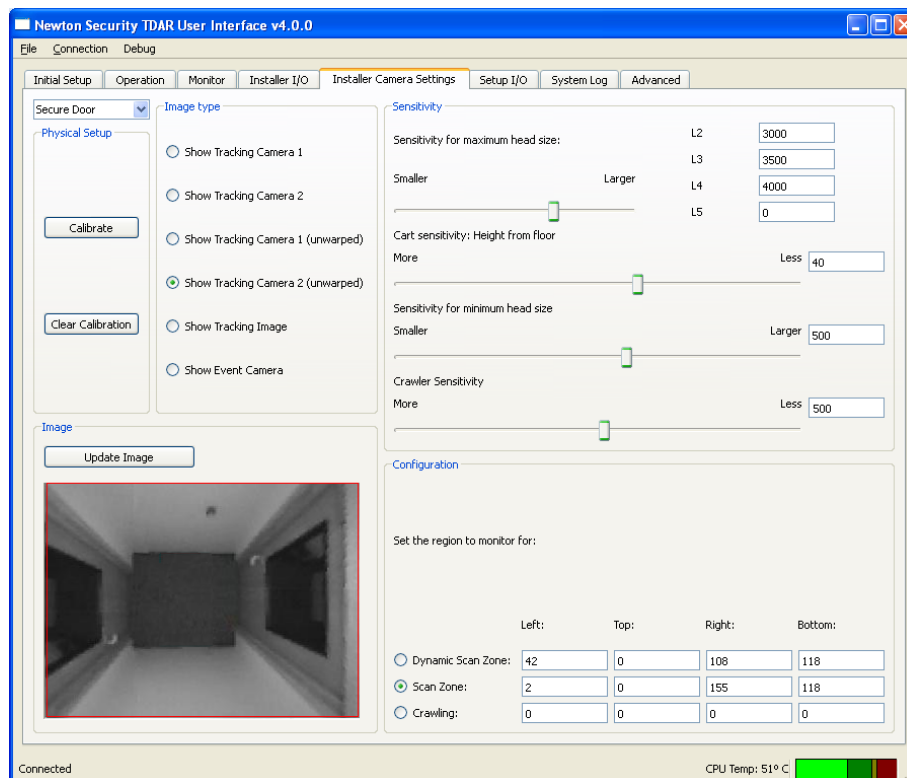
Scan Zone

The Scan Zone is the region where static scanning occurs. A static scan is a scan that occurs during a valid access grant (from inside the mantrap). The static scan is instantaneous and occurs only once per passage. The T-DAR system detects tailgating attempts in the Scan Zone region during the static scan. When detecting multiple people during the static scan, the T-DAR Annunciator will sound a pre-recorded message: *“Please exit and try again in ten seconds”*. During entry, the static scan occurs after a public access grant, while both doors are closed.

The Scan Zone should be large enough that when a person stands against the walls/doors, the person is detected by the camera head. Select “Show camera views” on the Monitor tab to display the headcount on the output video screen. Ensure that the headcount remains at one when the mantrap is occupied.

During egress, the static scan's occurrence is customizable. There are three options for the dynamic scan on egress:

- *Option 1)* no static scan on egress. The mantrap interlocks the doors, without scanning.
- *Option 2)* automatic static scan after the secure door closes behind a person. No access grant required from inside the mantrap.
- *Option 3)* the static scan occurs after a public access grant, located on the secure door, inside the mantrap.

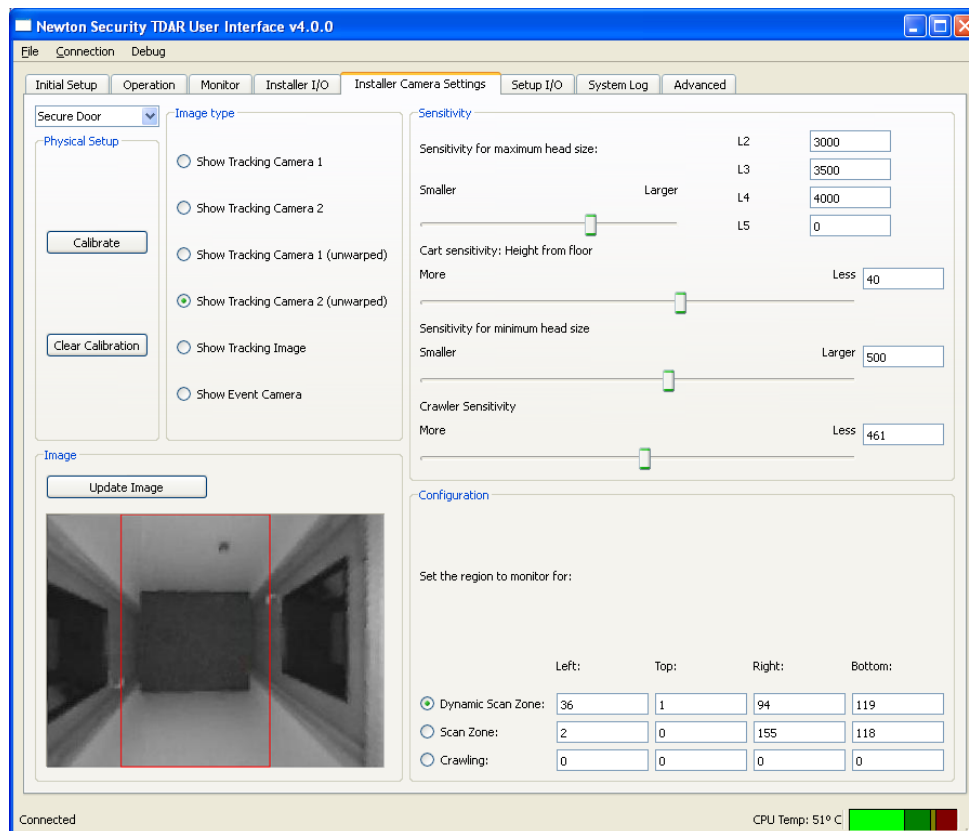


Dynamic Scan Zone

The purpose of the dynamic scan is to detect a person tailgating through the public or secure door. The Dynamic Zone detects tailgating immediately, whereas the Scan Zone detects only after a person's final access read (inside mantrap). Dynamic Scanning is a continuous scan that only occurs while the public or secure door is open. The dynamic scan occurs once per transaction/passage and continues until the public and secure doors are closed.

When the public or secure door is open and multiple people walk into the dynamic scan zone, an alarm will occur. When the alarm occurs, a recorded voice announces *"Only one person at a time allowed through door"* and the T-DAR sends a remote signal notifying security that two people have entered the mantrap. If the door remains open, dynamic scanning will continue indefinitely. Once the door closes, the system does not use dynamic scanning for the remainder of the transaction. If no Dynamic Scan Zone is drawn, no dynamic scanning occurs and no alarming occurs while the doors are open.

