T-DAR®

Model DS1010 and Model DS2010
One Door - Two Door

TAILGATING / PIGGYBACKING DETECTION SYSTEM

INSTALLATION AND OPERATION MANUAL

Newton Security Inc.
443 SW 41st Street
Renton, WA. 98057 USA
www.newtonsecurityinc.com

Revision 11

C E

Warning:

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

Tailgating/Piggybacking

Access control systems are the heart of most security systems. From smart cards to fingerprinting and even iris recognition technology, there are many different systems in place to restrict access to secure areas. But there is one way to completely bypass every one of these systems - with the simple act of holding the door open. Some people do this out of politeness, as we are all taught, while others are unknowingly followed through these secure doors by unauthorized persons. All access control systems, regardless of the technology used, are vulnerable to this problem.

T-DAR® Solution

Newton's patented **T-DAR**® system uses sophisticated three-dimensional optical imaging to detect Piggybacking and Tailgating through secure portals. The Newton T-DAR system detects persons and differentiates them from carts or other objects in or around the secure side of the portal and then utilities Newton's sophisticated Stereo Machine Vision technology to identify and tag each human within the field of view of the tracking (overhead) camera. It maintains that tag on that person so long as he or she (or some portion of the person) remains in the view of the camera. That information is than combined with the data provided by the access device, door contacts and other input data to determine if the tagged person is a legal transit or is tailgating / piggybacking.

Once the status of a person is determined to not be a legal transit but to be tailgating or piggybacking, the **T-DAR** system then actuates any number of possible results, all controlled and selected from an easy to use User Interface. These alarms range from local alarm sirens, flashing lights and voice annunciation through remote alarm, real-time delivery of video of the event to security forces, activation of internal or existing DVR systems and physical events such as the locking of other doors to prevent the intruder from further penetrating the secure area.

When the T-DAR system is used in conjunction with physical barriers such as security portals, mantraps and security revolving doors, the system can prevent tailgating/piggybacking as well as detecting and alarming on those occurrences. In addition to the model described in this manual, other models of the T-DAR system are available for use in:

Double Doors	**Vehicle Tailgate Detection**
Mantraps	**Vehicle Tracking**
Optical Turnstiles	**People Counting**
Barrier Arm Turnstiles	**Waiting Line Tracking**
Barrier Gates (Wing Style)	**Asset Tracking and Verification**
Automated Immigration Gates	**Population Counting**
Elevator Control	**Directional Control**
Escalator Direction Sensing	**Time and Attendance Tracking**

Critical Elements for a Successful T-DAR Installation

The T-DAR® system does a superb job of detecting violations of access control security systems. In order to accomplish this task, the T-DAR requires several critical elements and/or signals from the door and the access control system as detailed in this manual. Four of the most important elements are:

1. **Valid access grant signals must be immediate.** The valid access signal from the access control system must occur at the same time or before the door is unlocked to allow an entry and must have duration of at least 300ms. In some instances this may require the use of a timer module to allow for adequate lock activation time. *In all circumstances, if a person crosses the door threshold prior to the receipt of a valid access grant signal by the T-DAR unit, that person will cause an alarm by the T-DAR system.* Especially in the case of installations where multiple valid entries are allowed on a single door open cycle, it is critical to confirm that the valid entry signal is reaching the T-DAR unit prior to a person crossing the door plane and that a separate signal for each valid entry is received by the T-DAR unit.

2. **Door contact/door position switch signals must be immediate.** These signals must be sent to the T-DAR unit at the same that the door is opened. Unless it can be verified that the access control system can give immediate door open signals, the T-DAR unit must have an independent circuit for this function that allows isolation from the access control system. It is recommended that mechanical switches of the roller and plunger types be avoided in favor of magnetic switch door contacts.

3. **Adequate and consistent lighting are required for accurate operation of the T-DAR system.** 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 from the ceiling down allows the system to identify and track targets in all areas of the detection pattern. Lighting from the sides or the floor is not helpful; in fact it may detract from system performance. If adequate down lighting is not currently in place, additional lighting must be added. Invisible (near IR) lighting is available from Newton.

4. **LineLock input is critical if low frequency fluorescents are utilized for lighting.**
    An ac wall-mounted transformer is included in the T-DAR control unit. If the lighting in the area that is protected by the T-DAR is provided by low frequency (older style-line frequency) fluorescents, this transformer or other low voltage AC source must be used to ensure proper operation of the T-DAR system. Any source of 6 to 30 VAC will provide the correct line locking of the T-Dar system to the building lighting.

PRODUCT DESCRIPTION

General Description

Several configurations of the T-DAR Series are available. The models covered in this manual are all inside systems and have the following features:

- ♦ Confirm only one human for each authorized entry, including multiple authorizations for each escorted visitor
- ♦ Allows for carts, parcels and other non-human objects
- ♦ Tracking and detection take place even if the portal is open for other authorized entries and exits
- ♦ Accepts data from virtually any badge or pass system, including biometrics and Smart ID systems.
- ♦ When a violation occurs, the alarm activates and the event camera records the violator in real time.
- ♦ Data, time, and pass number used for the authorized passage are recorded with the event video.
- ♦ Communicates the alarm condition and transmits the recorded video to central security in real time over a video or digital link.
- ♦ Allows door to swing in either direction.
- ♦ Fully software configurable; easily adapts to virtually any portal.
- ♦ All operating and communication parameters are controlled by a simple graphical user interface.
- ♦ Easy setup – no special training required

T-DAR Models Covered In This Manual

DS-1010 Single Head (Single Door) Systems
- Swing Doors
- Sliding Doors
- Folding Doors
- Open Passageways
- Some Elevator Systems (External to the Elevator Door) Systems
- Most Portals (External to the Portal)

DS-2010 Two Head (2 Independent Doors) Systems
- Swing Doors
- Sliding Doors
- Folding Doors
- Open Passageways
- Some Elevator (External to the Elevator Door) Systems
- Most Portals (External to the Portal)

T-DAR Models Not Covered In This Manual
- Double Door Systems
- Mantrap Systems
- Gate (Turnstile) Systems
- Outside Systems
- Vehicle Systems
- People Counting Systems
- Population Counting
- Elevator Systems (Internal to the Elevator)
- Thrown Object Detection Systems
- Escalator Systems
- Revolving Doors
- Time and Attendance Tracking
- Waiting Line Tracking
- Directional Control Systems

Consult Sales at Newton Security Inc. for T-DAR Models and Manuals for systems not covered in this manual.

T-DAR Product List for the Systems covered by this Manual

Please use the following data when contacting your sales representative for additional components. Special configurations are also available.
Note – A power supply is not included with the T-DAR system.

	Item	Model Number	Description
1.	1 Door Complete T-DAR System	DS1010	Complete Tailgate Detection System-with CB110 Control Unit, 1 DC 200LP Camera Head, and 1 S100 Annunciator Unit
2.	2 Door Complete T-DAR System	DS2010	Complete Tailgate Detection System-with CB210 Control Unit, 2 DC 200LP Camera Heads, and 2 S100 Annunciator Unites
3.	1 Door Control Unit	CB110	Single Door Control Unit
4.	2 Door Control Unit	CB210	2 Door Control Unit
5.	Stereo Camera Head	DC200LPLP	Stereo Camera Unit
6.	Annunciator Unit	S100	Wall Mount Annunciator Unit with Light, Siren and Voice Alarm
7.	Door Position Sensor	I100	Door Position Sensor- Required for doors where door swing intrudes into the field of view of the T-DAR unit (Door swings into the secure area).
8.	Event Camera	EC105	Color Event Imager

9.	Cable Extender/Amplifier	EA101/EA101A EA102/EA102A	Cable Extender--Extends the distance from the door to the T-DAR Control Unit for more than the 200'.
		EA101/EA102 powered by the T-DAR unit	
			Extends the cable length for the DC200LPLP Stereo Camera Head, the S100 Annunciator Unit and the I100 Door Position Indicator.
		EA101A/EA102A powered by plug mounted power supply	
			EA101/EA102 units can be combined for up to 1,000' from the door to the T-DAR Control Unit.
10.	Ceiling Mount Kit	MK200B	Installs DC200LPLP into Drop Ceiling Panels
11.	Wall Bracket	CWB100	Stereo Camera Head wall mounting bracket-used for mounting a DC200LPLP to a flat wall
12.	Thrown Object Detection Software	F102	Option to detect thrown objects up to 60 Miles Per hour
13.	Anti-Pass Back Software	F103	Option to determine if persons with a valid access signal have proceeded through the portal
14.	Non-standard I/O Software	F104	Customer specified I/O differing from the standard T-DAR software
15.	Non-standard Operating Software	F105	Customer specified Operating software differing from the standard T-DAR operating software
16.	*Authorized Cart* Software	F106	Software allowing specific individuals to move special carts though the T-DAR system

SPECIFICATIONS

CB110/210 Control Unit

Figure 1- T-DAR Control Unit

Size: 5.726" x 16.365" x 11.643"
Weight: 26 lbs
Enclosure: Bent steel; completely enclosed with door
Mounting: Mounting via 4 x 1/4 " holes on back panel tabs (Optional mounting brackets available)
Standard Operating Temperature: 40 to 110 degrees F, (optional high and low temperature systems available)
Storage Temperature: 0 to 125 degrees

Power Considerations (Power Supply Not Included)

The T-DAR Systems requires relatively stable DC power. If the system is installed in an area where the DC power is not stable and is subject to severe fluctuations and/or discontinuity, the use of an Uninterruptible Power Supply may be required.

Input Voltage/Current	24VDC Listed (26VDC MAX) @ 8A
Inputs	14 Opto-isolated digital
Outputs	6 Relays 3A each
Video out	VGA, NTSC / PAL (Software Selectable)
Connectors	Phoenix style, BNC (RG-59Uand RJ45)
Serial Connections	2 RS232 and 4USB
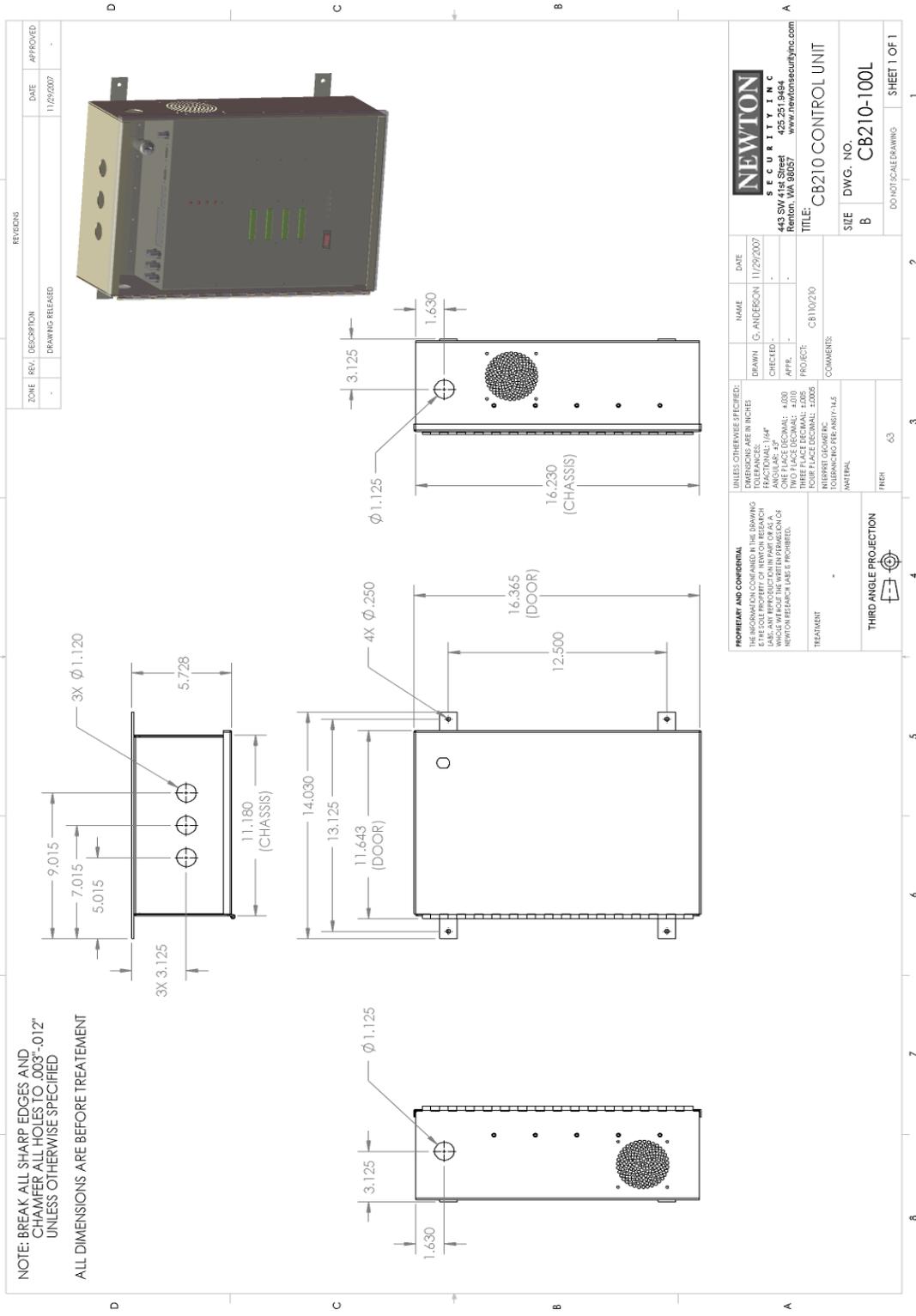
Figure 2 - T-DAR Control Unit CAD

S100 Annunciator

Figure 3 - T-DAR Annunciator

Size: 6.00" x 8.13" x 7.19"
Weight: 5 lbs
Max Cable Distance: 200ft (60m)
Enclosure: Bent steel, with high impact plastic indicator
Mounting: Mounting via 4 x 3/16" holes on back panel tabs
Standard Operating Temperature: 40 to 125 degrees F, (optional high and low temperature systems available)
Storage Temperature: 0 to 150 degrees F

Input Voltage/Current	12VDC 2A maximum (*Powered by the CB200 Control Unit*)
Inputs	RJ45 Std. Ethernet Cable from Control Unit
Speaker Volume Control	Rotary Control with front panel access
Illuminator	Xenon Strobe w/red colored diffuser
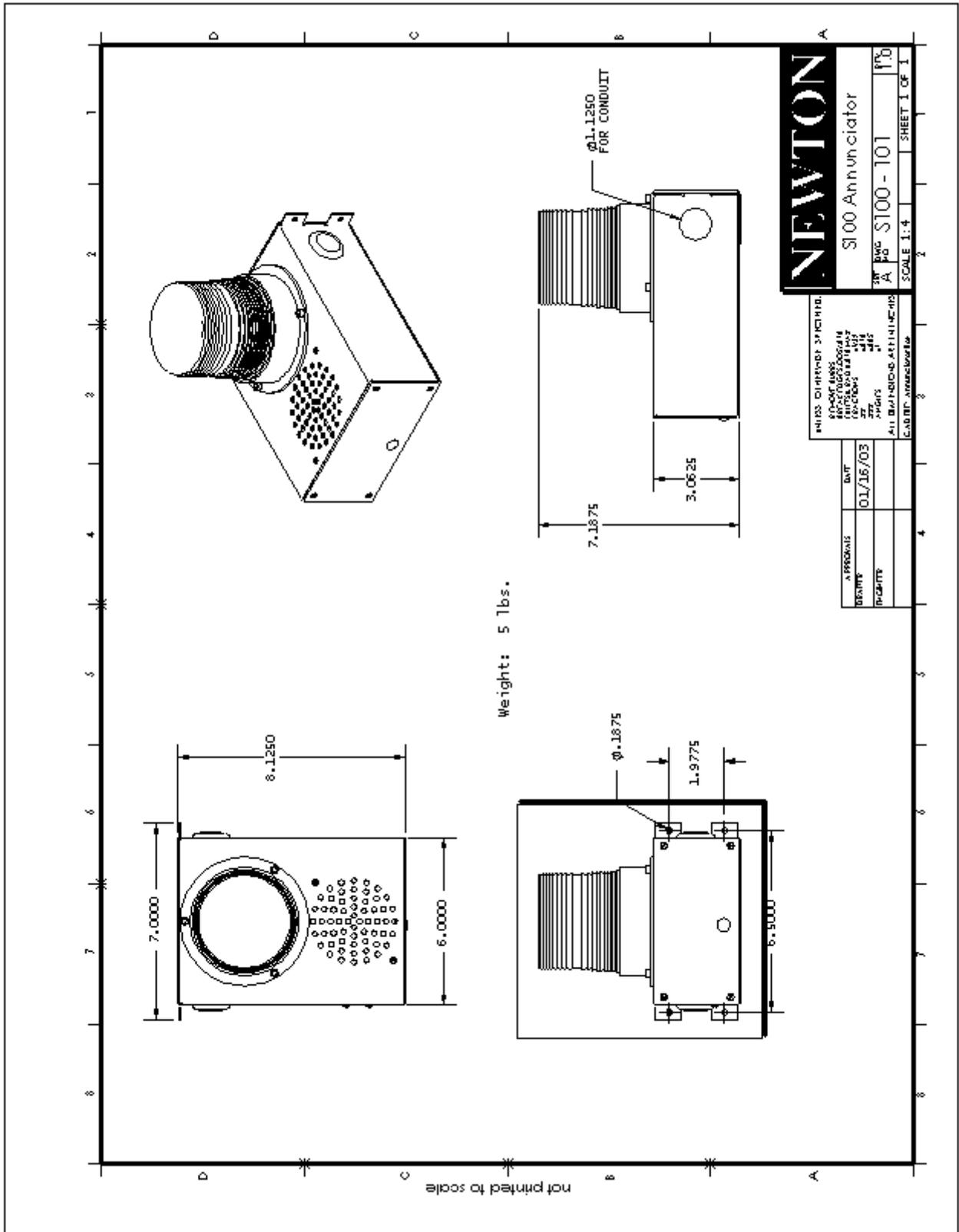
Figure 4 - T-DAR Annunciator CAD

DC200LP Stereo Tracking Head

Figure 5 - T-DAR Stereo Tracking Head

Size: 7.00" x 2.50" x 2.50"
Weight: 2.2 lbs
Enclosure: Bent steel
Mounting: Mounting via 4 x 1/8" holes on back panel tabs (Optional mounting brackets available)
Standard Operating Temperature: 40 to 125 degrees F, (optional high and low temperature systems available)
Storage Temperature: 0 to 150 degrees F

Input Voltage/Current	12VDC 1A maximum (*Powered by the CB100/200 Control Unit*)
Inputs	1-RJ45 Std. Ethernet from Control Unit
Outputs	NTSC or PAL Stereo Video (Specify)
Video Connectors	BNC x2 (RG-59U)
Focus and Field of View	Factory fixed, non-adjustable (Correct part number must be specified for the application camera height. Consult the table on Page 38 for the lens specification and part number)
Lighting	Both Visible and Near IR (Invisible to human eyes) DC200 camera heads are available