View the dynamic areas by selecting the Dynamic Scan Zone radio button and selecting "Show Tracking Camera 2 (un-warped)" (or camera 1 un-warped). Click "Update Now" to update the Viewing Window. The dynamic regions are more sensitive than the scan zone regions simply because they scan for a longer period. As the Dynamic Scan Zone is more sensitive, it should be set smaller than the Scan Zone. Set the dynamic region small enough to avoid moving door(s).

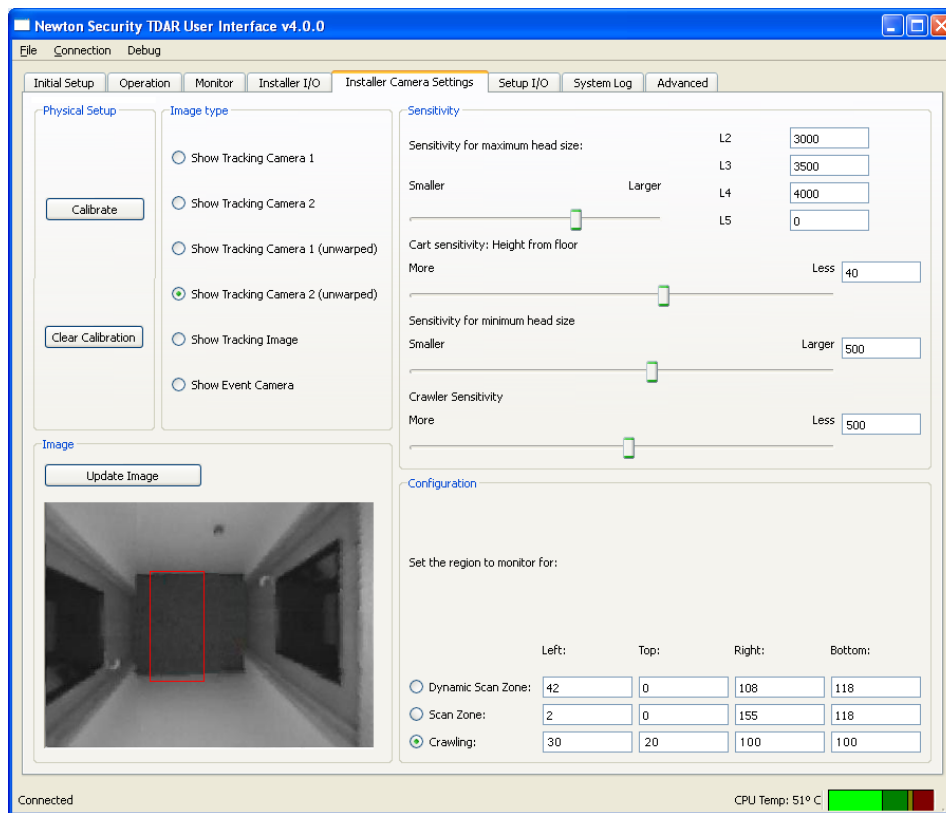


Setting up the Dynamic Scan Zones:

- Dynamic scanning occurs for an extended length of time while people are moving, so there is a higher false alarm potential in the Dynamic Scan Zone.
- Draw the Dynamic Scan Zone large enough to detect two people entering the mantrap.
- Draw the Dynamic Scan Zone small enough to avoid moving doors and people outside the mantrap (through windows or doors).
- In a unidirectional mantrap, you may extend the Dynamic Scan Zone all the way up the secure door, as the T-DAR performs no dynamic scanning while secure door is open.

Crawling

The purpose of the crawling zone is to detect a person crawling through the public or secure door. The T-DAR system considers an object, seen in the crawl zone, a person when it meets the following criteria. An object is determined to be a crawler (causing an alarm) when it is shorter than cart height, “Cart sensitivity – Height from floor”. The system also considers objects crawlers when they meet a certain size threshold, “Crawler sensitivity”. Everything in the Crawl Zone below cart height is considered a crawler unless a person is seen standing nearby. When there is an object in the crawl zone and a person standing in the Scan Zone, T-DRA considers the object a cart and no alarms occur. Crawl detection occurs at all times, whether the public or secure doors are open or closed.



Setting the Crawling Area

The region of interest for crawling should be the width of the door and centered under the camera as much as possible (notice the red box drawn centered in the image). Cover roughly half of the floor area with the Crawling Zone. Set the Cart sensitivity to about 1000mm (40in). Set the Crawler Sensitivity to about 500. The Crawler Sensitivity is the number of pixels that must be detected in the crawl zone for an

object to be considered a crawler. Setting this number low will increase the sensitivity, but will increase the potential for false alarming. As this region never stops scanning, be sure that the floor appearance does not change, by getting dirty, worn, or receiving sunlight.

Note: If the mantrap goes into continuous alarm, while the mantrap is unoccupied, there is a good chance that there is an object detected in the crawl zone.

To reduce false alarming on persons leaving the mantrap, be sure there is a gap between the each door and the Crawl zone. The reason for this is to avoid the scenario where a person's feet and legs are in the Crawl Zone, but their head and upper body have disappeared through the door. A 10-pixel gap between the base of the door and the crawl zone will eliminate this occurrence. If the Crawl zone is too close to the door, false alarms may occur when exiting the mantrap.

Note: The crawl region is very sensitive to sunlight and objects near the floor, even when the doors are closed. Be sure to calibrate the mantrap and ensure that the Cart-sensitivity is not lower than 30 inches.

Calibration

The physical setup section consists of two buttons used to control camera calibration. Use the Calibrate button to teach the system about the mantrap environment. When the system has learned the environment, the tracking image will become stable and black, until new objects appear in the mantrap. When calibrating, be sure that the mantrap is in empty, the doors are closed, and that you are finished hanging all signage in the mantrap. If ambient sunlight is a factor, calibrate during the brightest part of the day.

Use the Clear Calibration button to show the un-calibrated tracking image. It is not necessary to use Clear Calibration before calibrating the mantrap. Viewing the cleared calibration image, the installer can determine the effect of various objects in the field of view on the tracking system.

Important Note: perform calibrations when the scene is completely stable. The mantrap should be empty with the doors closed. When ambient sunlight is a factor, calibrate during the brightest time of the day.

Sensitivity

The sensitivity section contains slider bars for maximum head size, cart sensitivity, and crawler sensitivity. Adjacent to each of these sliders is a numeric box that shows the numeric equivalent for the slide position. Adjust the values may by manipulating the slider or by direct entry of the values in the numeric box. We recommended using numeric entries over the slide bars. We provide commonly used numeric values throughout this manual.

About Settings

The use of stereo machine vision analysis allows the system to assign a constant numeric value to an object regardless of how far or close the object is to the camera lens. This number represents the amount of pixels the system needs to see in order to place a cross hair on an object

Minimum Head Size

Minimum head size sets the threshold for the detection of a person. The unit for Minimum head size is in pixels. When the T-DAR stereo algorithm locates a certain number of pixels at the top of an object, it labels the object a person. When the T-DAR detects the required amount of pixels, it will place a visible

green cross on the top of the object. Each green cross that the T-DAR plots will show the assumed position of a person. View green crosses on the video output of the T-DAR controller.