Figure 6 - T-DAR Stereo Tracking Head

I100 Door Position Encoder

Figure 7 – T-DAR Door Encoder

Size: 2.40" x 2.50" x 2.40"
Weight: 13.5 ounces
Enclosure: Machined Delrin
Mounting: Mounting via 4 x 1/4-" holes on back panel (Optional mounting brackets available)
Standard Operating Temperature: 40 to 125 degrees F, (optional high and low temperature systems available)
Storage Temperature: 0 to 150 degrees F

Input Voltage/Current	12VDC 500mA maximum (*Powered by the CB100/200 Control Unit*)
Inputs	RJ45 Std. Ethernet from Control Unit
Outputs	Quadrature digital output

NEWTON

DOOR ENCODER INSTL

DWG. NO. 1100-105   REV. R2

SIZE A   SCALE 1:2   SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED:
REMOVE BURRS
BREAK EDGES .005/.010
FILLETS & RADII .010 MAX
FRACTIONS ±1/32
.XX ±.010
.XXX ±.005
ANGLES ±1°
ALL DIMENSIONS ARE IN INCHES

CAD FILE: 1100-105

DATE 12-08-03

APPROVALS
DRAFTER
ENGINEER

ø .375 PROBE

2.420

2.375

CONNECTOR ACCESS

4X ø .250 MTG HOLES

3.750

3.350

1.190

1.590

6" TYP

NOTES:
1) APPROXIMATE WEIGHT 13 OZ.
2) PROBE POSITION SHOWN CORRESPONDS TO DOOR APPROX HALF OPEN.

not printed to scale

Figure 8 – T-DAR Door Encoder

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EA101/EA101A Cable Extender/Amplifier

Figure 9 – T-DAR Cable Extender/Amplifier

Size: 3.55" x 3..55" x 3.00"
Weight: 1.5lbs
Enclosure: Extruded Aluminum
Mounting: Mounted via back panel mounting holes
Standard Operating Temperature: 40 to 125 degrees F, (optional high and low temperature systems available)
Storage Temperature: 0 to 125 degrees F
Required to extend the standard maximum distance of 200' from the door to the CB100/200 Control Unit

Input Voltage/Current	EA101 powered by the T-DAR Control Unit-no external power required EA101A-supplied plug mounted power sulpply-115/230 VAC 50-60Hz 28 Watts
Inputs (From the protected door)	2 BNC (RG59U)
	2- Stereo Cameras from the DC200LPLP
	2 RJ45 (Standard Ethernet Jack)
	1- DC200LP Stereo Camera Head Power
	1- S100 Annunciator Unit
Outputs (To the DC100/200 Control Unit or additional EA101A Extender/Amplifier)	2 BNC (RG59U)
	2- Stereo Cameras
	2 RJ45 (Standard Ethernet Jack)
	1- DC200LP Stereo Camera Head Power

Figure 10 – T-DAR Cable Extender/Amplifier CAD

Ea101 Vs. Ea101A

Figure 11 - EA101

➢ Use the EA101 for the first extender at 150 – 200 feet
➢ No external power require-powered from the TDAR Control Unit

Vs.

Figure 12 - Ea101A W/ power adapter

➢ Use the EA101A for additional extenders for each 150- 200 foot extension
➢ Power from a plug mounted power adapter-supplied with the EA101A
➢ Able to daisy chain up to 4 units for a total of 1,000 foot cable runs
➢ 120/240VAC 50/60Hz 28W

EA102/EA102A Encoder Cable Extender

Figure 12b – T-DAR Encoder Cable Extender

Size: 3.55" x 3.55" x 3.00"
Weight: 2.5lbs
Enclosure: Extruded Aluminum
Mounting: Mounted via back panel mounting holes
Standard Operating Temperature: 40 to 125 degrees F, (optional high and low temperature systems available)
Storage Temperature: 0 to 125 degrees F
Required to extend the standard maximum distance of 200' from the door to the CB110/210/410 Control Unit

Input Voltage/Current	EA102 powered by the T-DAR Control Unit-no external power required EA102A-supplied plug mounted power sulpply-115/230 VAC 50-60Hz 28 Watts

Inputs (From the protected door)	2 RJ45 (Standard Ethernet Jack)
	   1- S100 Annunciator Unit
	   1- I100 Encoder Unit

Outputs (To the CB110/210/410 Control Unit or additional EA102A Extender/Amplifier)	1 RJ45 (Standard Ethernet Jack)
	   1- Annunciator port on Control Unit
	Phoenix Connector C/D at Control Unit
	   1- Connector C for portal 1
	   2- Connector D for portal 2
	   3- Connector D for a mantrap
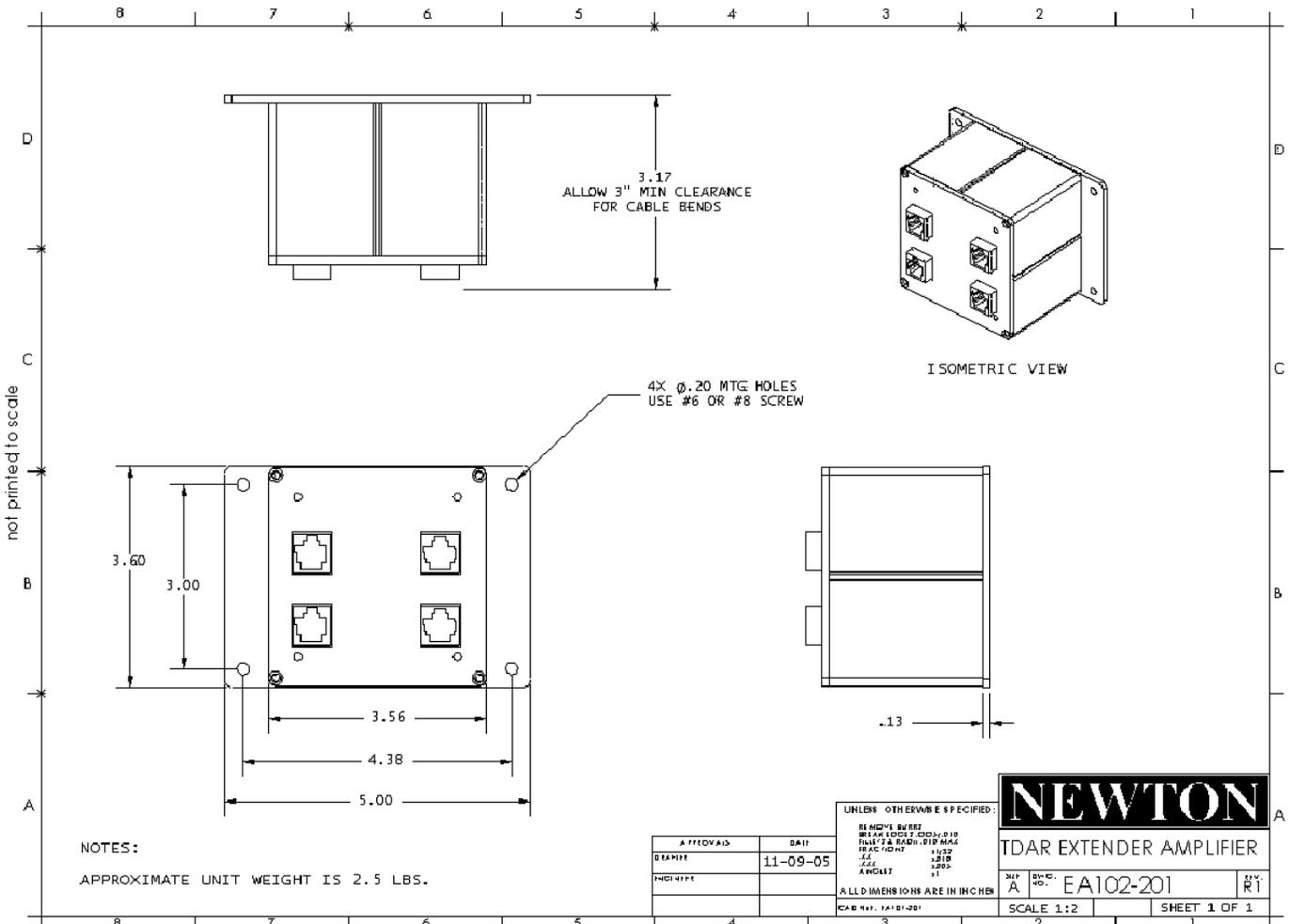
Figure 13 – T-DAR Annunciator/Encoder Cable Extender CAD

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Ea101/Ea102 Vs. Ea101A/Ea102A

Figure 13 - EA101

➢ Use the EA101/EA102 for the first extender at 200 feet
➢ No external power require-powered from the TDAR Control Unit

Vs.

Figure 14 - Ea101A with power adapter

➢ Use the EA101A/EA102A for additional extenders for each 200 foot extension
➢ Power from a plug mounted power adapter - supplied with the EA101A/EA102A
➢ Able to daisy chain up to 4 units for a total of 1,000 foot cable runs
➢ 120/240VAC 50/60Hz 28W

WMK-100 Camera Head Wall Mount
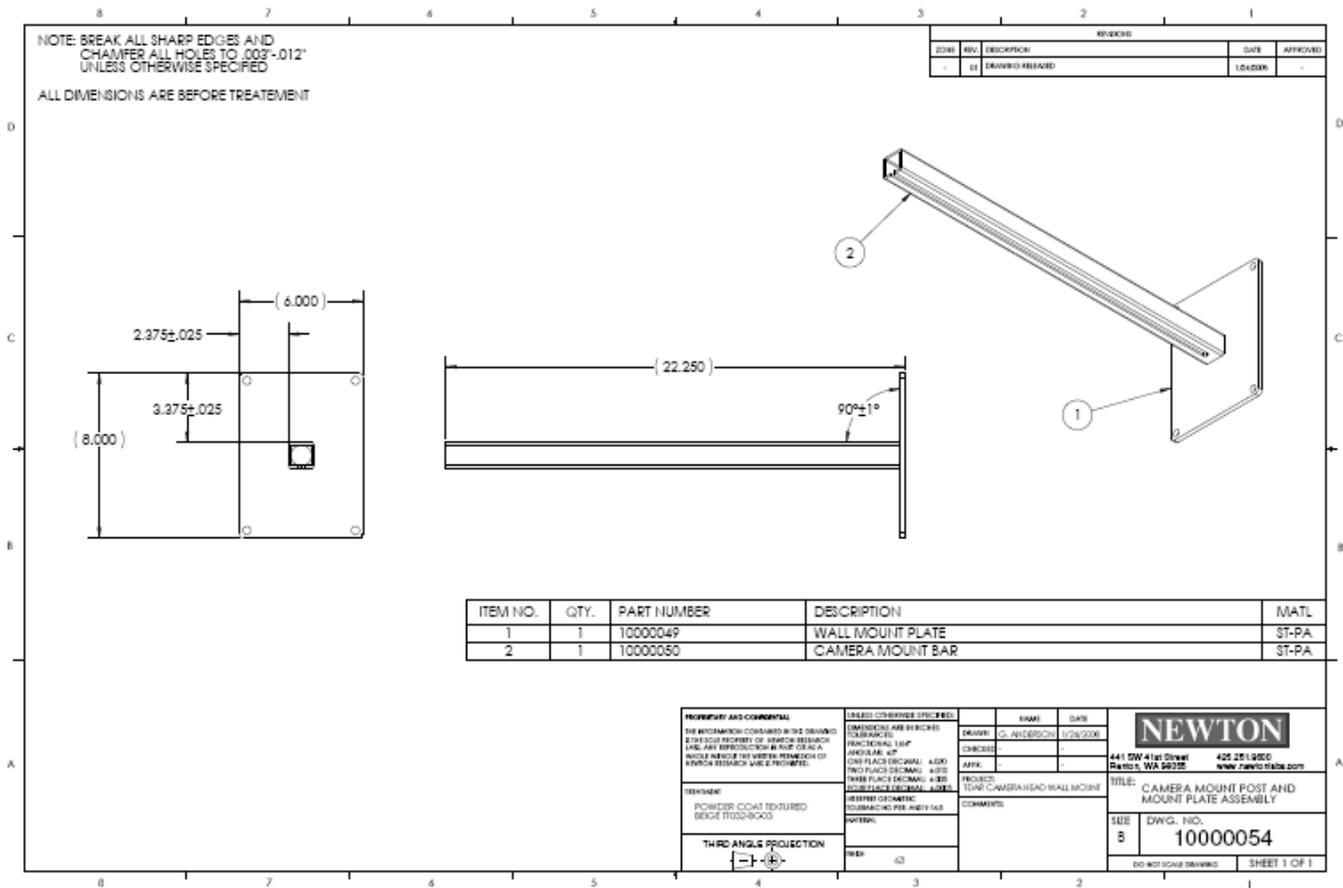
Figure 15a – WMK-100 Camera Head Wall Mount

CMK-100 Camera Head Ceiling Mount

25.99

11.00

.915
GAP FOR
CEILING THICKNESS

2.68

4.50

	NAME	DATE
DRAWN	-	-

NEWTON
SECURITY INC
443 SW 41st Street   425.251.9494
Renton, WA 98057   www.newtonsecurityinc.com

TITLE:
CAMERA HEAD CEILING MOUNT

SIZE	DWG. NO.
B	**MK200B**

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING   SHEET 1 OF 1

15b – CMK-100 Camera Head Ceiling Mount

INSTALLATION

Important Safety and Warning Information

⚠ WARNING Electrical Shock Hazard with Cover Removed

The T-DAR system may contain, produce and present the hazard for electrical shock or burns with the cover removed. There are no user serviceable parts under the interior panels. Only trained authorized personnel may perform maintenance or repair.

Underwriters Laboratories Inc. has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested for fire, shock and casualty hazards as outlined in UL's Standard for Safety UL 60950-1. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product. **UL MAKES NO REPRESENTATIONS, WARRANTIES OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT.**

Units are for use in **RESTRICTED ACCESS LOCATIONS.**

Tips for a Successful T-DAR Installation

Several critical elements for installation:

1. **Valid access grant signals must be immediate.** The valid access signal from the access control system must by occur at the same time or before the door is unlocked to allow an entry and must have duration of at least 300 ms. In some instances this may require the use of a timer module to allow for adequate lock activation time. *In all circumstances, if a person crosses the door threshold prior to the receipt of a valid access grant signal by the T-DAR unit, that person will cause an alarm by the T-DAR system.* Especially in the case of installations where multiple valid entries are allowed on a single door open cycle, it is critical to confirm that the valid entry signal is reaching the T-DAR unit prior to a person crossing the door plane and that a separate signal for each valid entry is received by the T-DAR unit.

2. **Door contact/door position switch signals must be immediate.** These signals must be sent to the T-DAR unit at the same that the door is opened. Unless it can be verified that the access control system can give immediate door open signals, the T-DAR unit must have an independent circuit for this function that allows isolation from the access control system. It is recommended that mechanical switches of the roller and plunger types be avoided in favor of magnetic switch door contacts.

3. **Adequate and consistent downward lighting are required for accurate operation of the T-DAR system.** 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 from the ceiling down allows the system to identify and track targets in all areas of the detection pattern. Lighting from the sides or the floor is not helpful; in fact it may detract from system performance. If adequate down lighting is not currently in place, additional lighting must be added. Invisible (near IR) lighting is available from Newton.

4. **The DC200LP Stereo Camera Head must be mounted at the proper distance from the door and the proper camera part number must be specified.** Use the chart found in this manual to determine the correct distance. If the DC200LP Stereo Camera head is mounted at other distances, the T-DAR unit will not be able to properly track persons and may have erratic behavior.

5. **A 24VDC power supply is required for operation.** An external 24V DC power supply with a peak current of 10Amps is required for operation. A power supply is not included with the T-DAR system.

6. **Inward Swinging doors must use an I100 Door Position Indicator.**
If an I100 Door Position Indicator is not used for doors that swing into the field of view of the camera, erratic operation will result.

7. **A 24VDC power supply is required for operation.** An external 24V DC power supply with a peak current of 10Amps is required for operation. A power supply is not included with the T-DAR system.

8. **LineLock input is critical if low frequency fluorescents are utilized for lighting.**
An ac wall-mounted transformer is included in the T-DAR control unit. If the lighting in the area that is protected by the T-DAR is provided by low frequency (older style-line frequency) fluorescents, this transformer or other low voltage AC source must be used to ensure proper operation of the T-DAR system. Any source of 6 to 30 VAC will provide the correct line locking of the T-Dar system to the building lighting.
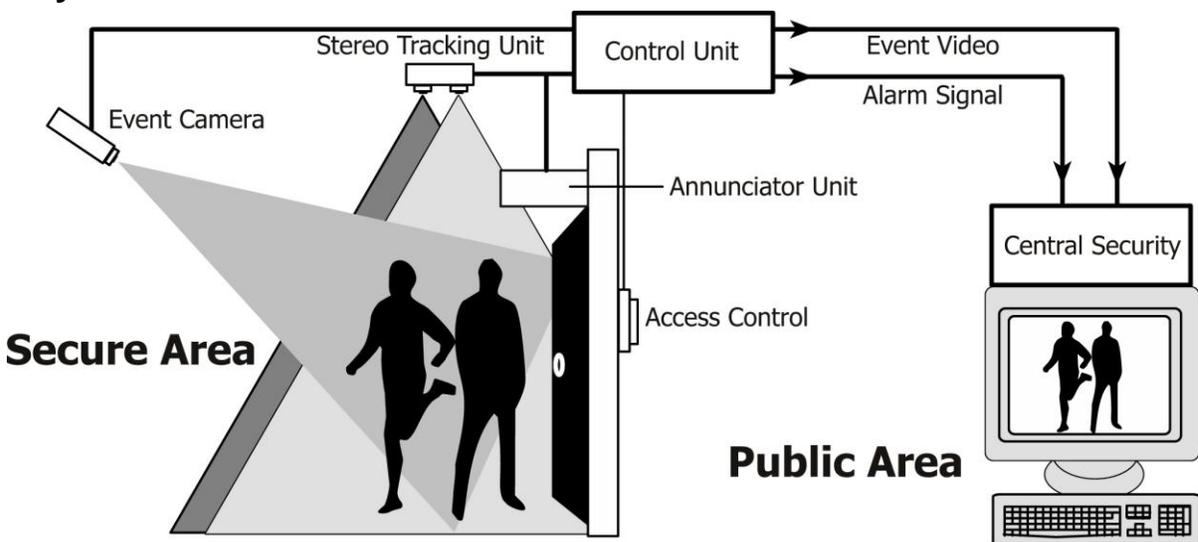
Physical Installation

Figure 15 - Typical Configuration

Site Considerations

There are several factors that must be considered when determining the application of T-DAR for the solution of tailgating and piggybacking. These factors are detailed as follows:

Consistent Downward Lighting

The T-DAR requires adequate and consistent downward lighting to properly detect tailgate violations. Failure to provide adequate lighting will result in elevated false alarm rates as well as the possibility of the system failing to detect violations. The minimum acceptable lighting level is 300 Lux (30 Ft-Candles) from above. The measurement should be taken so than only lighting emanating from above (the ceiling in most cases) is included in the measurement. Lighting from the sides of the viewing area can actually detract from the robustness of the installation. In some cases it may be necessary to add additional lighting above the desired detection area to produce the required results. Invisible (near IR) lighting is available from Newton if desired to enhance lighting without human interference.

Direct Sunlight

Direct sunlight can have a negative impact on system performance. Proposed locations that are awash in direct sunlight should be qualified by the manufacturer.

Before You Begin

Before you begin any installation, make sure that the proposed installation locations that have been chosen provide adequate room for the devices as well as any electrical conduit that may be necessary. Dimensions for the specific components may be found in this manual

Local Device Placement

The local devices such as the door position sensor, camera head, and Annunciator Unit need to be placed within a certain linear distance of the controller to minimize the effects of voltage drop. The maximum Annunciator cable distance is 200ft (60m). For cameras and inputs/outputs, this distance is 200ft (60m) and should not be exceeded unless a distance extender is used. Information about the cost and part number of the Data Extender is available from the Newton Security. Whenever possible, local devices shall be placed on the secure side of the portal being monitored to reduce the risk of vandalism and attempts to defeat.

Control Unit Placement

The Control Unit should be located in a place that allows for access to the unit, is relatively clean, and affords the unit protection from damage or vandalism. The unit should be located in an area that provides 24VDC power at 10Amps (power supply not included). The unit should be located within an acceptable distance to the access control system so that door status signals and inter-system communications and signals are not significantly diminished by voltage drop. Adequate clearance should be maintained to the sides and top of the unit to facilitate the installation of conduit and ventilation, and clearance to the front of the unit should meet or exceed the requirements established for electrical panels by the National Electrical Code (NEC). The Control Unit is not water-tight, and must be protected from rain and sprayed or blown water.

Annunciator Unit Placement

The maximum Annunciator cable distance is 200ft (60m). The Annunciator Unit should be located at the security portal being monitored so that violations are immediately announced to the violator as well as the persons in the secure area. The Annunciator Unit is fitted with conduit knockouts on the left and right sides of the unit. Adequate clearance should be maintained to the sides of the unit to facilitate conduit installation. Additionally, adequate clearance is required to the front of the unit to allow for adjustment of the volume control. The Annunciator Unit must be installed outside of the field of view of the stereo camera head.

Event Camera Placement

The event camera should be strategically placed to capture full frontal images of persons entering the secure area through the portal. The event video output leads should be protected within armored conduit to help prevent vandalism. Protecting the camera itself is recommended.

Stereo Tracking Head Selection

The stereo camera head must be the correct head for your application: NTSC or PAL, Visible or Near IR lighting and the correct stereo camera head for the distance from the stereo camera head to the floor.

NTSC or PAL

Order the correct head for your country system. The Control Unit inputs either type of systems (software selectable) and the video output will be set to the corresponding output in the T-DAR User Interface.

Lighting System – Visible or Near IR

Order the correct head for the lighting at your installation. Newton Security supplies Stereo Camera Heads for both types of lighting systems.

Distance from Stereo Camera Head to Floor

Newton Security supplies stereo camera heads pre-focused and set to the correct field of view for various camera heights. Select the correct head number from the table below. Failure to use the correct camera head for your application **will result in the failure of the installation**. In addition, the T-DAR User Interface will not allow the installation to proceed if the correct camera head has not been chosen for your application.

Stereo Tracking Head Placement

The stereo camera head needs to be located based upon the calculations in the camera head placement chart. Failure to place the camera in the correct location will lead to false alarms or an altogether failure to detect violations. The calculations in this chart are based upon door size, camera head height, and lens focal length. (*See chart on page 31)*
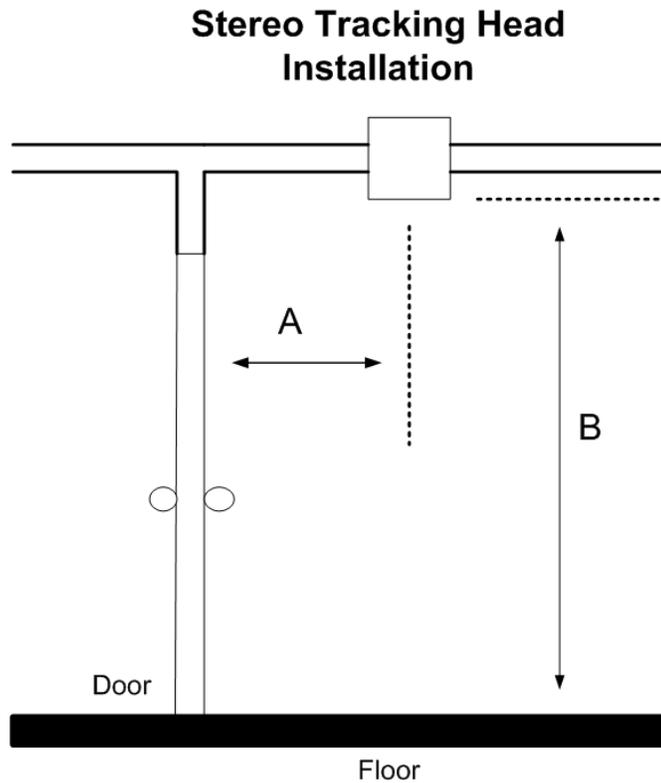
Stereo Tracking Head Installation

A

B

Door

Floor

Figure 16 - Stereo Tracking Head Reference

Stereo Tracking Head Placement chart

Distance from the front of the Stereo Camera Head to the floor (B)		Type of Camera
Inches	**M**	
84 to 100*	2.13 to 2.59*	*
102 (8.5')	2.60	DC 219 Stereo Camera Head
104	2.64	DC 219 Stereo Camera Head
107	2.71	DC 219 Stereo Camera Head
108 (9')	2.74	DC 219 Stereo Camera Head
114	2.95	DC 219 Stereo Camera Head
120 (10')	3.05	DC 225 Stereo Camera Head
121	3.07	DC 225 Stereo Camera Head
126	3.20	DC 225 Stereo Camera Head
132 (11')	3.37	DC 225 Stereo Camera Head
Over 132 (11")*	Over 3.37*	*

* Non-standard Installation. Consult factory for assistance

(Examples of non-standard installations are any installation under 8.5 FT (2.60M) or over 11 FT (3.37M))

Please see figure 16 for Installation Guide

Component Mounting and Electrical Connections

Control Unit

The door control unit should be mounted on a wall in a vertical orientation. The unit is equipped with mounting tabs that will accommodate ¼ inch mounting hardware. The unit should be mounted and grounded in accordance with National Electrical Code (NEC) guidelines. The unit is not weatherproof, and will require protection from rain or sprayed water. There are four conduit knockouts on the sides and top of the unit. Refer to Figure 2 for unit dimensions.

1. For each Portal, install and terminate two video coaxial cables (75 Ohm) from each camera head with BNC connectors. Label the cables so that camera one is easily distinguished from camera two.
2. Attach the coaxial cables to the upper panel Tracking Camera BNC inputs in accordance to the labeling on the panel.
3. For each Portal install and terminate one Ethernet cable (straight through) from the stereo camera head.
4. Attach the stereo camera head Ethernet cable to the Power/Control connector on the upper panel.
5. For each portal, install and terminate one Ethernet cable (straight through) from the Annunciator Unit. The maximum annunciator cable distance is 200ft (60m).
6. Attach the Annunciator Unit Ethernet cable to the Annunciator connector on the underside of the lower panel slightly behind and to the right of the main ac power connector. The connector closest to the ac main connector is for Portal one.
7. Install and terminate an adequate number of wires to support the inputs and outputs that will be utilized on the system. Detailed examples of connections are available in Figure 17.

Stereo Tracking Head

The camera head can be mounted utilizing the mounting tabs that accommodate up to a number 12 screw or a Newton MK200 ceiling mount kit designed to work in a variety of applications such as drop tile ceiling or hard ceiling. Refer to the MK 200 manual addendum in this manual for specific details. Care should be taken to ensure adequate access to the connection port on the side of the unit. Refer to Figure 6 for unit dimensions.

1. Ensure that the stereo tracking head is mounted in the correct location according to the chart in Figure 16.
2. Ensure that the view of the camera is not obscured by the Annunciator Unit or any other objects such as exit signs or door closers/operators.
3. For each stereo camera head, install and terminate two video coaxial connectors with BNC connectors. These cables should already have been labeled to make them easily identifiable.
4. Attach the coaxial cables to the BNC 90 degree connectors on the inside of the stereo camera head. The camera head can be opened by removing the screws in the access plate of the unit.
5. Install and terminate one Ethernet cable (straight through) in the stereo camera head.
6. Attach the Ethernet cable to the Power/Control connector on the stereo camera head.
7. Ensure Camera 2 is closest to the secure door and Camera 1 is towards the exiting side of the door.

Annunciator Unit

The Annunciator Unit is mounted utilizing the mounting tabs that accommodate up to a number 12 screw. Care should be taken to ensure adequate access to the connection port on the top of the unit, as well as the volume control on the front of the unit. The unit should be mounted at least eight feet above the finished floor. Refer to Figure 4 for unit dimensions.

1. Ensure that the Annunciator Unit is mounted outside of the field of view of the stereo camera head.
2. Install and terminate one Ethernet cable (straight through) on the Annunciator Unit.
3. Attach the Ethernet cable to the Annunciator connector on the Control Unit. The maximum cable distance from the control unit to the Annunciator is 200ft (60m).

Event Camera

The event camera should be mounted in accordance with the manufacturer's requirements. It is strongly recommended that vandal-resistant camera enclosures and wire ways be incorporated in the installation.

1. Install, terminate, and install one video coaxial cable at the event camera.
2. Install, terminate, and install the power supply power cable (Power must not be obtained from the T-DAR controller, a separate power supply must be provided for the installation).
3. Adjust the focus and other settings as required to obtain a usable image.
4. Adjust the sync settings of the camera per the manufacturers' procedure to optimize the quality of the event video playback to be streamed out of the T-DAR control unit.

Door Position Sensor (Door Encoder)

The Door Position Sensor is used to define the specific location of an inward swinging door at all points of the arc that the door crosses and is required for doors that swing into the field of view of the tracking head. This allows the T-DAR to ignore the image signature of the door and focus instead on tracking objects of interest. See Figure 7 for a picture of the Door Position Sensor

The Door Position Sensor is mounted on the secure side of the door on the door frame above the top hinge if possible, otherwise as high as is practical. The unit must be oriented so that the arm rides on the surface of the door throughout the entire arc without encountering any resistance. The cable for connecting the sensor should be fished out of the wall/frame and terminated into the unit. The cable is a straight through Ethernet (cat 5) cable terminated with an RJ-45 connector. The other end of the cable is then terminated as flying leads on the portal specific connector as described in figure 35.

Note - the cable length should be no more than 200 ft linear from the controller. Use an EA101 or EA101A extender for cable runs more than 200 Feet,

CONNECTION TO ACCESS CONTROL SYSTEMS

Door Valid Access Grant Switch

The valid access grant switch 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 also provides an output to the T-DAR system. This is acceptable for those applications where access through the portal is on a one-by-one basis, meaning that only one person may enter the secure area when the door is opened, and the door must fully close before the next person may enter the area. Applications where the access procedures and policy allow for multiple valid accesses on one door access cycle (opening) may require the use of a timer module. This is necessary to ensure that there is no noticeable latency in the receipt of a valid access grant signal by T-DAR and the actual release of the door lock. It should be noted that it is acceptable for the T-DAR to receive the signal before the door is unlocked, but not after. Failure to use isolated circuits or using access control system auxiliary outputs/relays to simulate valid access switch activity may result in poor system performance. There can be no noticeable latency in the receipt of valid access grant switch signals by T-DAR.

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

2. The distance from the control unit to the valid access grant switch should be kept to less than 200 foot. Contact the manufacturer for guidance on longer distances.

3. Refer to Figure 17 for detailed examples of configuration.

Door Position Switch

The door position switch must 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. Failure to use isolated circuits or using access control system outputs/relays to simulate door contact activity can result in poor system performance. There can be no noticeable latency in the receipt of door position switch signals by T-DAR.

1. The door position switch will connect to the Portal Contact terminal and to either ground or +12v (or applicable source voltage) dependent upon installation type.

2. The distance from the control unit to the door position switch should be kept to less than 200 foot. Contact the manufacturer for guidance on longer distances.

3. Refer to Figure 15 for detailed examples of configuration.

Relay Connections

The T-DAR T-1010 and T-2010 control units are equipped with four relays on the General connector plus one relay on each of the Portal connectors. These relays may be used to signal various alarm conditions based on user configurable options in the user interface. All of these relays are single pole/single throw, and are normally open. Various degrees of customization are possible through coordination with the manufacturer (Fig 28). Note that the T-DAR unit requires a 24VDC power supply.
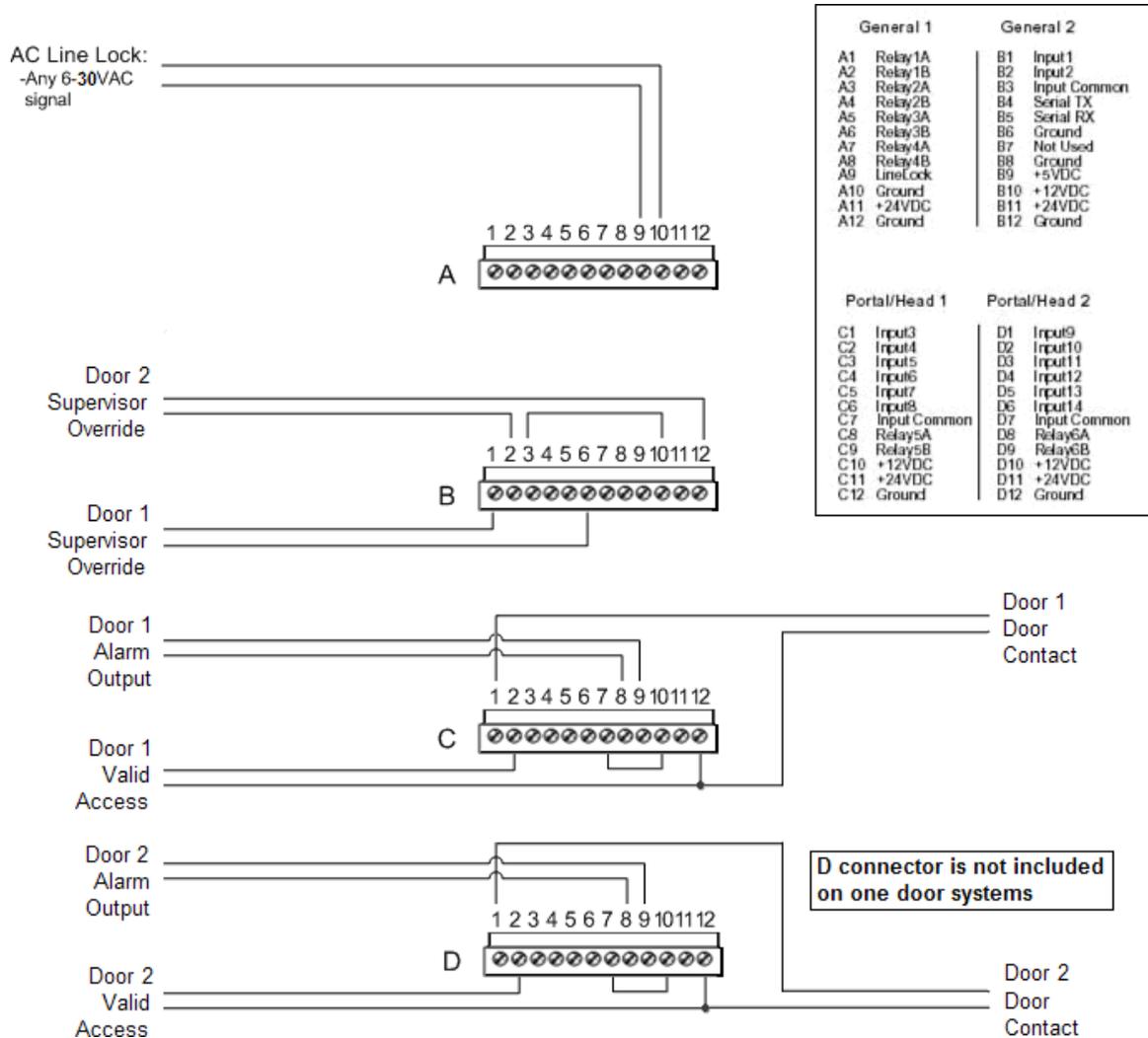

Figure 17 - Typical Configuration

Notes:

-All input grounds are common.
-All relays are SPST/Form A, with a default
 state of normally open.
-Reference voltage for all inputs is generated via
 a jumper between +12VDC and common.

CONNECTION TO LAPTOP / LAN

To Configure 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. TDAR, 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". A new window will open, select "Local Area Connection" and click "Properties" from the new selection. A third 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:

    a. IP: 10.0.0.21 (unless the unit is .21, then use .22, etc)

    b. Subnet: 255.0.0.0

    c. Gateway 10.0.0.1

5. Apply these changes and return to the desktop. You may have to reboot your host computer before the changes take effect. The system will now connect using the *Configure Connection* option in the User Interface.

Install the Software

The Newton Security Inc. T-DAR System Software CD-ROM contains an installer for the user interface application and a loader program for the T-DAR Door Control Unit application.

User Interface (UI) Application

1. Insert the T-DAR Software CD-ROM into the host PC.

2. Browse to the User Interface directory in the CD-ROM drive and execute setup.exe.

3. Follow the on-screen instructions.

Door Control Unit Application

1. Connect the vision system. Refer to **page 22**

2. Insert the T-DAR Software CD-ROM into the host PC.

3. Browse to the 'control box software' directory on the CD-ROM drive and execute update.exe.

4. Follow the on-screen instructions.

After the software is loaded, the UI may be launched from the start menu on the host computer.

Start -> Programs -> Newton Security Inc -> T-DAR

Once the system hardware is configured, the UI application is no longer needed and the T-DAR will run unaided.

IMPORTANT NOTE: The Newton Security Inc. T-DAR software must be installed to an independent directory if a version(s) of T-DAR software already exit on the host PC.

Uninstall older versions of T-DAR software when new, updated software is installed. If Newton Security software is to be uninstalled, save the settings of the portals or mantraps that you have access to. Saving settings is explained in the User Interface section of this manual.

Before removing software, make a record of the User Interface version and control box version of each mantrap or portal. Store these records for the T-DAR systems in an easily accessible location. Be sure that install files for this T-DAR double door system are made accessible to integrators who work on the system in the future.

Configure Connection
Selecting Configure Connection from the menu opens the dialog box to specify connection type, IP address and connection preference.

Figure 18 - Configure Connection

Connecting via Ethernet

1. serial number and factory-set IP address of each vision system is printed on the inside lower corner of the door of the unit, in the following format:

   SN: CB200101000102 IP: 10.3.2.21

2. The IP address in the above label is 10.3.2.21

3. If the IP address in the UI matches the unit, skip to step 7

4. Refer to **Connect via Serial Ports** to establish a serial port connection

5. Select **Connection** then **Configure Connection** from the application's menu bar.

6. Select **Ethernet, IP address** from the **Configure Connection** dialog.

7. Enter either the pre-configured IP address in the field next to **Ethernet, IP address** or enter a new IP address that is compatible with the network.