The Minimum head size sets the size threshold for detecting a person. Set the Minimum head size small enough to detect a person's head, but large enough to ignore smaller objects. The T-DAR will detect various extraneous objects as people when the Minimum head size is too small. Extraneous objects include anything over cart height, such as door hardware, arms, hands, hoods, and any carried objects. Set the Minimum head size threshold large enough to ignore these extraneous objects.

To avoid detecting a small object as the head of a person, set the minimum head size threshold larger than this object. Setting the Minimum Head size too large will allow the system to ignore smaller people. A standard value for Minimum head size is 350 to 600 pixels. More objects will meet the threshold for person detection when this value is smaller. Watch the tracking video of a person in the mantrap. If the person is receiving two separate crosses, set the Minimum head size large enough to ignore the smaller section.

The monitor output shows the number of persons detected under a camera head by displaying a "Head Count". The video output shows a screen split into four sections. The bottom two sections show the images from the camera head. The upper left image shows the tracking image from the camera head and the upper right section will show replay video after a violation. To use the T-DAR video output, select "Show Camera Views" from the monitor tab.

Important Note: perform calibrations when the scene is completely stable. The mantrap should be empty with the doors closed. When ambient sunlight is a factor, calibrate during the brightest time of the day.

L2, L3, L4 and Maximum Head Size

The goal in setting the maximum head size is to keep two people from passing through the mantrap. The maximum head size limits the body size of a person, so that the system will not detect two people as one. Set the Maximum Head Size small enough that an alarm occurs when two people try to defeat the T-DAR system by walking close together into the mantrap.

The values L2, L3, and L4 represent three horizontal cross sections of a person's body at various heights measured from the top of the head. The value L2 corresponds to the area (in pixels) one inch down from the top of a person's head. The value L3 corresponds to the area two inches down from the top of a person's head. The final value L4 corresponds to the area nine inches down from the top of a person's head (shoulder area roughly). Typical values for L2, L3, and L4 are 2800, 3200, and 3800 pixels, respectively, for ceiling higher than 9.0 ft. (2.75m). For ceiling under 8.5 ft. (2.6m), set L2, L3, and L4 to 3000, 3500, and 4000, respectively.

An alternative method of adjusting the maximum head size is to use the slider for maximum head size. The maximum head size slider sets the size for the largest object that can proceed through the portal without generating an alarm. .

When violating the maximum head size, the cross on a person's head will be red. A red cross on a person means that the person is larger than the L2, L3, and L4 cross sections. The head/body of a person may be determined to be too large for the following reasons:

- The occupant may have swung their arm away from their body,
- They may be talking on a cell phone,

- They may be wearing a large hood,
- They may be carrying an object above cart height,
- They may be wearing a backpack

A small amount of trial and error may be necessary to account for these occasions. Mantrap users should keep arms and carried objects next to the body, as these actions may generate alarms. Holding arms away from the body is a security risk; the T-DAR system assumes a person is hiding a potential tailgater beneath their arms.

Use the monitor output to observe red and green crosses under the camera. To use the T-DAR video output, select 'Show Camera Views' from the monitor tab. The video output shows a screen split into four different sections. The bottom two sections show the two images from a camera head and the upper left area shows the tracking image from a camera head. The upper right section displays replay video after a violation. The upper right area of the screen will show video from a security camera connected to the event "Cam1" input.

Cart Sensitivity

The cart sensitivity slider sets the maximum height of cart that can pass through the mantrap. Stated another way, the T-DAR system ignores everything below Cart Sensitivity – height from floor, except people that are crawling. The system will consider an object below this height to be a cart when it is in close proximity to a person. When not in close proximity to a person, the system will consider an object below this height to be a crawler. The cart height should be set lower than a person's head walking through the mantrap and high enough to ignore carts pushed through the mantrap. A typical value for Cart Sensitivity is 1m (40in).

Crawler alarming will occur when an object is seen in the crawl zone (below cart height), but no person is standing in the Scan Zone (see Scan Zone, above). An object seen in the Crawler zone with no one in the Scan Zone, for at least 0.75 seconds, will generate an alarm. An object that is taller than Cart Sensitivity is not a crawler. An object that is next to a person is not a crawler.

Crawler Sensitivity

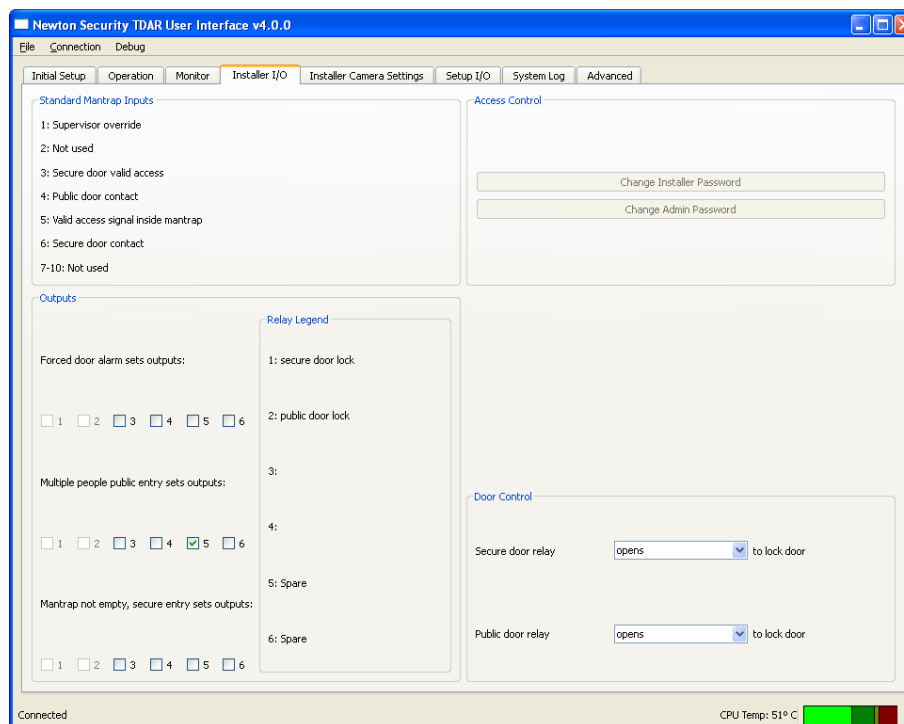
The crawler sensitivity controls the value that limits the size of a crawler (crawling person). An alarm will generate on objects considered crawlers. Set the Crawler Sensitivity small enough to alarm on objects that meet the size of a person crawling. A typical value for Crawler Sensitivity is 350.