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

9. Select **Connection** then **Disconnect** from the menu bar. This will close the serial port connection.

10. Select **Connection** then **Connect** from the menu bar.

11. A connection via Ethernet will be established.

Configuring the T-DAR

The T-DAR user interface (UI) is used to set-up and optimize the detection performance of the system. The following instructions provide guidelines that will enable the installer to quickly and effectively place the T-DAR system in service.

Viewing Images

The installer should select the Show Camera Views view from the monitor page. This will display a quad image on the CCTV monitor showing the tracking image, event camera image, and tracking head cameras 1 and 2 simultaneously. Using this image, the installer is able to clearly see what the system is viewing in real time.

Calibration

After the unit has been installed and the UI is connected to the unit, a calibration must be performed. The purpose of the calibration is to 'teach' the system what the area of detection looks like when the area is empty of people. *Objects that are not normally in the scene such as carts and parcels should be removed before the calibration is performed.* This clean calibration will then allow the system to recognize objects introduced into the scene and track them accordingly while ignoring those objects that are normal to the scene.

Inward Swinging Door

The following is a description of the process for performing the calibration when an inward swinging door sensor is used. After the sensor has been terminated at the Control Unit, the door sensor should be powered up and tested by slowly moving the arm back and forth. This should result in a change in the current sensor value section of the installer I/O page in the User Interface. If no change shows in the current sensor values as the door is swung, check the wiring; it is probably reversed.

To calibrate the door, follow the instructions on the screen when the Clear Calibration button is clicked. Upon completion of the calibration, verify it was successful by observing the tracking image to determine if the door is still visible to the system as it is swung though its full range of motion from open to closed.

Testing the Units

The units should be periodically tested to ensure that they are functioning properly. This can be easily accomplished by walking out of the door, not allowing it to close, and then walking back in without using a card. This should generate a local and remote alarm. If an alarm is not correctly annunciated (i.e. no audible message) repeat the above steps. If the system still does not operate correctly, cycle the power on the Control Unit and repeat the test. If

the system still does not respond, call for Newton Security or your integrator for additional support.

Capturing Events

Alarm event video is captured and stored in volatile memory on the system. There is no onboard persistent storage of alarm video information; if the system power is interrupted, all stored video will be lost. Use of an external DVR system is recommended if permanent storage of alarm events is required.

Configuration and Setup of the T-DAR Software

Utilizing the T-DAR user interface, connect to the system to be configured and follow the steps as outlined below to configure the T-DAR system for operation. To conduct the set-up operation, the following items will be needed:

- An Ethernet-capable computer running the T-DAR user interface software
- A video monitor or television with video input
- The T-DAR controller software and camera calibration CD's that came with the system
- All associated cables and connectors for connecting devices such as computers, Ethernet hubs, and monitors to the T-DAR controller (Note: a cross-over cable may be used for direct PC/Laptop to the Control Unit)

Once these components have been supplied and properly connected, the T-DAR system may be powered on. The following steps will complete the set-up process.

1. Connect to the T-DAR controller using the IP address on the label on the inside of the controller door. (Or with a serial connection-see Connection above.)
   a. The lower left corner of the user interface displays the connection status. If a connection can not be made, please refer to the troubleshooting section for further assistance.
2. On the monitor tab in the user interface, change the Display mode to Show Camera Views.
3. Observe the video monitor and note the change in the video on the screen when this change is made.
   a. If any video signals are missing, or if any of the signals are rolling or noisy, please refer to the troubleshooting section for further assistance.
4. If a T-2000 two-door system is to be set-up,, each Portal is set-up independently. After set-up of Portal 1, change from Portal 1 to Portal 2 using the pull down box and repeat step 3.
5. In the user interface, change tabs to the Setup I/O tab
6. Set the time and date on the controller
7. Give the T-DAR system Portals a logical name in the Portal Name space
8. Verify that all of the alarm devices are enabled (checked) and that the Alarm Timeout is at least 5 seconds.

9. Click on the initial set-up page and draw a green line at the base of the door jam. This will automatically set the proper regions of interest
10. The System should now be operating and ready for testing. (See testing the System Pg. 51)

USER INTERFACE

The T-DAR User Interface (UI) software consists of seven tabbed pages labeled as follows; Initial Set-up, Monitor, Setup I/O, Installer I/O, Installer Camera Settings, System Log, and Advanced. The User Interface Tab pages are navigated by a series of tabs and menus. The tabs control the configuration, setup and monitoring of the system. The menus provide options to configure connections, save/load settings, and perform advanced level debug commands.

Tab Pages
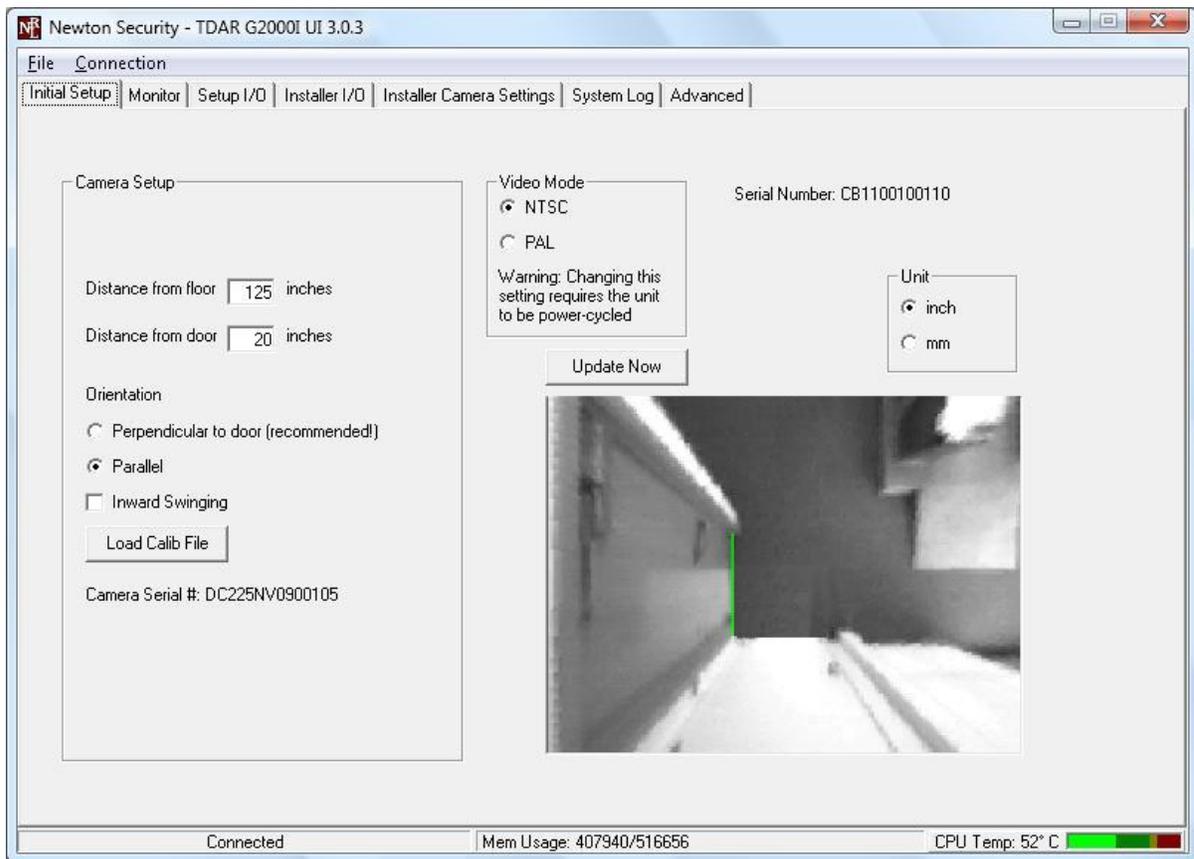
Figure 20 – Tab Pages

File Menu
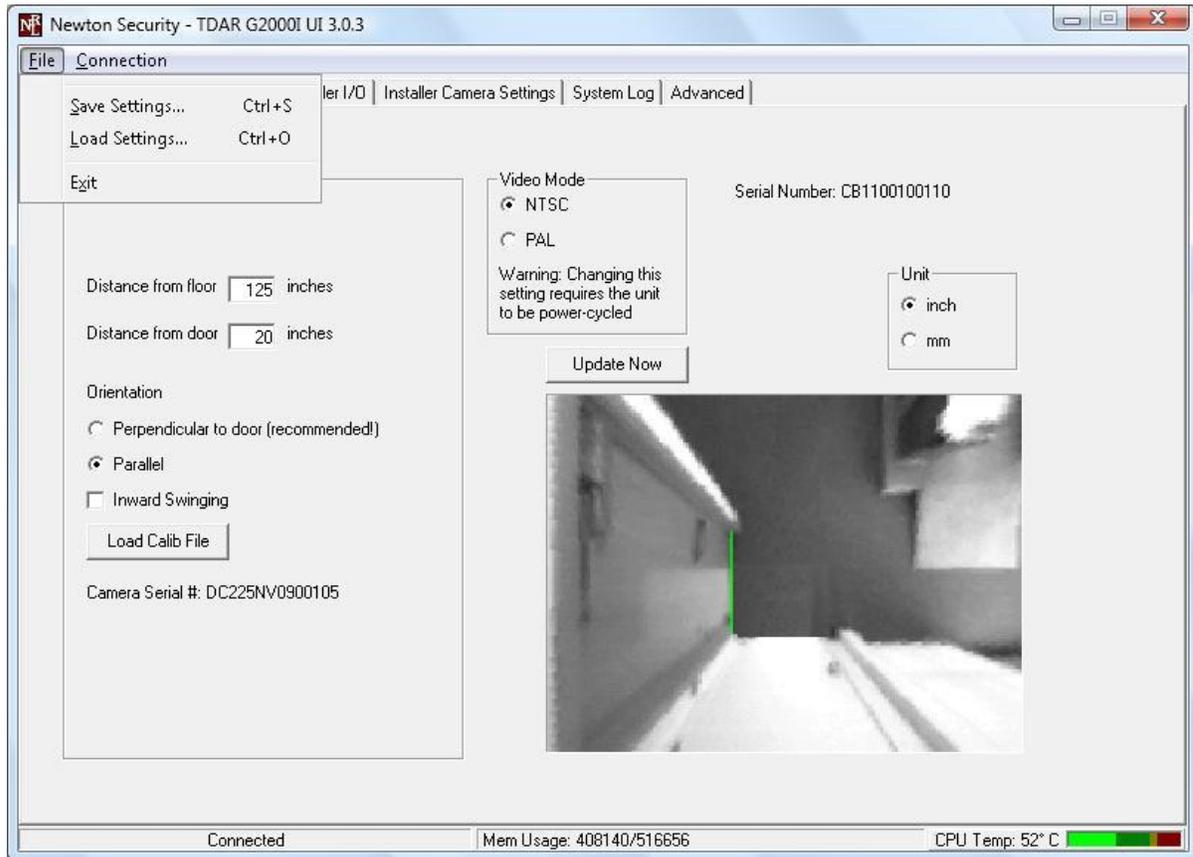
Figure 21 – File Tab

Selecting **FILE** from the menu, opens a window that allows the options for saving and restoring settings. These settings can be stored in another computer. In the event of having to restore the software, any configuration adjustments can be recalled from this file.

Save Settings

The **Save Settings** option compiles all the user configurable settings into a file to be saved for system back-up. This file has the ".nlc" file extension. This file should be saved to the computer designated to be host for the User Interface. A copy of multiple T-DAR system settings files should be stored and maintained centrally. It is recommended that the user defined logical names be assigned to the files, such as "Door 56.nlc" to avoid confusion.

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 location of the desired file and click **OK**

Exit

Clicking the Exit button closes the User Interface. The T-DAR will continue to run and perform security inspections even with this interface disabled. Settings and parameters that have been changed with the User Interface will persist while disconnected. The Host computer will be completely removed from and have no communications with the operating unit.
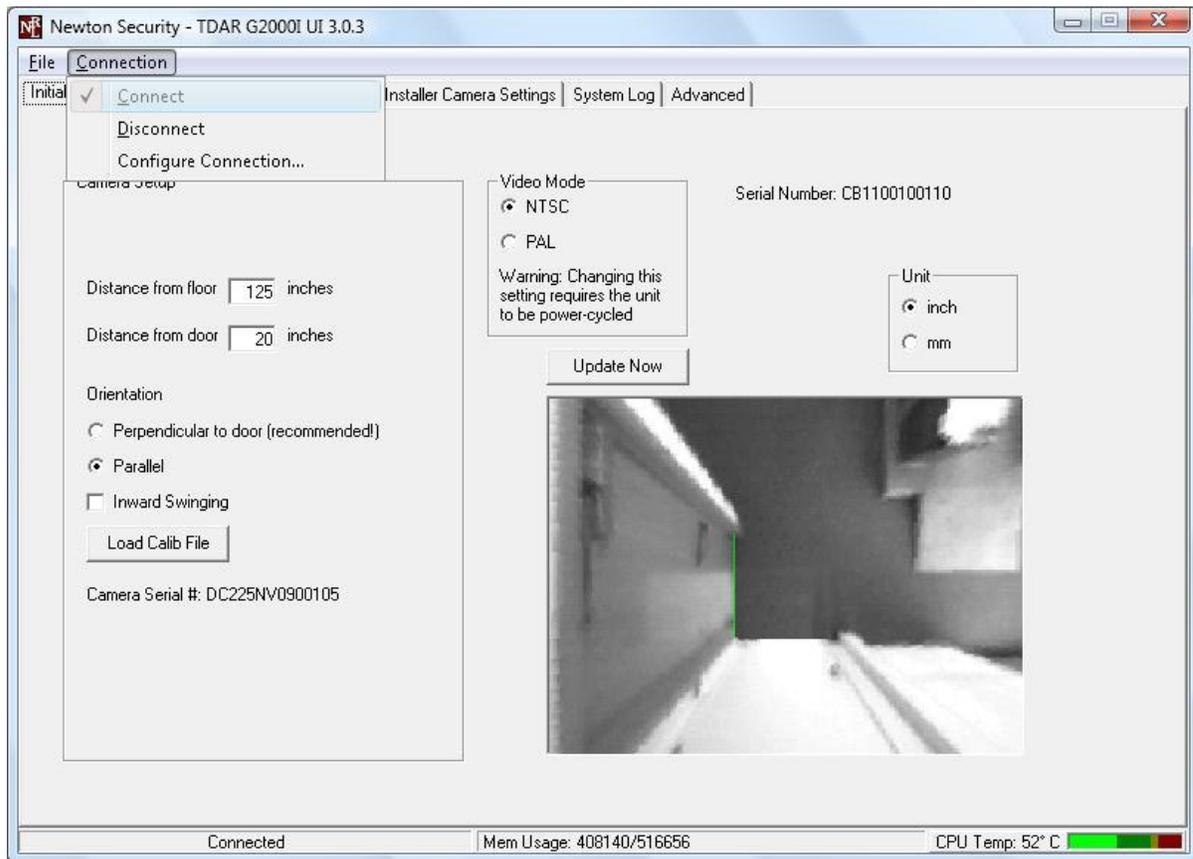
Connection Menu

Figure 22 – Connection

Connect

The connection menu establishes communication between the UI application and the T-DAR hardware. A connection must be established before proceeding to the run menu or before performing subsequent UI operations. If the T-DAR IP has been previously configured, selecting *Connect* from the menu will enable the User Interface. Once enabled, changes may be made to the connected unit.

Disconnect

From a connected or enabled User Interface, *Disconnect* may be used to close the connection with the T-DAR. The ability to make changes to the unit ceases, but the User Interface remains open on the Host computer. This is a convenient method to troubleshoot connectivity problem.

Configure Connection

This selection allows for adjustment as to how the T-DAR connects to the host computer. Connections may be made via addressable IP or serial connection. The option for *Always Connect on Start Up* is also provided.
   *For more details please see the **Configure Connection** section on Page 47*
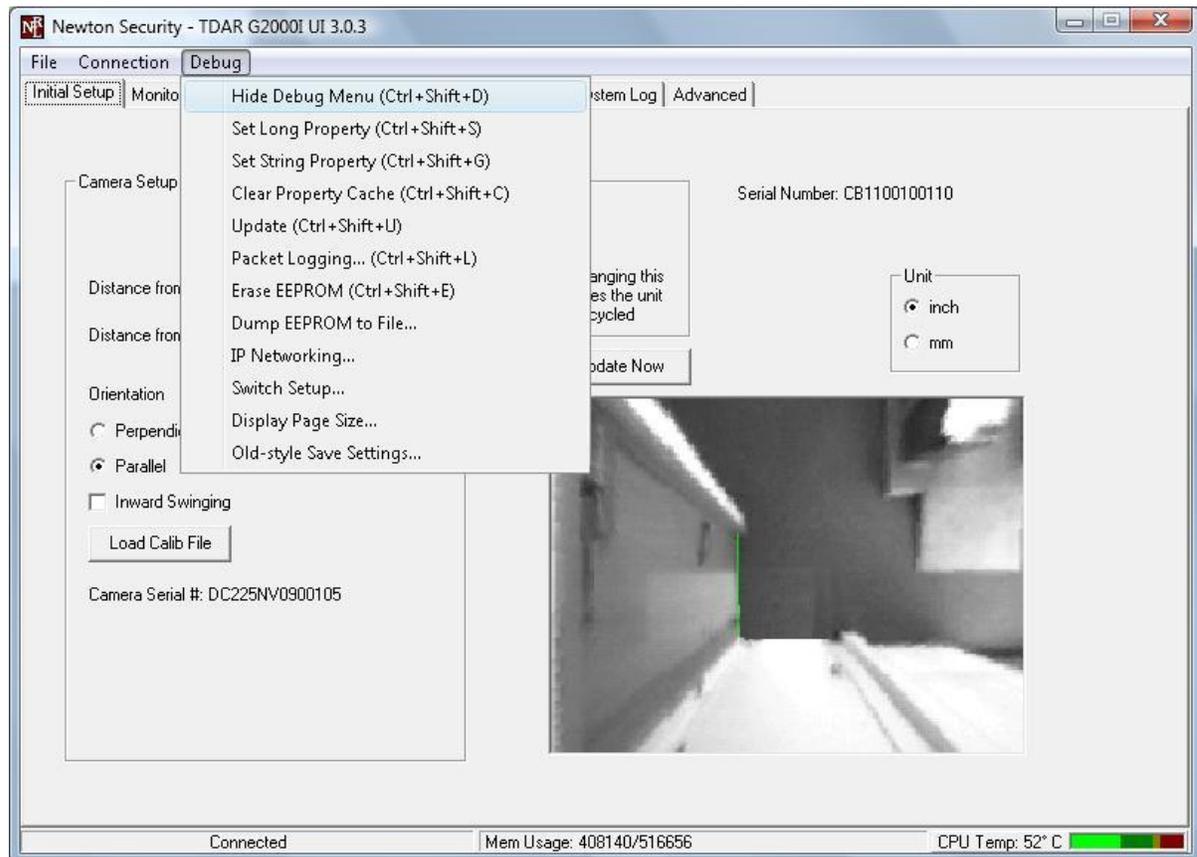
Debug Tab:

Figure 23 - DeBug Tab

Hide Debug Menu
This allows you to hide the Debug menu. The Debug menu is not for general use, it is designed to be used by the system Admin to troubleshoot the system. Do not make any changes using this menu if you have not been properly trained. Unexpected behavior by the T-DAR system may result if items on this menu are not properly utilized.