The following items describe a crawler:

- The object resides inside of the crawling region
- It is larger than the crawler value specified (in pixel area)
- It is not in close proximity to a person.

Installer I/O

The Installer tab is for configuring the interface with the other components of the access control system. The provisions for configuring the Outputs, Door Setup and Sensitivity are on this tab. This screen can be password protected for Installer and System Administrators use only.



Setup of Inputs

The configurable options of the Door Control section allow for adapting T-DAR to the existing access control peripherals. Select the input state for these devices by clicking the check box that reflects the installation type. For example, if the door contact passes continuity when the door is closed, the door contact is “closed when door is closed”. The same logic is true for the Access Contact. Use the following steps for determining the normally open/closed status:

Door Contact

On the Monitor tab, observe the count for Door Opens (reset the counts on the “setup I/O” tab if necessary).

1. On the Monitor tab, observe the count for door opens.
2. Open and hold the door.
3. If the door open count advances by one, the switch is set correctly. The switch is not set correctly, if the door open count advances when the door closes.

Valid Access Contact

On the Monitor tab, observe the count for Valid Access Contact (reset the counts on the “setup I/O” tab if necessary).

1. Perform a Secure Door, Public or Secure Side Valid Access Grant.

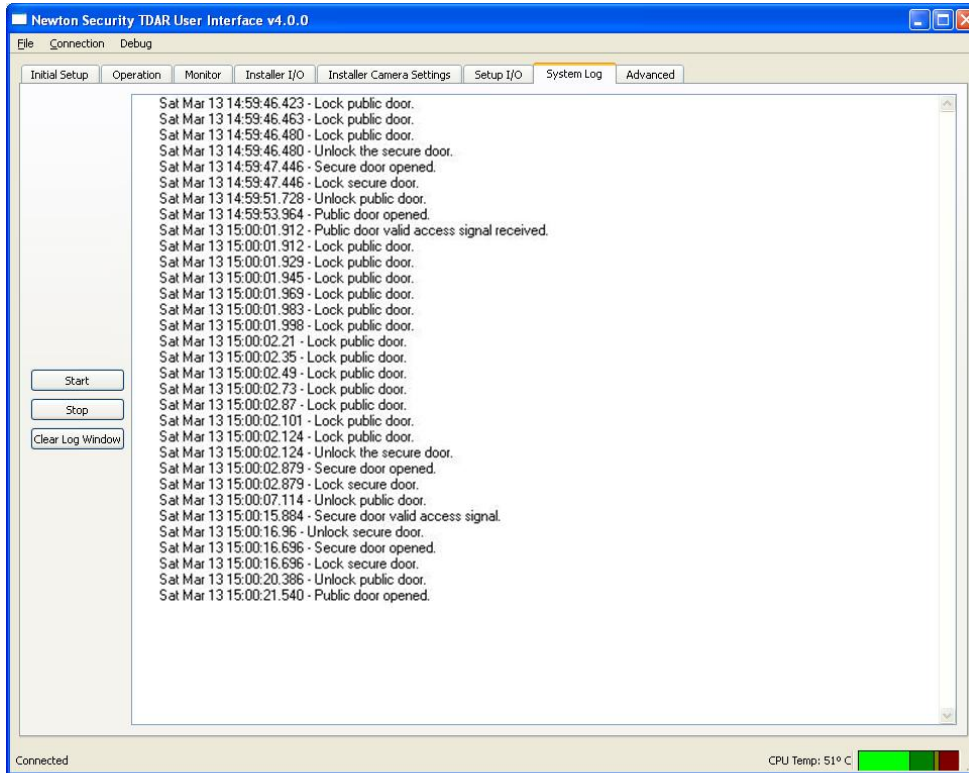
2. If the Valid Access Contact count advances by one immediately, the switch is set correctly.
3. If the Valid Access Contact count does not advance immediately, but takes a few seconds or more to advance, the switch is set incorrectly.

Setup of Outputs

There are five relays on a CB-110 control unit for providing signals from the T-DAR. The first relay is for the secure door lock, Relay 1A and Relay 1B. The second relay is for the public door lock, Relay 2A and Relay 2B. Relays three through five are for the tailgate alarm, forced door alarm and various other status signals. Activate the relay by checking the selected relay number. The selected relay will close during the corresponding event. For example, selecting check box number four of the Forced Door Alarm output enables Relay 4 to close when forcing a door open. Likewise, checking box number five of Multiple People Public Entry will enable Relay 5 to close when tailgating occurs through the public door.

System Log

This tab allows you to see the activity of the T-DAR system, when doors open and close, what alarms are active and what inputs and outputs have triggered.



Newton Security TDAR User Interface v4.0.0

File Connection Debug

Initial Setup Operation Monitor Installer I/O Installer Camera Settings Setup I/O System Log Advanced

Sat Mar 13 14:53:46.423 - Lock public door.
Sat Mar 13 14:53:46.463 - Lock public door.
Sat Mar 13 14:53:46.480 - Lock public door.
Sat Mar 13 14:53:46.480 - Unlock the secure door.
Sat Mar 13 14:53:47.446 - Secure door opened.
Sat Mar 13 14:53:47.446 - Lock secure door.
Sat Mar 13 14:53:51.728 - Unlock public door.
Sat Mar 13 14:53:53.964 - Public door opened.
Sat Mar 13 15:00:01.912 - Public door valid access signal received.
Sat Mar 13 15:00:01.912 - Lock public door.
Sat Mar 13 15:00:01.929 - Lock public door.
Sat Mar 13 15:00:01.945 - Lock public door.
Sat Mar 13 15:00:01.969 - Lock public door.
Sat Mar 13 15:00:01.983 - Lock public door.
Sat Mar 13 15:00:01.998 - Lock public door.
Sat Mar 13 15:00:02.21 - Lock public door.
Sat Mar 13 15:00:02.35 - Lock public door.
Sat Mar 13 15:00:02.49 - Lock public door.
Sat Mar 13 15:00:02.73 - Lock public door.
Sat Mar 13 15:00:02.87 - Lock public door.
Sat Mar 13 15:00:02.101 - Lock public door.
Sat Mar 13 15:00:02.124 - Lock public door.
Sat Mar 13 15:00:02.124 - Unlock the secure door.
Sat Mar 13 15:00:02.879 - Secure door opened.
Sat Mar 13 15:00:02.879 - Lock secure door.
Sat Mar 13 15:00:07.114 - Unlock public door.
Sat Mar 13 15:00:15.884 - Secure door valid access signal.
Sat Mar 13 15:00:16.96 - Unlock secure door.
Sat Mar 13 15:00:16.696 - Secure door opened.
Sat Mar 13 15:00:16.696 - Lock secure door.
Sat Mar 13 15:00:20.386 - Unlock public door.
Sat Mar 13 15:00:21.540 - Public door opened.

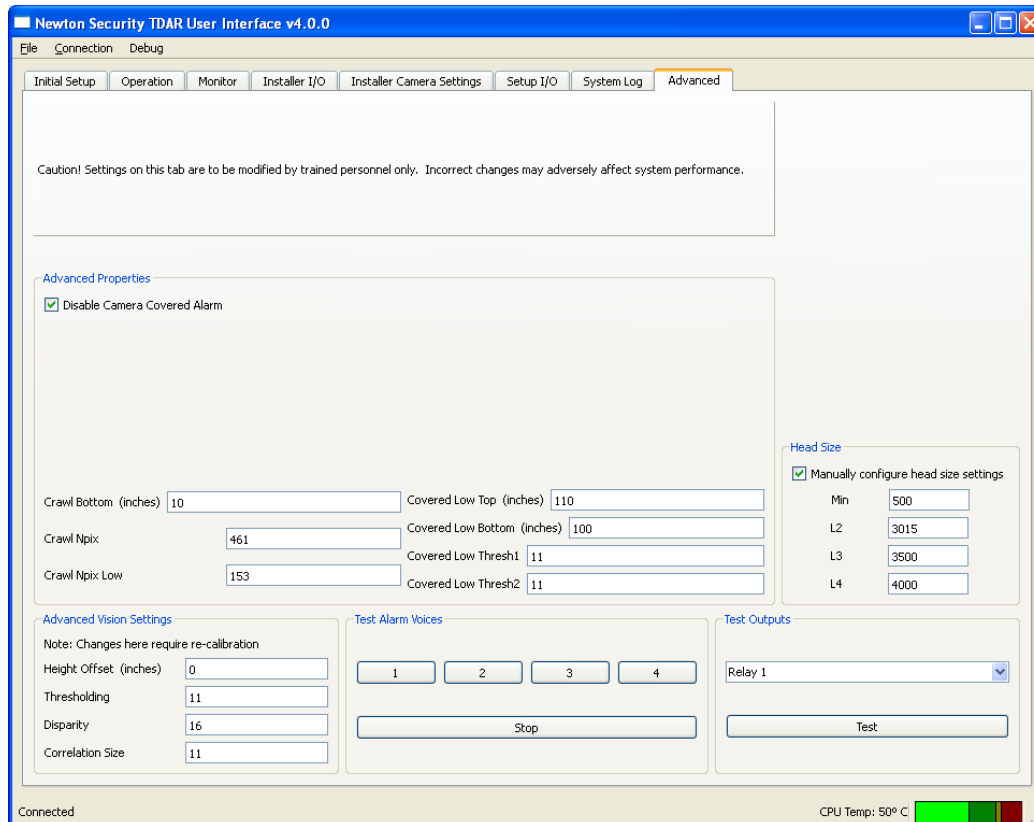
Start
Stop
Clear Log Window

Connected CPU Temp: 51° C

Advanced Tab

The Advanced screen consists of a number of user-definable options that can override several of the standard controls of critical system functions detailed in previous tabs.

CAUTION: Settings on this tab are to be modified by trained personnel.



Test Outputs

Use the Test Outputs portion of the Advance tab to test the communication between T-DAR and the access control system. Choose the desired relay from the drop down menu and press the Test button. Test relays one and two to lock the doors. If the system is setup to control automatic doors, test that the public and secure door will open, by engaging relays one and two. Test the alarm and status output relays that are use. For each alarm or status signal utilized, engage the relay and ensure the access control system receives this signal.

Test Alarm Voices

Use the Test Alarm Voices portion of the Advanced tab to test the Annunciator. There are four test buttons, to control the various Annunciator alarms. Button 1 will engage the strobe light on the annunciator. Buttons two through four will sound pre-recorded voices from the Annunciator.

Note: It is possible to change the recordings on the Annunciator using the built in microphone.

9. T-DAR Mantrap Maintenance

A maintenance procedure should be put in place to ensure the maximum life span of the system. Performing the following checks at the prescribed times will allow the system to provide the most secure access control. A system that is calibrated and running correctly will give few false alarms. Consider purchasing a spare T-DAR unit to reduce the amount of down time during a failure.

Calibration

Check the calibration every two months to ensure optimal tailgate detection and a low number of false alarms. The calibration should be checked immediately whenever there is a change in the mantrap environment. Calibrate the T-DAR system after a change in lighting, walls, floors, and especially when hanging signs or posts.

After calibration, have a person walk around the mantrap space with the doors closed. Observe the headcount on the monitor as the person walks around the mantrap space. The headcount should remain "1" as the person walks around the mantrap space.

Observe several users pass through the mantrap, ensuring that there are no false alarms. Ensure that the user is able to pass completely through the mantrap on the first try. Attempt to tailgate through the mantrap. Each tailgate attempt should sound the local Annunciator and send a remote signal to security.

Fans and Temperature

Every four months, check LED 3 on the front panel of the T-DAR controller to monitor the temperature. A green light signifies that the unit is running in the correct temperature range. A red LED or yellow LED is an alert that the system is running hot or is about to overheat.

Ensure the fans are spinning at a constant speed. Both exterior fans should be running smoothly without unusual vibration or noise. Feel the airflow, there should be a moderate amount of air expelled from the right exhaust fan. If the air is blowing lightly or is excessively warm, check that the unit is not overheating.

If there is a padded filter over the intake fan, replace the filter every six months. Note: It is normal not to have a filter over the right exhaust fan. When using padded filters in a dirty environment, replace the filters as often as necessary, before the six month time frame. The filters should be replaced if they show any amount of discoloration or darkening and well before the unit shows other signs of overheating.

Stereo Cameras

Check the integrity of the camera connections every six months. In order for T-DAR stereo algorithms to work correctly, the raw video from the cameras must be clean and stable. There are two cameras in each stereo head. Check the raw video output from both of these cameras on a video monitor (or VGA monitor). Ensure that the video from each camera is stable with no signs of movement. Look for signs of interference on both cameras to ensure that the video is clean with no lines, static, or warping.

Ensure that the video sync is stable. The camera video (on the monitor output) should not shift up or down. If one or both images shift up or down, by a pixel or more, check the CAT5 and coax cables running to the camera heads. In a T-DAR system with more than one head connected to the control unit, check all of the video signals from the camera heads.

Hardware and Integration

Check the operation of the mantrap every six months to ensure that all systems are functional. The door contacts and door lock operation should be proved. All readers should be tested to ensure that users do not have trouble receiving validation. The T-DAR cameras and connections should be checked for stability. Ensure that the alarm outputs are received by security.

Check the input and output connections once a year to ensure that the T-DAR is communicating correctly with the access control. Use the input/output screen on the monitor output to display the T-DAR inputs and outputs. The door contacts, reader inputs, and door lock outputs will all be visible on the screen. Open and close the doors and be sure that the signals change state on the T-DAR I/O display. Test the door interlocking and door locks. Be sure that the doors close and lock, unaided.