Set long and String properties
The *Set long and String properties* allows you to manually enter values for properties, which are not accessible with GUI. (Consult manufacturer for commands)

Clear property Cache
This clears all long and string properties stored in temp memory

Updates
The *Update* function is currently disabled.

Packet Logging
The *packet logging* function logs all data, and commands sent from UI.

Erase EEPROM
This function erases all current setting and restore unit back to factory defaults.

Dump EEPROM
This feature allows you to save the current EEROM setting to a file, for technical analyst/troubling support from manufacturer.

IP Networking
IP Networking allows you to change the IP address, subnet mask, and gateway that you unit uses to connect to your company internal network.

Switch Setup
The *Switch Setup* function is currently disabled.

Display Page Size
The *Display Screen size* function shows screen resolution.

Old-Style saves settings
This is another way to save settings to a file.

Initial Set-up

The initial Set-up tab is the most important tab in the UI. Here the technician will enter the camera height, Distance to floor, orientation of cameras, load camera calibrations, and the most important element draw the Green line (line of demarcation) for automatically setting up the users regions. Here the serial number and IP address of the unit will also be found. Until all of the fields are properly filled out on this tab you will not be able to move to any other tabs in the UI to complete the installation.
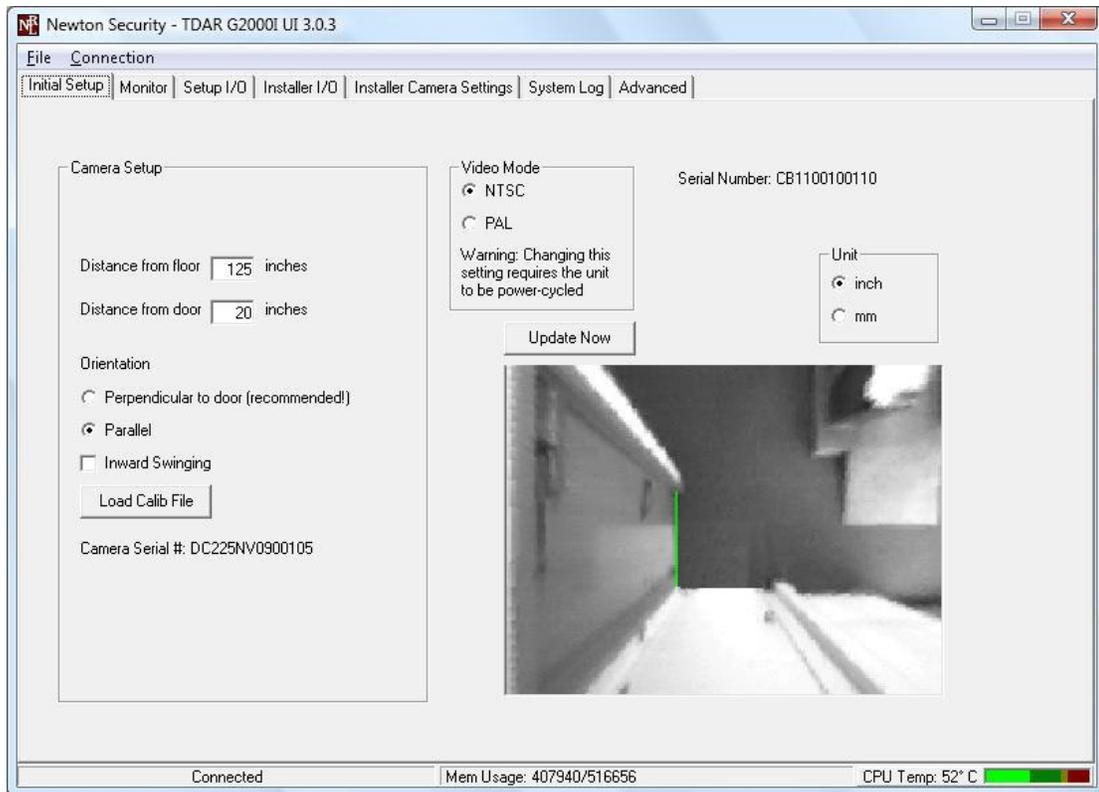
Figure 24 - Initial Set-Up Tab

Camera set-up

Here the technician will input various distances that the cameras are place away from the door and the floor. Also you choose the orientation of your cameras and load the calibration files. (*See stereo head placement chart for optimal placement*)

Video modes

Here the installer picks between NTSC and PAL depending on the type of camera and video system they are using

Green Line

With the crosshair draw a green line at the base of the door, which the unit is installed (as shown). Drawing a green line will automatically set-up the regions for scanning.

Monitor Tab

The Monitor page consists of a various menus that allow the user to change between cameras and camera views. Below is a list of the various camera views available for selection by way of radio buttons. Also on this page is an Alarm Reset button for each Portal, as well as statistics for each Portal. The statistics may be reset using the Reset Event Statistics button on the Setup I/O page. There are no installer configurable items on this page.
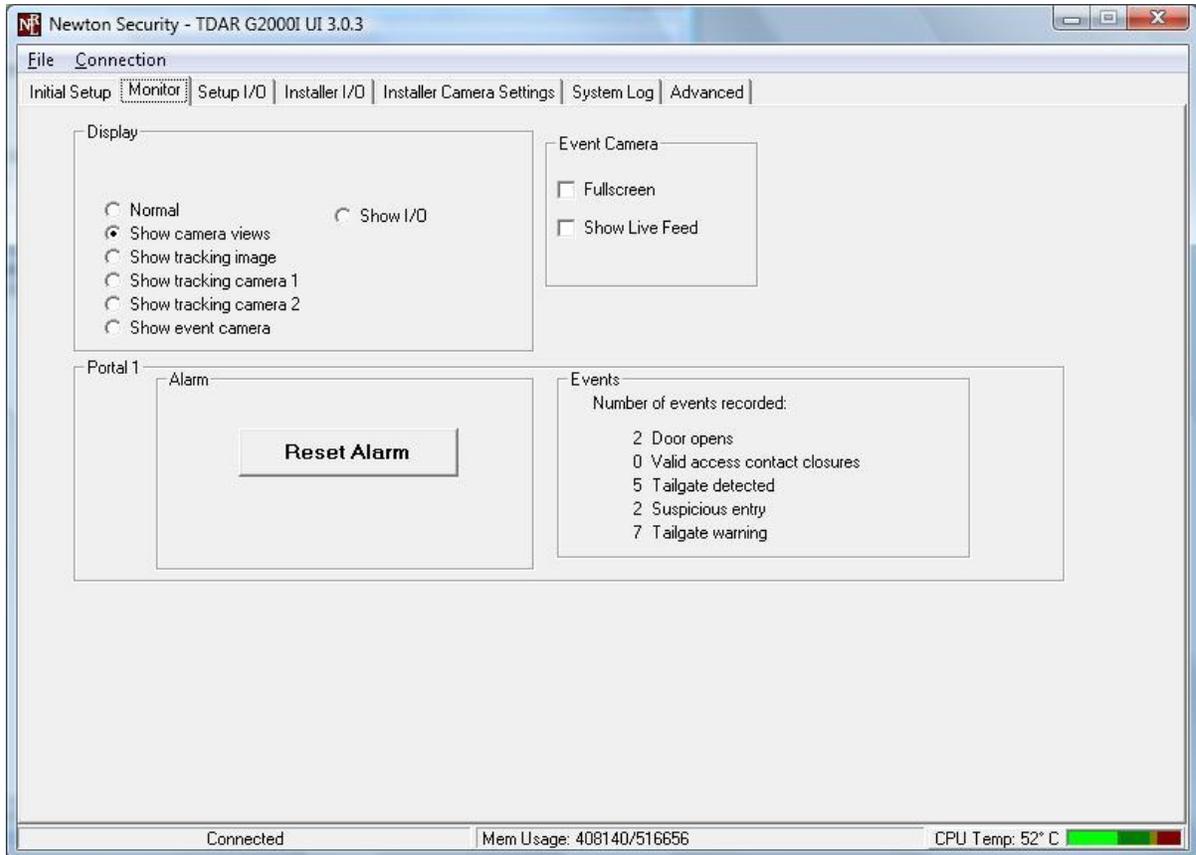

Figure 25 – Monitor Tab

Display

The *Display* section of this page controls which video displayed on the monitor. The settings are unique to the portal being monitored; the output chosen will be the video that is recorded during a security event.

Normal	No video output, event video out during alarm
Show Camera Views;	Camera Head images, tracking image and event video
Show Tracking Image	Displays tracking image
Show Tracking Camera 1	Camera Head image 1
Show Tracking Camera 2	Camera Head image 2
Show Event Camera	Portal 1or 2 Event Camera video
Show I/O	Displays the status screen for I/O diagnostics

Alarm and Events

A button for manually resetting the alarm is available in the UI. Clicking **Reset Alarm** will clear an alarming security event and return the system to its normal monitoring mode.

The **Events** counter is a running log of the security scenarios being monitored by the T-DAR. Events are characterized by access events, door cycles, and security violation types.

Event Camera

Two check boxes are available for changing the properties of the event camera view in the normal display mode. These are as described below:

- Full screen mode allows the user to select a full sized image for event video display. Unselecting this feature will cause a quarter-screen image to be displayed instead.
- 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 event playback occurs.

Setup I/O

The Setup I/O page consists of a pull-down, an Alarm section, a Reset Event Statistics button, a Change Admin Password button, a Portal Name box, a Time section, and a Policy section. These items are detailed below.
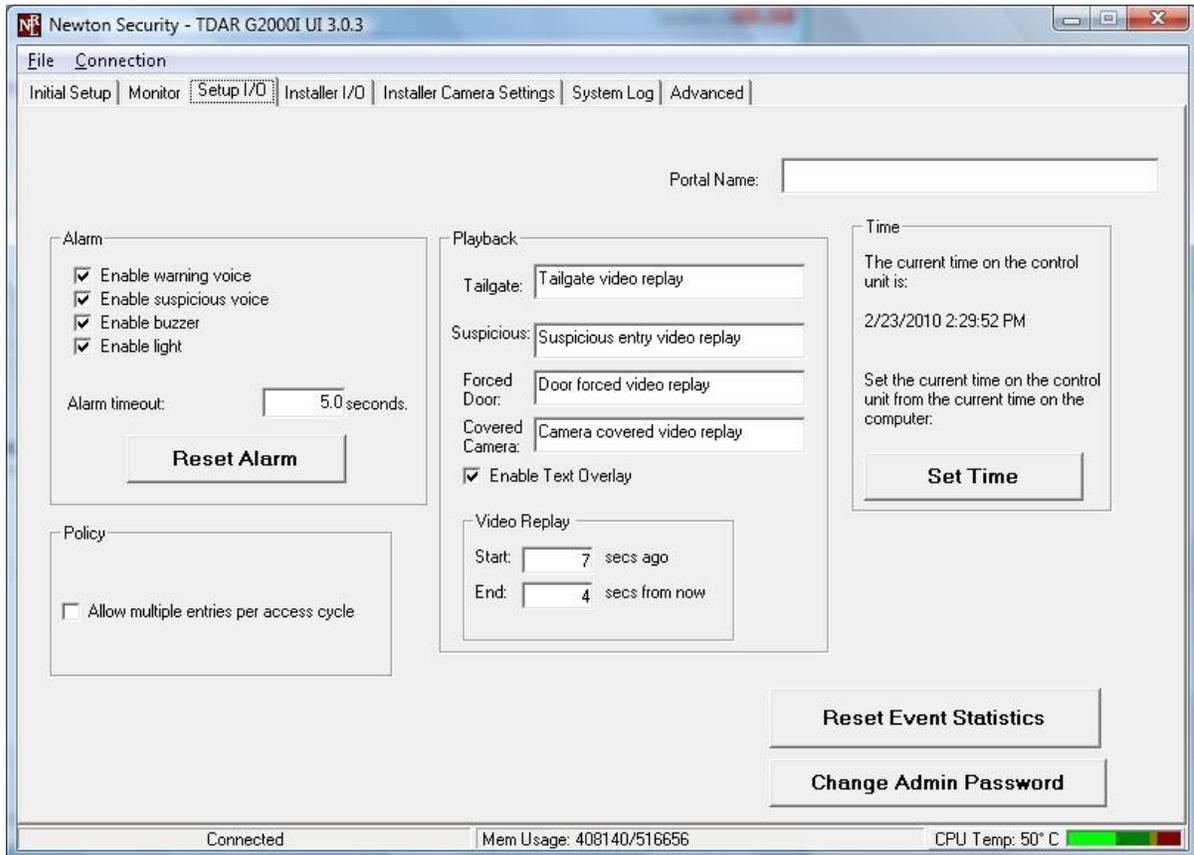

Figure 26 - Set-up I/O

Alarm

The alarm section consists of check boxes that allow the user to disable all of the various alarm annunciation provided by the Annunciator Unit. There is also an Alarm Timeout box that defines how long an alarm will annunciate for before resetting. Setting this value to zero causes the unit to be in manual reset mode only. Below the Alarm Timeout is a Reset Alarm button that resets the T-DAR alarm when clicked.

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Policy

The Allow Multiple Entries per Access Cycle check-box is used to set the T-DAR system to stack cards. Card stacking to the ability of T-DAR to recognize multiple valid access signals and to retain that number for as long as the door is open or 15 seconds has passed, whichever comes first. As an example, if an authorized user presents a card to the system and then opens the door, two more people can also present their cards and walk thru the door without T-DAR alarming. However, if the second person waits too long, or if the door is allowed to close, then the card stack will be zeroed out. This function must e selected if multiple entries are desired OR there is not an actual door, such as in a hallway/corridor application where door status cannot be monitored.

Playback

The Playback section lists the four 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 that is displayed in the event playback video image. Additionally, there is a check-box that is 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 determine the length of the event video replay image clip that is displayed by the system. The Start time defines how long *before* the actual alarm is received that replay starts from, and the END time determines how long *after* the alarm was received the video is recorded.

Portal Name

The Portal Name box allows the user to define a specific logical name to a door, such as Door 569, North Entrance. This name will be displayed in the event video playback loop. Once a name has been entered here, all of the Portal Control pull-downs will reflect the change in the name.

Time

The Time section allows the user to select the time that is maintained in the controller. This time stamp is also displayed in all event video images. Clicking the Set Time button will set the time on the controller to be the same as the PC used to run the UI. It should be noted that daylight savings time corrections must be performed manually.

Reset Event Statistics

The Reset Event Statistics is used to reset the statistics located on the Monitor page.

Change Admin Password

The admin password is the second highest level of access available to users. This allows access to the Monitor, Setup I/O, and Setup View tabs of the system. To configure the password, the button is clicked and then a password is typed either on the on-screen keyboard or on the host computer keyboard. If a mistake is made, use the backspace key to remove characters one by one, or the clear key to clear all of the characters simultaneously. Once the password is entered, press the OK button to make password permanent.

Installer Camera Settings

The Installer Camera Settings page consists of a pull-down, an Image Type section, an Update Now button, a Viewing Window, a Physical Setup section, a Sensitivity Section, and a Configuration Section. These are detailed below:

Figure 27 - Installer Camera Settings

Image Type

The image type section is used to select what camera is viewed when the system process is stopped. To stop the system process, click on Run on the Menu bar at the top of the screen and select Stop Running. This will make images available in the Viewing Window, and different images can then be selected using the associated radio buttons.

Update Now

The update now button causes the system to update the image in the Viewing Window when the button is clicked and system processes are stopped.

Viewing Window

The Viewing Window displays the images selected in the Image Type section when the system is stopped.

Physical Setup

The physical setup section consists of two buttons used to control the camera calibration process. The Calibrate button is used to teach the system about the scene that is being monitored. When the system has learned the environment, the tracking image will become stable and black unless objects are detected. The Clear Calibration button is used to expose the raw tracking image. Using this raw tracking image, the installer can determine the effect of various objects in the field of view on the tracking system. Also, refer to the Clear Calibration section for additional information on use of the Clear Calibration button when using a Door Position Sensor.

IMPORTANT NOTE
Calibrations must be performed when the scene is completely stable. The scene must be stable for several seconds after the button is clicked, until the image stabilizes at a black level.

Camera Calibration

The camera calibration section contains a Load from File button that will allow the user to load camera calibration files into the controller. Pressing the button will open a file explorer window that will allow the user to specify the location of the calibration to be loaded. After the file is selected, the controller will need to be restarted (mains power interrupted) to enable the new files.

Sensitivity

The sensitivity section contains slider bars for maximum head size, cart sensitivity, minimum head size, and crawler sensitivity. Adjacent to each of these sliders is a numeric box that shows the numeric equivalent for the slide position. The values may be adjusted by either manipulating the slider or through direct entry of the values in the numeric box. The slider bars are detailed as follows:
About Settings:
The use of stereo machine vision analysis allows the system to assign a fairly 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 to place a cross-hair on an object

Maximum Head Size

The maximum head size slider controls the value that determines the largest object that can be called a head without allowing more than one person to proceed through the portal. A small amount of trial and error may be necessary to account for items such as hats and very large hair styles, as well as the use of hooded parkas.

Cart Sensitivity

The cart sensitivity slider controls the value that determines the level of sensitivity used when comparing carts to possible persons.

Minimum Head Size

The minimum head size slider controls the value that determines the smallest object that can be called a head without incorrectly identifying carried objects as a head.

Crawler Sensitivity

The crawler sensitivity slider controls the value that determines the size a specific object must be larger than to be called crawler (crawling person).

Configuration

The configuration section is used to define the regions of interest within the scene that are monitored for tracking activity. The regions are selected by clicking on the adjacent radio button, and are then defined by drawing a box in the Viewing Window with the mouse pointer. Additionally, the values may be entered in the numeric box adjacent to each region.

Drawing a Box

To draw a box in the Viewing Window, the image displayed must be one of the two unwarped images. An unwarped image is simply an image that has had the lens distortion (fisheye) removed. Once an unwarped image is selected, position the mouse pointer over the top left corner of the area you want to draw the box around. Click and hold the left mouse button as you drag the box to the size and shape you desire. Release the mouse when the box is complete, and then move the mouse pointer out of the image. Accidentally clicking within the perimeter of the box will instantly resize the box to the exact location where you clicked.

Tailgating

The region of interest for tailgating should be oversized, meaning that it should be wider and taller than the door and extend out into the secure area several feet. It is acceptable to simply draw a box around the entire area for tailgate detection.

Crawling

The region of interest for crawling should be slightly wider than the door and only extend up the wall approximately three feet and extend into the area at least three feet.