Testing the Tracking

Connect a monitor to the video output of the T-DAR system. To use the T-DAR video output, select 'Show Camera Views' from the monitor tab of the user interface.

Test the Scan Zone Areas

Have someone walk around inside the mantrap with both doors closed. Have the occupant stand and face several different directions. Observe the headcount on the video monitor and ensure that the count remains one while the person is in the mantrap. Have the person walk the perimeter of the mantrap, close to the walls and doors. If the headcount drops to zero, enlarge the Scan Zone region or reduce the Minimum Head Size. If two crosses are showing on a person against the wall, decrease the Minimum Head size until one of the crosses disappears.

Test the Dynamic Scan Areas

Connect a monitor to the video output of the T-DAR system. To use the T-DAR video output, select 'Show Camera Views' from the monitor tab of the user interface. Prop the public door open and have the person walk through the mantrap to the secure door. Propping the public door open, causes the system to scan only the Dynamic areas. Have someone walk around inside the mantrap while observing the headcount on the video monitor. Ensure that the headcount remains one or zero the entire the time the person is in the mantrap. The headcount will change to zero when the person is outside a Dynamic Scan zone. Obtain more accurate test results by having the subject wear dark clothing.

When one person is receiving two crosses, the minimum head size may be set too small. Increase the minimum head size until one of the crosses disappears. Repeat the process several times, propping the public door open each time, and walking the perimeter of the mantrap. Ensure that no alarming occurs during this testing.

Note: For improved test results, use a subject wearing dark clothing.

Factors That Could Cause Improper Operation

Wiring or programming changes in access control may keep the system from working correctly.

When making changes to the access control system, check that the T-DAR control unit continues to receive and send the proper signals. Check the input and output signals by observing the operation of the mantrap. Test the mantrap simply by passing through, in the entry and egress direction. Ensure that a tailgate alarm triggers during a tailgate violation. If necessary, observe

the event count on the Monitor tab of the user interface to check for proper door signals and valid access signals.

The T-DAR system requires adequate and consistent lighting for proper operation.

The T-DAR system uses stereo video analysis to determine three-dimensional characteristics of targets and requires sufficient lighting to perform this task. Equal and consistent lighting allows the system to identify people in the detection area.

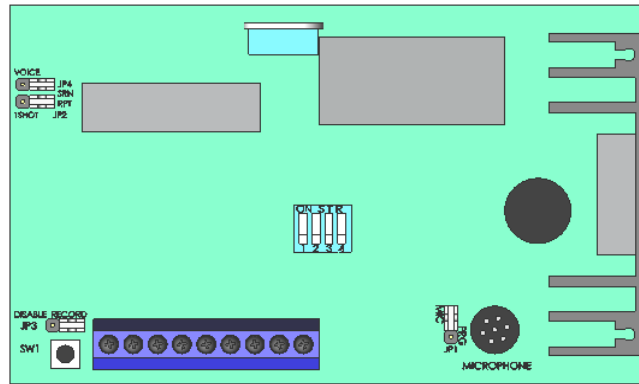
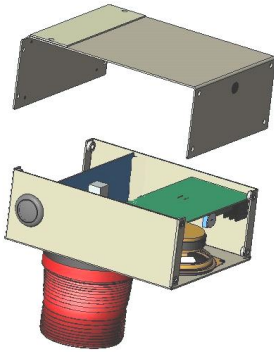
Mount the T-DAR unit in an area that maintains suitable temperatures.

Consult the Product Description or Specifications portions of this manual for suitable mounting conditions. The CB100 control unit utilizes long life fans but these may need service after a number of years. The fan life may be dependent on the amount of contaminants in the air. LED three on the front of the CB110 will turn yellow or red if the T-DAR control box becomes overheated. In addition, the S100 Annunciator red signal light flashes continuously if the T-DAR unit has shutdown.

Front Panel Indicator LED's on the CB110 Control Unit

LED	Use		Description
1	T-DAR Status	Off Flashing Yellow Flashing Green Flashing Red Any color- steady state	Firmware and software not running Firmware running-software in self-check Firmware and software running-Normal Firmware running-software stopped Firmware and software stopped
2	Ethernet connection	Off Green	No Ethernet connection Ethernet connection established (Will take a couple of seconds to respond)
3	Processor Temperature	Green Yellow Red Flashing Red	Less than 55° C-Normal 56°C to 65° 66° to 70°C Over 70°C (Annunciator will produce a timed signal)
4	Power	Off Green Red	No Power to the unit Power supplied and breaker is not tripped Power supplied and breaker is tripped

Changing the Voice Announcements via the Built-In Microphone



1. Remove the six (6) 6/32 Phillips head screws that attach the top cover. Gain access to the printed circuit board within the Annunciator.
2. Set JP1 to MIC, set JP2 to repeat, set JP3 to Record, and set JP4 to Voice.
3. Locate the record switch SW1 in the rear right corner of the circuit board.
4. Select, via the one of the four STR DIP switches, the message you wish to record over. This message will repeat until you its switch.
5. Depress and hold the record switch SW1 and speak the new message clearly into the unit.
6. Release the record switch when complete. Your new message should now be playing repeatedly.
7. If satisfied with the new message, restore the STR DIP switch selected for reprogramming to its normal off position.
8. Replace and secure the cover with the (6) 6/32 Phillips head screws.

Note: if recording voices into a microphone is not desirable, contact Newton Security for other methods of adding new announcements. This will require sending the unit to Newton Security for programming.

External System Maintenance

Periodically, inspect the unit for any signs of damage or build up of debris on the camera head as well as the intake and exhaust ports of the controller. Remove any debris with a damp cloth.

Troubleshooting

This section provides fundamental hardware troubleshooting for the T-DAR system. For problems not covered in this section, contact your local Newton Security Inc. Authorized Distributor.

Receiving good detection

- Make sure to illuminate the mantrap with software ambient lighting. Avoid “can style” lighting and filament bulbs, which are often too bright directly underneath and too dim at the perimeter. Use visible lighting of any color.
- Ensure the floor, walls, and surrounding physical environment are free from bright reflections. Bright reflections may cause the T-DAR system to perceive a person when the mantrap is empty. Minimize bright reflections by coating shiny surfaces, blocking windows, or changing lighting style/position.
- Loosening the T-DAR’s settings may be required to overcome a reflection issue. Reduce problems with bright reflections by increasing the Minimum Head Size. Increasing the Minimum Head size will minimize detection of lesser objects, such as reflections. Do not raise this threshold to more than 600. Additionally, decrease the scan zone region so that it does not encompass the reflection. Do not reduce the scan zone so far that a person may hide outside of the Scan Zone. The Scan Zone regions should be large enough to detect a person standing anywhere in the mantrap.

Problems Communicating with the T-DAR

<p><i>The user interface will not connect with the T-DAR System</i></p>	<p><u>Try the following first:</u></p> <ul style="list-style-type: none"> ▪ Wait 30 seconds and try reconnecting. ▪ Reboot the T-DAR control unit and try reconnecting. (Note: Be sure that the T-DAR control unit is fully booted; approximately a two minute process) ▪ Check the Ethernet cable to ensure it is connected properly ▪ Ensure that an Ethernet connection is established (This is verified by a green light on LED 2) ▪ Make sure that only one copy of the user interface is installed on the laptop or PC. ▪ You may need to use a crossover Ethernet cable when connecting directly to a laptop or PC ▪ Set your laptop or PC to 10.0.0. # with a sub –mask of 255.0.0.0 when connecting directly ▪ Turn off the computer, restart, and try again. <p><u>If the above suggestions do not provide results, follow the procedures below to further troubleshoot communications:</u></p> <p>Call your Newton Security Inc. Authorized Distributor</p>
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Imaging Problems

To assist in troubleshooting, connect the T-DAR to any NTSC color monitor. Use a BNC cable and adapters to connect from the monitor to the Imager Out terminal on the top panel of the T-DAR unit. This will allow you see what the imager is viewing in terms of bright spots, reflections, and other imaging problems.

<p><i>The Image Is Entirely Blue</i></p>	<ul style="list-style-type: none"> ▪ Make sure the BNC cable is connected properly to the Camera Head and to the Control Unit. ▪ Be sure that the camera sync cable (CAT-6, straight through) is properly connected. ▪ Ensure that the monitor is connected and that 'Show camera views' is selected on the user interface. Connect with the user interface. Open the monitor tab and select 'Show camera views' for the camera. ▪ While connected with the user interface, turn to the Installer Camera Settings tab and view the appropriate camera in the Viewing Window. ▪ Connect the camera BNC directly to the monitor to check for a proper video image. Try a different cable if necessary. ▪ Contact your Newton Security Inc. Authorized Distributor.
<p><i>The Image Is Black</i></p>	<ul style="list-style-type: none"> ▪ Make sure the BNC cable and Power Control cable is properly connected to the system unit and to the Camera Head. ▪ Be sure that the camera sync cable (CAT-6, straight through) is properly connected. ▪ Ensure that the monitor is on, is connected, and that 'Show camera views' is selected on the user interface. Connect with the user interface. Open the monitor tab and select 'Show camera views' for this camera. ▪ Point the Imager at a bright light. If the live image is entirely black, then contact your Newton Security Inc. Authorized Distributor.

<p><i>Random Pixels Appear In The Image</i></p>	<p>Electrical noise generated by motors and controllers connected to, or near, the T-DAR control unit or camera head/cables will cause noise in the image. Minimize this image noise, as it will adversely affect performance.</p> <p>Use the following guide to try to isolate the cause of the noise:</p> <p>STEP 1: The idea in this step is to determine what a normal image looks like for comparison. Electrically isolate the T-DAR Series to determine a known or normal visual pattern on the video monitor. If it is not possible to isolate the unit at its normal mounting position, take the T-DAR away from the area where inspections are running and connect it to another Camera Head. Determine the normal image.</p> <p>STEP 2: Determine the noise. Reconnect to the T-DARA normally. Block the lens to produce a dark image so that you can see the electrically induced noise.</p>
<p><i>Random Pixels Appear In the Video Output</i></p>	<p>Remove the unit from its current mounting- repeat Step 2.</p> <ul style="list-style-type: none"> ▪ Change the power source-repeat Step 2. ▪ Change the ground connections-repeat Step 2. ▪ Disconnect controllers and drives one at a time from the control panel-repeat Step 2. ▪ Physically move the T-DAR (or Camera Head cables) away from the machine-repeat Step 2. ▪ Continue with these steps to find the source of the noise. <p>Note: A common solution is to isolate the T-DAR ground circuit from the ground circuits of heavy machinery.</p>
<p><i>The Image Is Too Dark</i></p>	<ul style="list-style-type: none"> ▪ Increase the overall light by increasing the intensity of the illumination source in the mantrap, or by increasing the number of illumination sources. ▪ Replace the stereo camera head if the problem persists.
<p><i>The Image Is Too Bright</i></p>	<ul style="list-style-type: none"> ▪ Decrease the illumination source or number of sources. ▪ Replace the stereo camera head if problem persists.

<p><i>The Image Is Blurry</i></p>	<p>You may need to:</p> <ul style="list-style-type: none"> ▪ Clean the lens. Clean lens ensures that the images acquired by the Camera Heads are accurate. This is important for good tracking performance. Clean the lenses with a commercial glass cleaner and a lint-free cloth. You may need to clean the lens daily in dusty environments. ▪ Move the Stereo Tracking Head. Verify the head is in the proper position. If correct, verify the height and placements are accurate. If the cameras and placements are correct, then contact your Newton Security Inc. Authorized Distributor.
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All Monitored Events Are Failing

<p>If a working installation suddenly returns failed inspections for all or most of the mantrap monitoring, a change in lighting conditions or a change in environment may have occurred. Recalibrate both camera heads to adapt to this new environment. The T-DAR stereo camera head may have been bumped or have had its views obstructed; be sure they are in place and free from obstruction. Observe the video output of all the tracking cameras to find abnormalities.</p>	
<p><i>Check the lighting conditions</i></p>	<p>A light source that dims over time or a light source that has gone out completely can affect the performance. Make sure that your light sources are strong and positioned correctly. Good lighting is essential to getting a good image and to security monitoring performance. To see the effect of the lighting, select an output that best displays the problem and monitor the live image.</p>
<p><i>Check to see if the stereo camera head is out of position</i></p>	<p>Put the Camera Head to its original position. If you are unsure, reposition it as close to the original location as possible. If you cannot reposition the unit properly, connect the control unit to the host computer and redo setup in the user interface</p>

Inputs/Outputs Are Not Functioning as Required

If the inputs and outputs are functioning differently than expected, there are several solutions for this. When there is question as to whether the inputs and outputs are switching correctly, connect a video or VGA monitor to the control box. To observe the status of inputs and outputs on the monitor, select 'I/O Display' on the 'Monitor' tab of the user Interface.

The secure door is not locking

The secure door should remain locked at all times, except when the T-DAR receives a valid inside-secure or outside-secure grant. At this time, the door will remain unlocked for a brief period.

- Observe output relay 1 on the monitor display. Ensure that it is green.
- If it is not, open the user interface and press Ctrl+Shft+S. In the 'Set Long Property' dialog box, enter 'tdar3.locked.closed'; press enter, then enter 1 and press enter.
- Disconnect the wires from Relay 1A and 1B. The door lock should change status. If the door does not lock, check the access control wiring. If the output status should be different, normally open or normally closed, change the output setting.

The Secure Door Will Not Open after a Valid Access Grant

When the T-DAR system does not open the secure door after a valid access grant, there may be an incorrect head count in the mantrap.

The secure door is not opening after a Secure Door, Public Side valid access grant.