Entry from Public/Exit to Public

These two regions should be identical. This can be accomplished by drawing a box for only one of the regions and then manually entering the numeric values identically in the other region. The region should be all the way up the door/wall (the same as the tailgating region) and should stop inside the door approximately two to three feet.
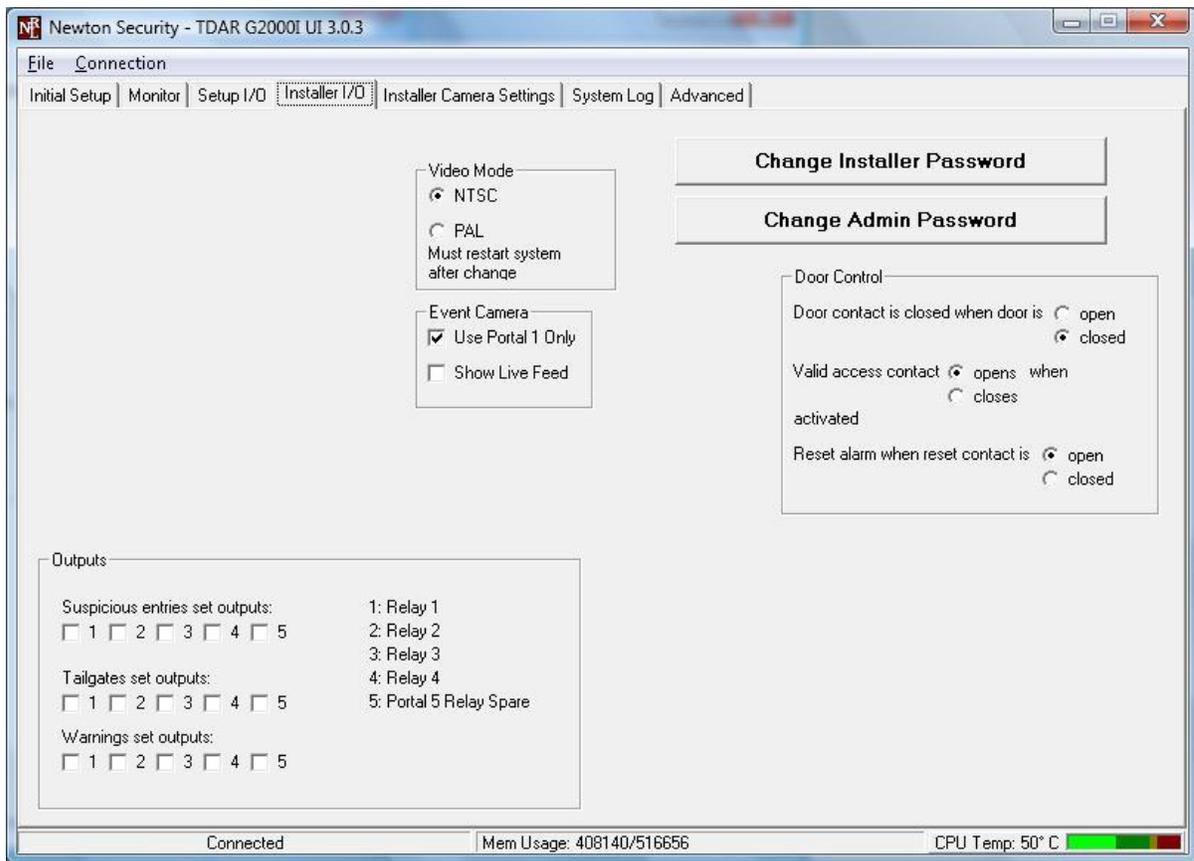
Installer I/O

Figure 28 - Installer I/O

The Installer tabs are for configuring the interface with the other components of the installed security system. Provisions for configuring the Outputs, Door Setup and Sensitivity are accessed from these pages. These pages are password protected for Installer and System Administrators use only.

Portal Selection

On multi-door systems, the selection and setup of the door being viewed is controlled by the "combo-box" next to the portal name on the tab page. Clicking the button (downward arrow) next to the name will show the other portal available. Click on the desired portal name to select that portal. Any changes in outputs or controls are applicable only to that selected portal.

Door Control

The configurable options of the ***Door Control*** section allow for adapting T-DAR to the existing peripherals to correctly trigger the unit. The logic state for these devices, as used by the T-DAR, is selected by clicking the check box that reflects the installation. For example, if the door contact passes continuity when the door is closed the door contact is said to be ***closed*** when the door is closed. The same logic is true for the ***Access Contact*** and the ***Alarm Reset***. If there is some question about the setting here, use the following steps to diagnose the issue:

Door Contact
- On the monitor tab, observe the count for door opens (reset the counts on the setup I/O page if necessary).
- Open and hold the door.
- If the door opens count increments by one, the switch is set correctly.
- If the door open count does not increment, close the door.
- If the door open count increments now, then the switch is set incorrectly.
    - o If the count does not ever change, switch the display mode to Show /O and observe the display of the I/O function on the screen. I/O assignments can be seen in Figure XX, page XX.
    - o If no changes are observed on the screen during testing, verify wiring of device and controller.
- Set the switch correctly and re-test.

Valid Access Contact
- On the monitor tab, observe the count for Valid Access Contact (reset the counts on the setup I/O page if necessary).
- Open and hold the door.
- If the Valid Access Contact count increments by one, the switch is set correctly.
- If the Valid Access Contact count does not increment, close the door.
- If the Valid Access Contact count increments now, then the switch is set incorrectly.
    - o If the count does not ever change, switch the display mode to Show /O and observe the display of the I/O function on the screen
    - o If no changes are observed on the screen during testing, verify wiring of device and controller.
- Set the switch correctly and re-test.

Outputs

There are five relays on a CB-110 and six relays on a CB-210 for connecting signals through the T-DAR. The first two relays are for Portal 1, **Relay Portal 1-1** and **Relay Portal 1-2**. Portal 2 has the next two relays, **Relay Portal 2-1** and **Relay Portal 2-2**. There is one spare relay for each portal, **Portal 1 Relay Spare** and **Portal 2 Relay Spare**. Activating the relay is caused by enabling the selected relay number to make contact when an alarm event is present.

For example selecting **Suspicious entries set outputs** check box 1, will close **Relay Portal 1-1** when a suspicious entry alarm condition exists. Likewise; when **Warnings set outputs** check box 5 is clicked, **Portal 1 Relay Spare** will close for that event.

Any combination of relays and triggering events may be selected. There is no specification as to how the relays are to be implemented. Regardless of whatever the control situation dictates there are three ways to close any of the relays.

Camera Geometry

Camera Geometry defines the physical placement of the stereo tracking head in relation to the door under surveillance. The installation details for height above floor, camera center from door and door actual width must be entered in these text boxes.
Please refer to figure 8 for door installation specifics

Change Installer Password
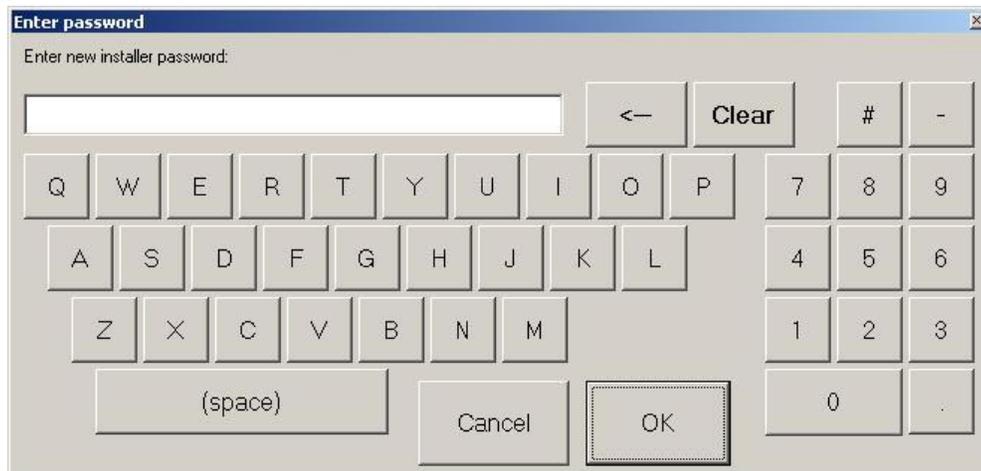
Figure 29 - Installer Password

Change Administrator Password

Same process as changing **Installer Password**

System Log

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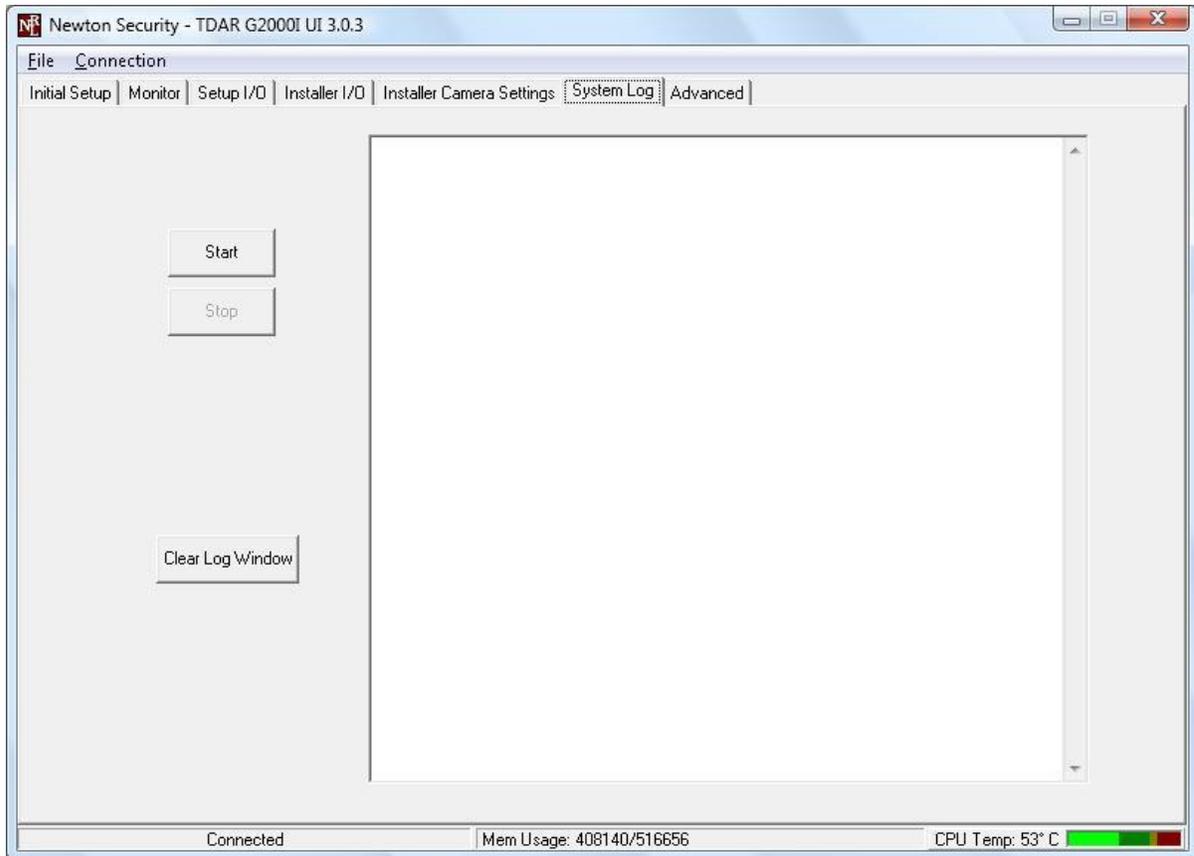

Figure 30- System Log

Advanced Tab

The Advance page consists of a number of user definable options that can override several of the standard controls of critical system functions detailed in previous tabs. These items should only be adjusted at the direction of qualified Newton Security Personnel. No Additional description of these functions is being provided here. Change the red tab below to read:

Caution! Settings on this tab are to be modified by trained personnel only
Incorrect changes may adversely affect system performance
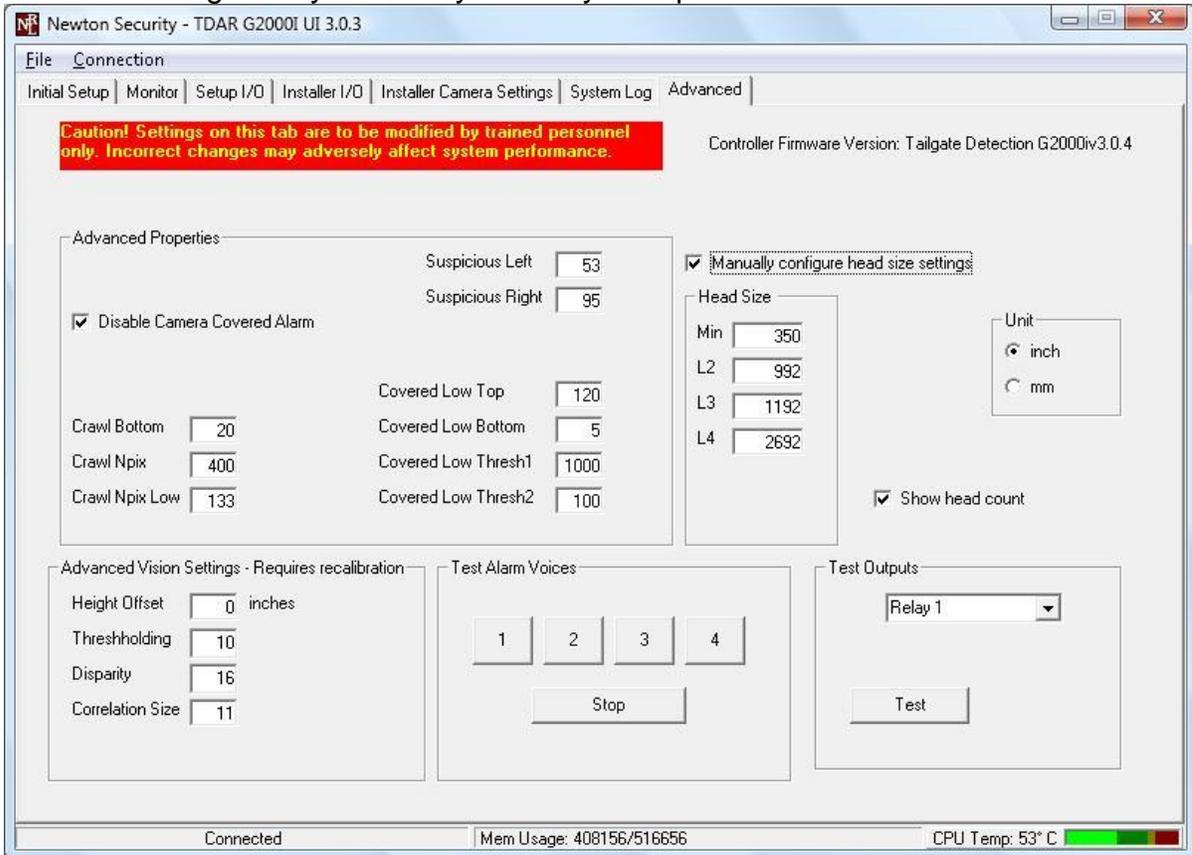
Figure 31 - Advanced

OPERATION

Important Safety and Warning Information

⚠	**WARNING Electrical Shock Hazard with Cover Removed**

The T-DAR system may contain, produce and present the hazard for electrical shock or burns with the cover removed. There are no user serviceable parts under the interior panels. Only trained authorized personnel may perform maintenance or repair.

Underwriters Laboratories Inc. has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested for fire, shock and casualty hazards as outlined in UL's Standard for Safety UL 60950-1. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product. **UL MAKES NO REPRESENTATIONS, WARRANTIES OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT.**

Units are for use in **RESTRICTED ACCESS LOCATIONS.**

Critical elements to maintain a properly operating T-DAR installation

Once correctly installed, the T-DAR system does a superb job of detecting violations of access control security systems. In order to accomplish this task, the T-DAR requires several critical elements and/or signals from the door and the access control system as detailed in this manual. If, after installation, environmental or access control signal conditions become degraded, the T-DAR system may not operate properly. Consult the Installation/Setup sections of this manual for the correct values for these elements. Some of the most important factors that could cause improper operation are:

1. **Additional or changed programming of the access control system may cause changes in its output to the T-DAR system.**

   A. **Valid access grant signals must be immediate.** The valid access signal from the access control system must by occur at the same time or before the door is unlocked to allow an entry and must have duration of at least 300 ms. In some instances this may require the use of a timer module to allow for adequate lock activation time. *In all circumstances, if a person crosses the door threshold prior to the receipt of a valid access grant signal by the T-DAR unit, that person will cause an alarm by the T-DAR system.* Especially in the case of installations where multiple valid entries are allowed on a single door open cycle, it is critical to confirm that the valid entry signal is reaching the T-DAR unit prior to a person crossing the door plane and that a separate signal for each valid entry is received by the T-DAR unit.

   B. **Door contact/door position switch signals must be immediate.** These signals must be sent to the T-DAR unit at the same that the door is opened. Unless it can be verified that the access control system can give immediate door open signals, the T-DAR unit must have an independent circuit for this function that allows isolation from the access control system. It is recommended that mechanical switches of the roller and plunger types be avoided in favor of magnetic switch door contacts.

2.   **Lighting Conditions may have changed.**

      A.   **Adequate and consistent lighting are required for accurate operation of the T-DAR system.** 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 and track targets in all areas of the detection pattern.

      B.   **Sunlight exposure to the protected area may have changed.** Direct sunlight exposure in protected areas can under certain conditions cause improper operation of the T-DAR unit and may need to be mitigated.

3.   **Power to existing event cameras may have changed.**

      Event cameras on multi-door systems (T-2000) must be powered with ac (alternating current) on the same leg of the 3-Phase line. This allows the independent video signals to be synced. Failure to have synced video signals will result in distorted and unusable event video replay clips. Single door systems (T-1000) may use DC (direct current) powered event cameras.

4.   **Temperature conditions may have changed or the T-DAR unit may need service.**

      The T-DAR units must be placed in areas that maintain suitable temperatures to operate properly. Consult the Product Description or Specifications portions of this manual for suitable conditions for each T-DAR component. The CB100/200 Control Unit utilizes long life fans but these may need service after a number of years.

      Note: The visible LED's on the side of the CB/100/200 provide visual indication of over temperature conditions. The Status and Alarm LED's flash yellow if the CB100/200 is over the recommended temperature and flash red if the temperature limit has been reached and the T-DAR unit is no longer functioning. In addition, the S100 Annunciator red signal light flashes continuously if the T-DAR unit has shutdown.

Front Panel Indicator LED's on the CB110/210

LED #	Use		Description
1	T-DAR Status	Off Flashing Orange 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*
3	Processor Temperature**	Green Orange Red	Less than 70º C - Normal 70ºC to 74º - Running High Over 74ºC – Overheating
4	Power	Off Green Red	No Power to the unit Power supplied and breaker is not tripped Power supplied and breaker is tripped

Figure 32 - LED Indicators

* LED 2 may take a few seconds to indicate an Ethernet connection or to turn off after the connection is removed.