- The mantrap may be empty or there may be more than one person in the mantrap. In order for the T-DAR system to unlock the secure door after a public valid access grant, there must be one person in the mantrap.
- The public or secure door may be open. Close the door(s).
- The system may be un-calibrated. Calibrate the T-DAR system.

10. DETAILED SPECIFICATIONS – CB210MT Control Box

Power Specifications*

Operating Voltage Range	24 VDC \pm 10%
Peak Voltage (Non-continuous)	30 VDC
Required Amperage	10 Amps
<i>*Note: Power supply not included</i>	

DC Input Specifications

Minimum Pulse Width	0.4 mSec
ON Voltage Level	>10 VDC
OFF Voltage Level	< 2 VDC
Input Impedance	2.2 K Ω
Minimum ON Current	>10 mA
Maximum OFF Current	<0.1mA
OFF to ON & ON to OFF Response	0.2 mSec Typical
Maximum Input Current	10mA@12VDC, 20mA@24VDC
Commons	Three Commons: General 2, Portal/Head 1&2

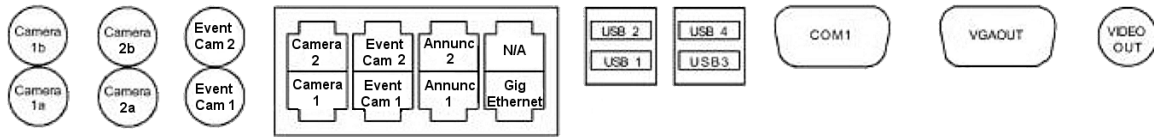
Relay Output Specifications

Minimum-Maximum Voltage Range	0 – 30 VDC
Peak Voltage	<50 VDC
Maximum Current (resistive)	2 A
Maximum Inrush Current	5 A
OFF to ON Response	0.2 mSec Typical
ON to OFF Response	0.2 mSec Typical

Auxiliary Power Outputs

+5 VDC	Incorporated over-current breaker
+12 VDC	Incorporated over-current breaker
+24 VDC	Incorporated over-current breaker

Upper Front Panel Connections



- Camera 1a:** Input, BNC connector from Stereo Camera Head 1, camera a. Used for secure, right camera head.
- Camera 1b:** Input, BNC connector from Stereo Camera Head 1, camera b. Used for secure, right camera head.
- Camera 2a:** Input, BNC connector (*Not used this mantrap system*)
- Camera 2b:** Input, BNC connector (*Not used this mantrap system*)
- Event Cam 1:** Input, BNC connector from Stereo Camera Head 3, camera a. Used for secure, left camera head. (Connect camera head 4 to A400)
- Event Cam 2:** Input, BNC connector (*Not used this mantrap system*)
- N/A:** RJ-45 Interface, connection for 4 head adaptor box (A400). 4 Head adaptor box contains two BNC connections for Head 4.
- Camera 1:** RJ-45 Interface, Standard 10BaseT Cat-6 Ethernet cable to Stereo Camera Head 1 for Power/Control. Used for secure, right camera head.
- Camera 2:** RJ-45 Interface, (*Not used this mantrap system*)
- Event Cam 1:** RJ-45 Interface, Standard 10BaseT Cat-6 Ethernet cable to Stereo Camera Head 3 for Power/Control. Used for secure, left camera head.
- Event Cam 2:** RJ-45 Interface, (*Not used this mantrap system*)
- Annunc 1:** RJ-45 Interface, Standard 10BaseT Cat-6 Ethernet cable to Annunciator for Power/Control.
- Annunc 2:** RJ-45 Interface, (*Not used on mantrap systems*)
- Gig Ethernet:** Ethernet Interface, Standard Cat-6 Ethernet cable to Local Area Network
- USB 1-4:** Interface, Standard USB-2 communications for flash memory, mouse, keyboard, etc.
- Com 1:** Interface, RS-232 interface for secondary communications with processor

VGA Out: Output, 15 pin VGA for connection of computer monitor for local system control.

Video Out: Output, BNC connector to video monitor for set-up and monitoring

Connection Details

Video Out

BNC Connector—System output in video format. Output is in RS170 (NTSC). Optional PAL output is available. Use video output for displaying inspection results and processed video of the T-DAR system in real time. Video Out output is not available in RGB or S-Video. Switching the output to PAL or to NTSC is not possible; this is a factory setting only.

Input 1

The alarm bypass is an opt-isolated input used to reset the alarm event for the T-DAR mantrap. Engaging this input stops the audio output from the Annunciator unit and ceases all tracking. While enabling this input, the strobe will flash and the T-DAR will allow multiple persons to pass through the mantrap after a secure access grant.

Relay 1

Form-factors A relay for control of the secure door lock. Relay 1 is normally closed and opens only after meeting certain conditions, including a Secure Door Public Side grant or Secure Door Secure Side grant. Relay 1 will not change state unless the public door is closed.

Relay 2

Form-factors A relay for control of the public door lock. This relay is normally open and closes only when the secure is open or unlocked.

Relays 3 - 5

The T-DAR unit is equipped with four form-factors A relays that can be configured to activate on various user selectable conditions. The normal state of these relays is user definable to allow for greater flexibility in integrating the system with a variety of access control systems. Four of the relays are located on the General 1 connector, and the fifth relay is located on the Portal connector.

Line Lock Input

The T-DAR uses the Line Lock input to sync with the local power grid. Use this input to synchronize the video input to the T-DAR system with low-frequency fluorescent lighting. A transformer is included with the T-DAR controller for this purpose.

Input Common

Use the common terminal to define the operation of the inputs on all four connectors, independently. If a dry contact is to be used for bypass on the General 2 connector, a small jumper wire will be installed between the +12VDC terminal and the common terminal. This provides a reference voltage for the various input signals.

RS232 TX

The T-DAR reads data in from external sources or outputs data from the vision system via a RS422 serial connections found on the Phoenix I/O Connectors. The T-DAR system does not use this terminal.

Input 4 and 6

These are door contacts used to monitor the status of the door position switches (open or closed). Inputs 4 and 6 monitor the public and secure doors, respectively. This should be dedicated switches, and require the installation of a double-pole/double-throw door position switch.

WARNING: Failure to use isolated circuits or using access control system auxiliary outputs/relays to simulate the valid access switch activity may result in poor system performance. There can be no noticeable time lag in the door contact signals by T-DAR.

Input 2, 3, 5 and 7

The valid access grant switches must be electrically isolated from the access control system to allow for proper operation. This will typically require the installation of a double pole/double throw relay that controls the lock and provides an output to the T-DAR system.

WARNING: Failure to use isolated circuits or using access control system auxiliary outputs/relays to simulate the valid access switch activity may result in poor system performance. There can be no noticeable time lag in the valid access signals by T-DAR.

The valid access grant switch will connect to the Portal Digital Input terminal and to either ground or +12v (or applicable source voltage) dependent upon installation type.

Inputs 8 - 14

Not Used