** If the Processor temperature is over 70ºC, the Annunciator will produce a timed alarm signal

Programming the Annunciator

Voice Announcements may be changed to suit the installation.
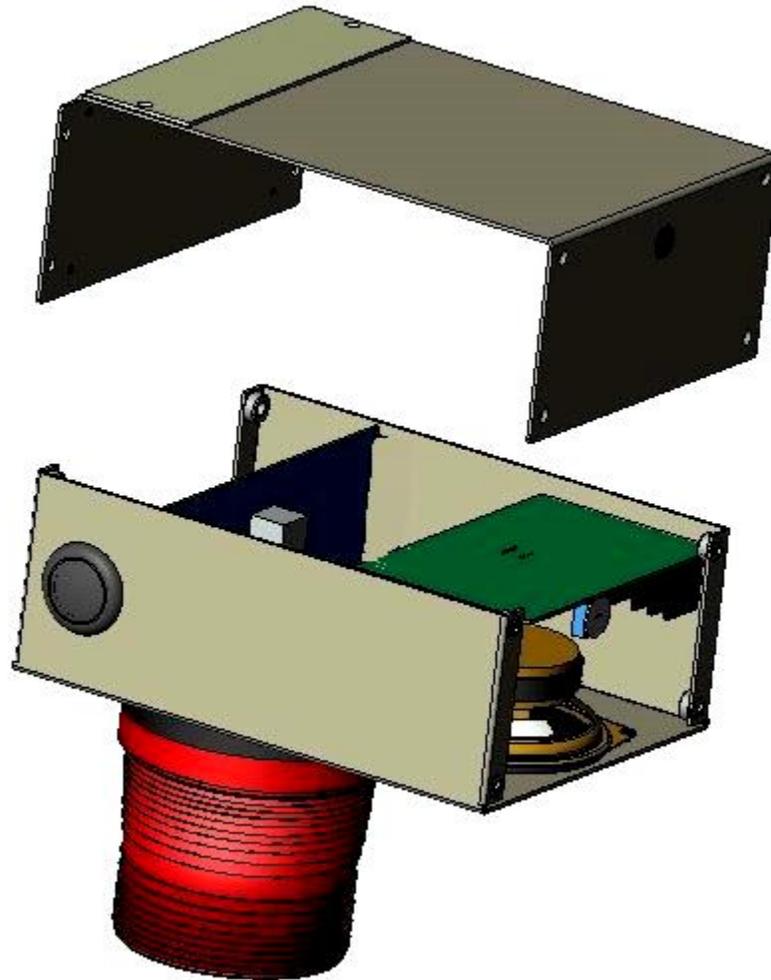
Figure 33 - Annunciator Internal View

To change the Voice Announcement via microphone:

b) Gain access to the printed circuit board within the Annunciator. Remove the (6) 6/32 Phillips head screws that attach the top cover.

c) Ensure that JP1 is set *MIC*., JP2 is set *REPEAT*, JP3 is set to *RECORD* and JP4 is set to *SIREN*.

d) Locate the record switch *SW1* in the rear right corner of the circuit board.

e) Select, via the one of the four *STR* DIP switches, the message you wish to record over. This message will repeat until its switch is restored.

f) Depress and hold the record switch *SW1* and speak the new message clearly into the unit.

g) Release the record switch when complete. Your new message should now be playing repeatedly.

h) If satisfied with the new message, restore the *STR* DIP switch selected for reprogramming to its normal off position.

i) Replace and secure the cover with the (6) 6/32 Phillips head screws.

***Please see the figure on the following page for component locations.
(Shown in default Microphone Programmable position)***
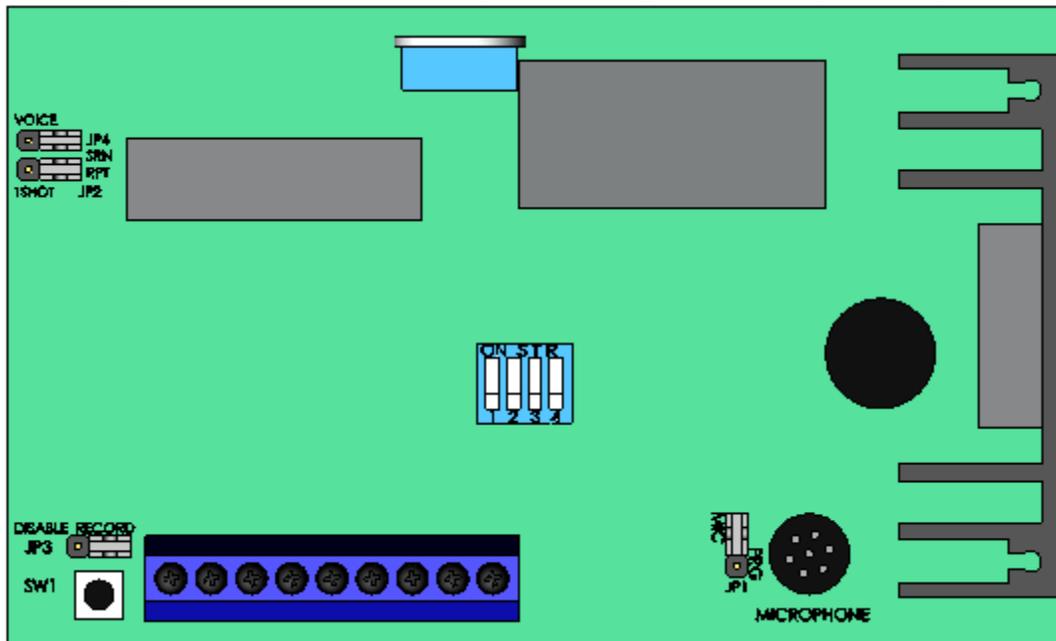
Figure 34- Annunciator PCB

To change the Voice Announcement via audio input jack:

a) Gain access to the printed circuit board within the Annunciator. Remove the (6) 6/32 Phillips head screws that attach the top cover.

Maintenance

Periodically, the unit should be inspected 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

Troubleshooting guides

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

Tips for getting a good image

- ♦ Make sure that the light is consistently illuminated across the inspection area.

- ♦ Ensure the floor; walls and surrounding physical environment are free from bright reflections.

Use Stereo Tracking Heads with longer focal lengths to produce more accurate images. Check with your Newton Security Inc. Authorized Distributor regarding availability of Stereo Tracking Heads for special installations.

Lighting

The minimum acceptable amount of lighting for proper operation of the T-DAR system is 30FC (foot candle) or 300LUX measured approximately 48 inches above the floor and at arms length from the body. If the lighting is below this level, it is required that this be increased to a level comparable to the guidance issued by the Illuminating Engineer Society of North America (IESNA) for Performance of Visual Tasks, High Contrast, which calls for approximately 30FC to 50FC (300 to 500LUX).

Problems Communicating with the T-DAR	
♦ The user interface will not connect with the T-DAR System	Try the following first: ♦ Wait 30 seconds and try reconnecting. ♦ Check all connections to ensure they are connected correctly ♦ Make sure only one copy of the software component is running on the laptop or PC. ♦ Make sure you are using a crossover Ethernet cable ♦ Make sure your Laptop/ PC is set to 10.0.0. # with a sub –mask of 255.0.0.0 ♦ Try to connect using the COM port. Ref to Pg. 48 ♦ Turn off the computer, restart, and try again. If the above suggestions do not provide results, follow the procedures below to further troubleshoot communications: **Call your Newton Security Inc. Authorized Distributor** Arrange with your local distributor to substitute a working T-DAR unit and laptop to determine where the problem exists.

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 appropriate Imager Out terminal on the front panel of the T-DAR unit. This will allow you see what the Imager is seeing in terms of bright spots, reflections, and other illumination related problems.

♦ The Image Is Entirely Blue	♦ Make sure the BNC cable is connected properly to the Camera Head and to the Control Unit. ♦ Put your hand or a dark piece of paper over the Camera Head. If the live image does not darken, then contact your Newton Security Inc. Authorized Distributor. *
♦ The Image Is Black	♦ Make sure the BNC cable and Power Control cable is properly connected to the system unit and to the Camera Head. ♦ Point the Imager at a bright light. If the live image is entirely black, then contact your Newton Security Inc. Authorized Distributor.*
♦ Random Pixels Appear In The Image	This is commonly caused by electrical noise generated by motors and controllers connected to or near the T-DAR Control Unit or Camera Head/Cables. This random image noise can adversely affect performance and should be minimized. Use the following guide to try to isolate the cause of the noise: **STEP 1: The idea in this step is to determine what a normal image looks like for comparison. Try to electrically isolate the T-DAR Series to determine a known or normal visual pattern on the video monitor. If it is not possible to electrically isolate the unit at it's normal mounting position, take the T-DAR Series away from the area where inspections are being performed and connect it to another Camera Head. Determine the normal image.** **STEP 2: Determine the noise.** Reconnect the T-DAR normally Block the lens to produce a dark image so that you can see the electrically induced noise.

IMAGING PROBLEMS (CONTINUED)	
♦ Random Pixels Appear In the Video Output (continued)	Remove the unit from its current mounting- repeat Step 2. 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 suggestions until the source of the noise is discovered. **Note: A common solution is to isolate the ground from the grounds of heavy machinery.**
♦ The Image Is Too Dark	♦ Increase the overall light by moving the illumination source closer to the security area, or by increasing the number of illumination sources. ♦ Replace the Stereo Camera Head if problem persists.
♦ The Image Is Too Bright	♦ Decrease the illumination source. ♦ Replace the Stereo Camera Head if problem persists.
♦ The Image Is Blurry	You may need to: ♦ Clean the lens. A clean lens ensures that the images acquired by the Camera Heads are accurate. This is important to the performance. The lens can be cleaned 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. The possibility that the wrong head was installed for that portal always exists. Verify the correct head is being used, if correct; verify the height and placement are accurate.

All Monitored Events Are Failing

If a working installation suddenly returns failed inspections for all or most of the inspections, the T-DAR Stereo Camera Head has probably been bumped, or something has obscured the field of view. A change in lighting conditions is another possible problem area. Observe the video output results to help determine causes of failure.

♦ Check the lighting conditions	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.
♦ Check to see if the Stereo Camera Head is out of position	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

DETAILED SPECIFICATIONS - CB110/210/410

Power Specifications

Operating Voltage Range	**24 VDC ±10%**
Peak Voltage (Non-continuous)	**30 VDC**
Required Amperage	**10 Amps**

DC Input Specifications

Minimum Pulse Width	**0.4 mSec**
ON Voltage Level	**>10 VDC**
OFF Voltage Level	**< 2 VDC**
Input Impedance	**2.2 KΩ**
Minimum ON Current	**>10 mA**
Maximum OFF Current	**<0.1mA**
OFF to ON & ON to OFF Response	**0.2 mS 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**

Lower Power Panel Connections

Upper Panel
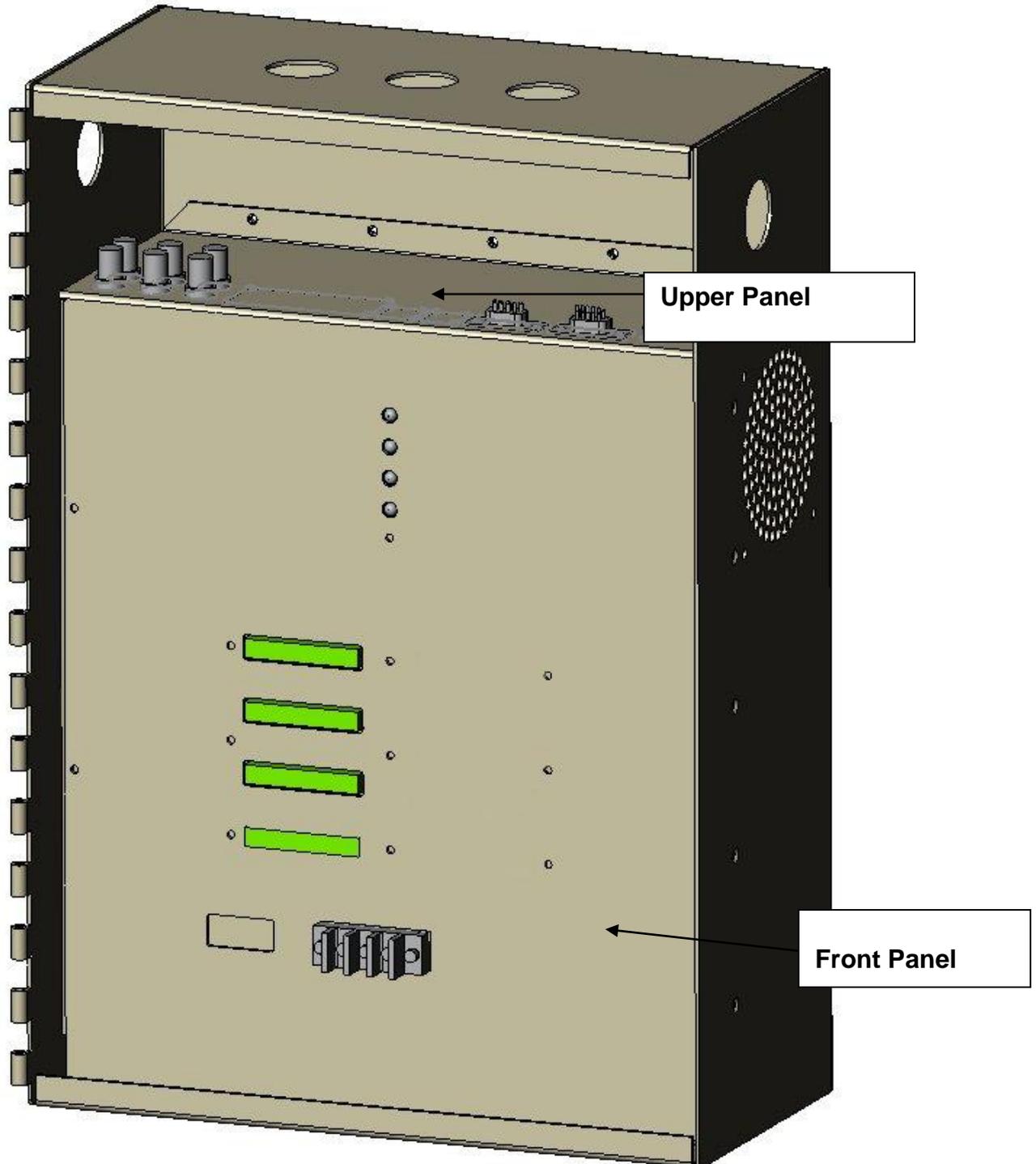
Front Panel

Figure 35 - Control Unit Connections

Upper Front Panel Connections
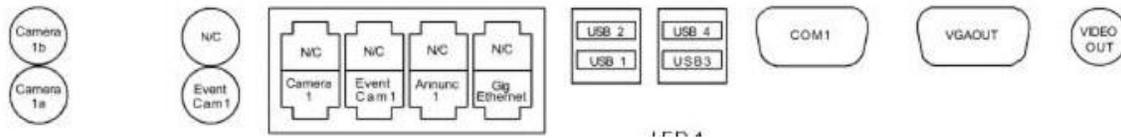
Figure 36 – Upper Panel Connections

Camera 1a: Input, BNC connector from Stereo Camera Head1, camera1

Camera 1b: Input, BNC connector from Stereo Camera Head 1, camera 2

Event Camera 1: Input, BNC connector from external Camera for Event Capture

Camera 1 RJ-45: Interface, Standard 10BaseT Cat-5 Ethernet cable to Stereo Camera Head for Power/Control

Event Cam 1 RJ-45: Not Used

Annunc 1 RJ-45: Interface, Standard 10BaseT Cat-5 Ethernet cable to Annuciator for Power/Control

Gig Ethernet: Gigabit Ethernet Interface, Standard Cat-5 Ethernet cable to Local Area Network (LAN)

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.

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

Front Panel Connections
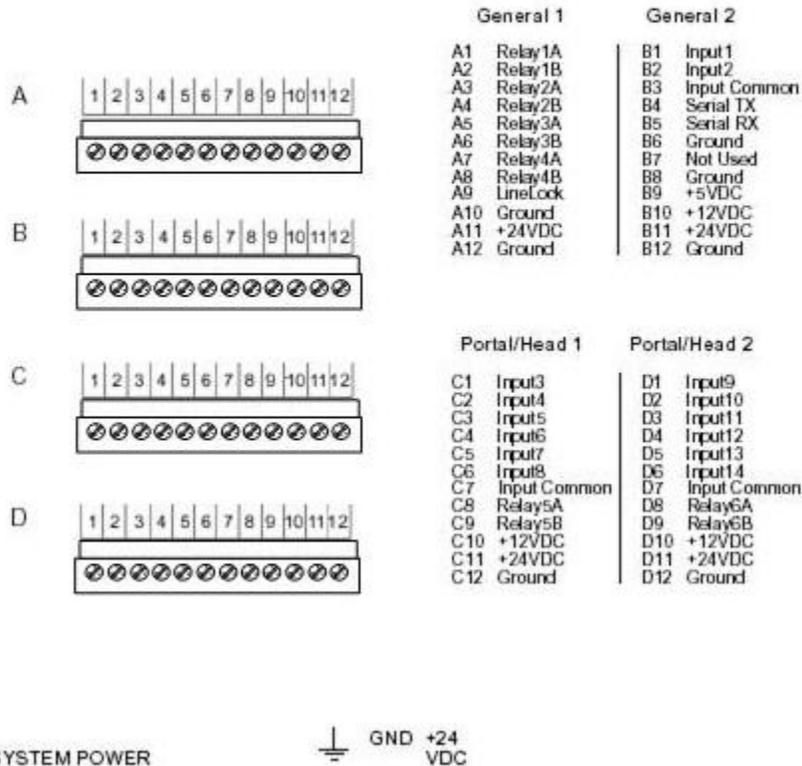
Figure 37 - Control Unit Connections

Phoenix Style connectors, top to bottom

CONNECTOR A, General 1
Pins 1-8: Relay 1-4 A&B, general purpose Form A relay contacts, normally open
Pin 9: Line Lock, for use with 6-30 VAC power for syncing to local power grid
Pin 10: System GND, for use with Line Lock
Pin 11: +24VDC
Pin 12: System GND

CONNECTOR B, General 2
Pin 1: Input, turns alarm off when triggered.
Pin 2: Input, turns alarm off when triggered

Pin 3: Input, Sets logic level for inputs on General Connector 2. Connect to Ground for Logic High (+12V=Trigger) on inputs. Connect to +12V for Logic Low (GND = Trigger).
Pin 4: Rs232 Output, serial data
Pin 5: Rs232Input, serial data
Pin 6: System GND
Pin 7: Not Used
Pin 8: System GND
Pin 9: Output, System +5VDC
Pin 10: Output, System +12VDC
Pin 11: Output, System +24VDC
Pin 12: System GND

CONNECTOR C, Portal 1
Pin 1: Input 3, Door Position Switch
Pin 2: Input 4, Valid Access Signal
Pin 3: Input 5, not used
Pin 4: Input 6, not used
Pin 5: Input 7, Encoder A, quadrate data from door position sensor
Pin 6: Input 8, Encoder B, quadrate data from door position sensor
Pin 7: Input, Sets logic level for inputs on Portal 1 Connector. Connect to Ground for Logic High (+12V=Trigger) on inputs. Connect to +12V for Logic Low (GND = Trigger).
Pin 8-9: Relay 5 A&B, general purpose Form A relay contacts, normally open
Pin 10: Output, System +12VDC
Pin 11: Output, System +24VDC
Pin 12: System GND

CONNECTOR D, Portal 2
Pin 1: Input 9, Door Position Switch
Pin 2: Input 10, Valid Access Signal
Pin 3: Input 11, not used
Pin 4: Input 12, not used
Pin 5: Input 13, Encoder A, quadrate data from door position sensor
Pin 6: Input 14, Encoder B, quadrate data from door position sensor
Pin 7: Input, Sets logic level for inputs on Portal 1 Connector. Connect to Ground for Logic High (+12V=Trigger) on inputs. Connect to +12V for Logic Low (GND = Trigger).
Pin 8-9: Relay 5 A&B, general purpose Form A relay contacts, normally open
Pin 10: Output, System +12VDC
Pin 11: Output, System +24VDC
Pin 12: System GND
SYSTEM POWER
GND: Connection to Ground on 24VDC +/-10% 8amp Power Supply (external)
+24VDC: Connection to +24VDC +/-10% 8ampPower Supply (external)
EARTH: Connection to external ground connection, as necessary

Connection details

Video Out

BNC Connector—System output in video format. Output is in RS170 (NTSC). Optional PAL output is available on special order. This video output is used for displaying inspection results of the T-DAR system in real time and processed video. The Video Out output is not available for RGB or S-Video,

Input 1&2

The portal reset is an opt-isolated input used to reset the alarm event on the T-DAR unit. Changing the state of this input causes the event video replay to stop, as well as halting the strobe and audio output of the Annunciator Unit.

Relay 1A -6B

The T-DAR unit is equipped with five (six for T-2010) form-factors A relays that can be configured to activate on various user selectable conditions. Also, 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 (sixth) relay is located on the Portal connector.

Line Lock Input

The T-DAR Series uses the Line Lock input to sync with the local power grid. This input is useful in applications where the video input to the T-DAR system needs to be synchronized with the lighting, such as fluorescent or other types of flickering lighting.

Input Common

The main common terminal is used to define the operation of the inputs on the General 2 connector only. If a dry contact is to be used for portal reset on the General connector, a small jumper wire will be installed between the +12 VDC terminal and the Main Common terminal. This allows the portal reset terminals to generate a reference voltage that can be sensed when the terminal is shorted to ground.
If a wet contact is to be used, the small jumper wire would be installed between the Main Common terminal and the Ground terminal on the General connector. Also, a bond wire from the external power supplies ground terminal will need to be placed in the Ground terminal as well to provide for ground bonding.

RS232 TX

The T-DAR Series 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. Use the specific section of this user's guide for application details on available inputs, outputs and configuration of this port.

Input 3&9

The portal contact is used to monitor the status of the door position switch. This should be a dedicated switch, and may require the installation of a double pole/double throw door position switch.

Input 4&10

The Portal Digital Input is used to monitor the state of the electronic lock on the access controlled portal. Typically, an interposing relay is placed in parallel with the lock circuit and the contacts on the relay are monitored by the Portal Digital Input terminal for access granted. This is not necessary if a dedicated output is available from the access control system. NOTE * The power from the access control door lock should not be routed through the T-DAR inputs.*

Input 5&9

Not Used

Input 6&10

Not Used

Portal Common

The Input Common terminal is used to define the operation of the inputs on the Portal connector only. If a dry contact is to be used for portal reset on the Portal connector, a small jumper wire will be installed between the +12 vdc terminal and the Portal Common terminal. This allows the portal reset terminals to generate a reference voltage that can be sensed when the terminal is shorted to ground.
If a wet contact is to be used, the small jumper wire would be installed between the Portal Common terminal and the Ground terminal on the Portal connector. Also, a bond wire from the external power supplies ground terminal will need to be placed in the Ground terminal as well to provide for ground bonding.

I100 Door Position Encoder

A high resolution door position sensor provides digital-quadrature data to determine door position, with respect to the overhead stereo cameras.

To install the Door Position Encoder use a straight thru Cat-5 with a RJ-45 connector on the encoder end and flying leads on the other end to the Phoenix connector on the TDAR Control Unit as shown in the diagram below. If the Door Position Encoder is placed on Door 2 you must use Portal 2 Phoenix Connector.

Pins		Portal 1			
7	Encoder A	Bl/Wh		Blue CAT-5	
8	Encoder B	Gr/Wh		Blue CAT-5	
12	Ground	Or,Or/Wh,Gr,Bl	Blue CAT-5	-Encoder
10	+12 Volt	Br,Br/Wh		Blue CAT-5	+Encoder

Figure 38–pin out for encoder Cat-5

Figure 39 –Position of Encoder on door

T-DAR Dual Digital Inputs

The T-DAR uses dual polarity opto-isolators on all digital inputs. All inputs can be used as either sinking or sourcing inputs.

Note: as there is a single common for the entire set of inputs, all inputs must be configured as either sourcing or sinking.

It is not possible to mix the inputs between sourcing and sinking.

The following diagrams illustrate the typical installation for each of the types of input:
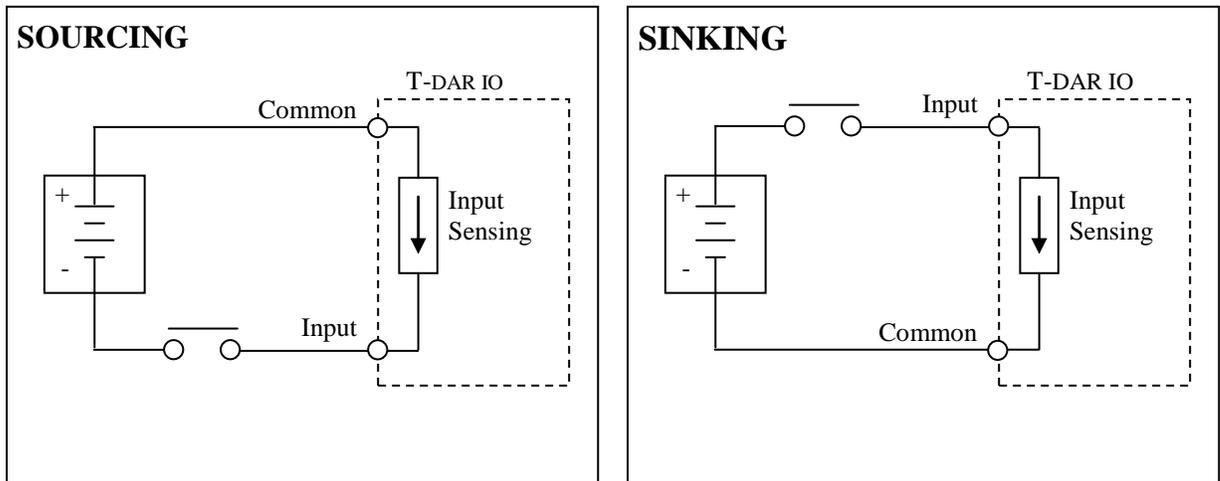
Figure 40 - Sourcing/Sinking Inputs

T-DAR Digital Outputs

The T-DAR uses relays for outputs. When the relay is triggered, connection points A & B are closed and current is allowed to pass. Applications should not exceed 3 amps.

The following diagram illustrates the typical installation for the sinking type of output:
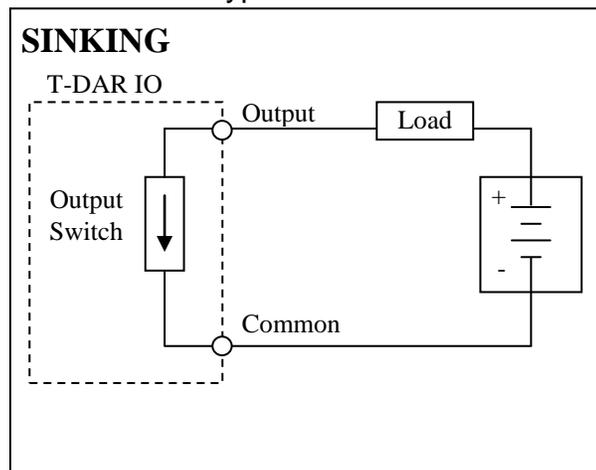
Figure 41- Sinking Outputs

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MK200B Stereo Camera Mounting Kit - Installation Guide

Overview

This mounting kit is designed to install a T-DAR stereo head camera safely and attractively in a standard acoustical tile ceiling.
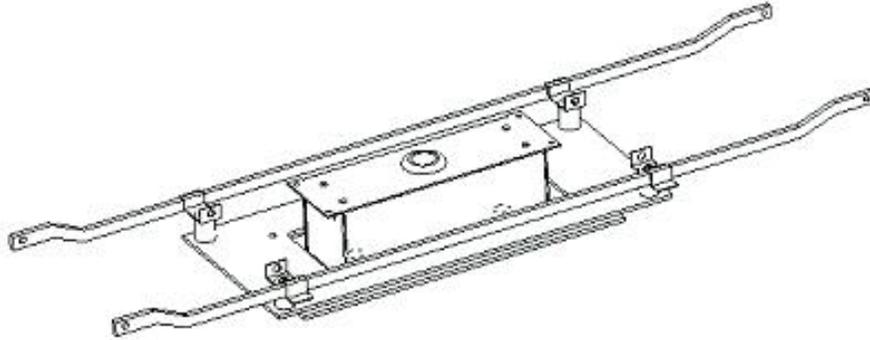
Figure 1 – Completed assembly

Getting Started

Refer to your T-DAR installation and operation manual for recommended camera locations with respect to the entry door.

Check for obstructions inside the ceiling such as ductwork, existing electrical fixtures, and so forth before choosing the final camera location. The camera will extend about 3.5" (9 cm) above the tile ceiling.

Required Hardware

Each mounting kit should contain the following:

- (1) Lower mounting plate (two round holes)
- (1) Upper mounting plate (large rectangular opening)
- (2) Caddy® 512 snap-on fixture hangers
- (4) Clips and spacers
- (8) ¼-20 x 1.5" flat socket cap screws
- (4) 4-40 x 3/8" flat socket cap screws

You will also need:

- Small handsaw
- Drill
- Phillips screwdriver, 5/32" (4mm) hex key, and a 1/16" hex key.

Panel Cutting

Mark and cut a hole in the tile to match the layout dimensions. The camera center is indicated for your convenience when measuring. It is expedient to simply use the upper plate for this; the cutout is the same.

Initial Assembly

Use the four small 4-40 screws to attach the lower mounting plate to the camera.
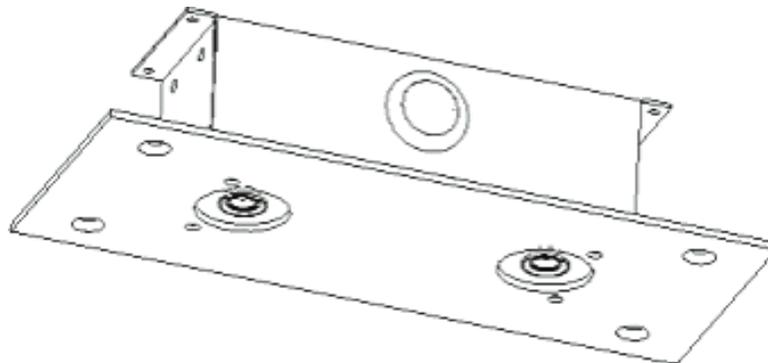
Figure 2 – Lower plate attached to camera

With the tile out of the ceiling grid, snap the fixture hangers over the grid "T" section as shown.
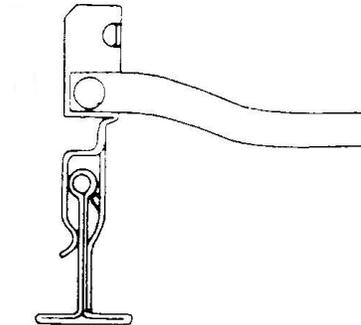
Figure 3 – Snap on fixture hanger

Adjust the clips on the upper plate to match the fixture hanger orientation. Note that the clips can swivel on both the fixture hanger and the upper plate to match the ceiling grid layout.

Align the upper plate and fixture hangers with the tile in place to get ready for the next step.

Final Assembly

Start with the upper plate in the ceiling, locked to the fixture clips and hangers.

Then slide the camera into the hole from underneath, and lock the plates together with the (4) ¼-20 x 1.5" socket cap screws.

In some areas you may be required to wire anchor the camera and fixture hangers. Check your local building codes.

ONE-HALF OF TILE CUTOUT.

FLIP TO LAY OUT OTHER SIDE.

4.13"
[10.5 cm]

1.38"
[3.5 cm]
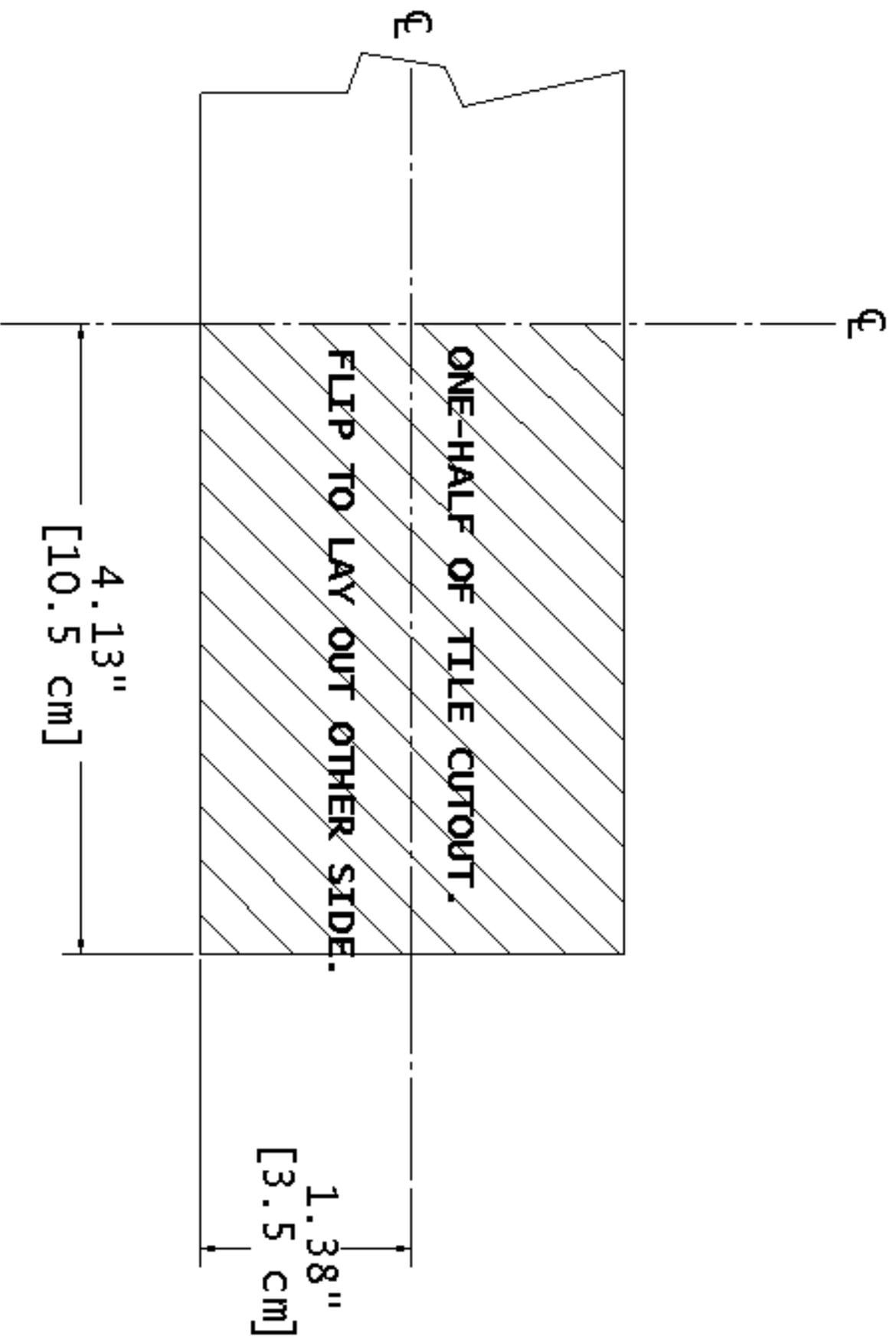
Known Issues and installation Tips

When using an electric solenoid locks, reverse voltage diodes across the solenoid terminals must be used to reduce voltage feedback to the system.

When mounting the TDAR on the wall or cabinet, ensure that there is at least 6 inches between each TDAR or any other physical barrier for proper ventilation. **Do not mount one T-DAR Control Unit with its heated exhaust able to enter the fan intake of another T-DAR Control Unit.**

The return signal needs to be instant from the access control system for the TDAR to alarm properly

Labeling the camera and Ethernet cables correctly on both ends will help minimize troubleshooting time, due to swapped cables

The area where the camera will be viewing needs to be very well lit. Lighting conditions can not vary during operation. If lighting conditions change, the T-DAR unit must be recalibrated to accept the changed conditions.

Be sure to connect the jumper between portal common and the correct reference connection (12V or ground)

Failure to supply Line lock input signal if low frequency fluorescents are utilized in the installation may cause erratic system operation. (See below)

LINELOCK INPUT

Required if Low Frequency Fluorescent Lighting is utilized in the installation

The T-DAR™ system requires an input of low voltage AC from a source that also supplies the lighting for the installation (as shown in the diagram below). This low voltage (6 to 30VAC) AC signal is required to allow the cameras to be in sync with the low frequency fluorescent lighting. Failure to provide this signal to the T-DAR may cause erratic behavior in the system.

Any 6 to 30VAC signal will provide the required synchronization of the T-DAR to the low frequency fluorescent lighting. A small transformer is provided with the T-DAR system and can be used to provide this signal; in addition, any other source of low voltage AC (6 to 30VAC) that is available can also be utilized. Low voltage DC will not provide the required LineLock signal; use low voltage AC only.

CAUTION!

Do **not** provide 110/220 VAC to the T-DAR unit LineLock input. Provide only **6 to 30VAC** to the LineLock input or permanent damage will occur to the unit.
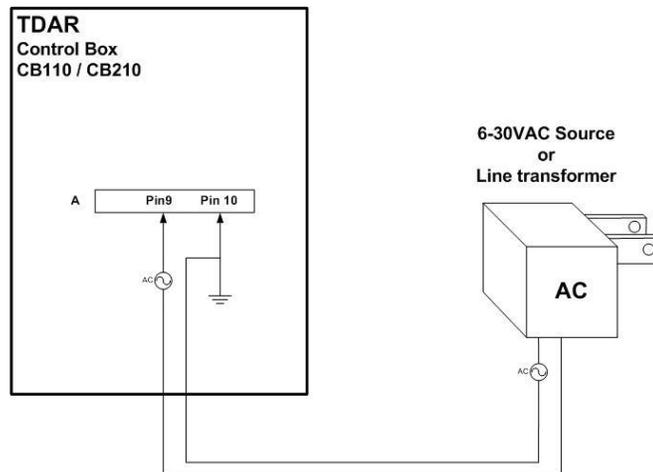
About Fluorescent Lighting:
Older style fluorescent lights turn on and off the light output at the AC line frequency: 50 or 60 Hz-depending on the area of the world. Since cameras operate at a similar frequency, this rapid cycling on and off of the lights can cause erratic behavior in the T-DAR cameras and requires synchronization.

Newer style high frequency fluorescent lights operate at much higher frequencies than do the T-DAR cameras and do not affect the T-DAR cameras; no LineLock signal is required.

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