COHU, INC. ELECTRONICS DIVISION

Installation and Operation Manual

$\phi 3.000$

$1\frac{1}{2}$ NPT

10.419

8.340

3.319

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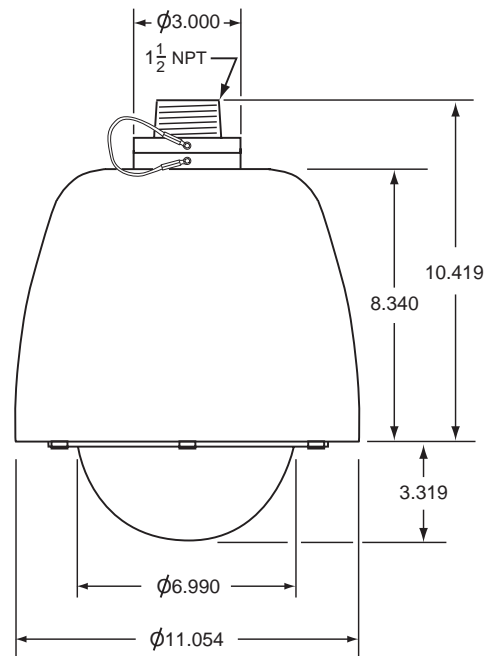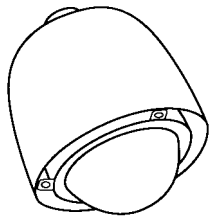
Unless otherwise noted, all dimensions in inches
NPT is National Pipe Thread

Figure 1. iDome

3920 SERIES
iDOME CAMERA/POSITIONER SYSTEM

Sept 27, 2002
Rev 1. 11-20-02

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Table 1. Specifications

SPECIFICATION	CHARACTERISTIC
Imager	1/4 inch color interline transfer CCD, progressive scan
Resolotion	470 horizontal tv lines
Lens	Integral 23X optical, 3.6 to 82.8 mm with 10X digital, auto/manual focus
Sync	Phase adjust line lock
Day/Night Switchover	Day (color) / night (mono), manual or auto
Sensitivity	3 lux at 1/60 s (color day) 0.2 lux at 1/4 s (color day) 0.3 lux at 1/60 s (mono night) 0.02 lux 1/4 s (mono night)
Power Input	120 V ac nominal: 89 - 135 V ac, 60 Hz per NEMA 2.1.2 standard TS2 for traffic control systems 230 V ac nominal (207 - 253), 50 Hz 24 V ac nominal (21.6 - 26.4), 60 Hz
Power Interruption	Confirms to NEMA 2.1.6 standard TS2
Power Transients/Interruptions	Confirms to NEMA 2.1.4 TS2
Communications	Opto-isolated serial port RS-232 and RS-422 with digital position feedback; RS-485 available
Protocol	Non-propritary Cohu standard, others optional (see figure 2, protocols)
Firmware	Stored in flash memory; upgrade via serial port
Pan/Tilt	360° continuous pan, 0-90° down. Auto flip at 90°
Preset Speed	>250°/second preset, at 0.1° accuracy
Presets	64
Title Generation	8 lines
Tours	8, each of 32 presets with dwell timer per preset per tour
Sectors	16 in the horizontal plane
Privacy Zones	8 programmable zones can be set for video blanking
Alarm Inputs	2 available
Environmental	-34 to 74 °C Conforms to NEMA 2.1.5.1 standard TS2 for traffic control systems
Humidity	100 percent, relative
Pressurization	Pressurized with dry nitrogen; IP Rating IP67, NEMA 4X
Weight	12 lb (5.5 kg) approximate

1.0 GENERAL DESCRIPTION

The iDome series is an integrated camera/positioner unit that integrates a high performance digital signal processing camera, pan-and-tilt, and control receiver into one integrated package (figure 1).

Throughout this manual the entire assembly will typically be referred to as the "iDome."

Specifications are contained in table 1 and a model number interpretation diagram is provided in figure 2. This diagram can be used to interpret an existing model number. An iDome can be operated via either RS-232 or RS-422 communications depending on which pins of the connector are used. Thus there is no model number designation to reflect a choice for the communications mode.

WARNING

Two versions of the iDome operate from voltages that can be dangerous: model 3925 (115 V ac) and model 3923 (230 V ac). Use all appropriate care when installing and maintaining either of these versions of the iDome.

1.1 ELECTRICAL CHARACTERISTICS

The camera uses digital signal processing. It has an internal source ID generator. Integration control plus a built-in video storage card provides full color continuous video even at very low light levels.

The iDome speeds are variable with maximums of 250° per second for pan and tilt. Pan range is a continuous 360 degrees while the tilt range is 0 to 90 degrees from the horizontal with auto-flip at the 90° point. There are 64 preset positions with a preset accuracy of 0.1 degree. When responding to standard pan-preset or manual control, the iDome can move with a pan speed of 250° per second.

This iDome will operate in temperature ranges from -34° to +74° C and with winds of up to 90 mph. The enclosure protects against salt, grime, dirt, and moisture.

The integrated receiver/driver, contained within the IDome, communicates using Cohu protocol messages and will also control the digital DSP camera functions. All iDome functions are operable via either

MODEL NUMBER INTERPRETATION DIAGRAM

392x — x x 0 x — xxxx

SERIES

DSP color/mono 1/4 inch progressive scan dome camera, 3.6 to 82.8 mm zoom lens

POWER

3 230 Vac
4 24 Vac
5 115 Vac

VIDEO

3 NTSC Phase Adjust Line Lock
7 PAL Phase Adjust Line Lock

PROTOCOL

1 Cohu
2 American Dynamics
3 Pelco D
4 Ultrak
5 Vicon
6 Javelin
7 Kalatel
8 Philips
9 NTCIP (not currently available)

DOME

1 Clear
2 Smoked
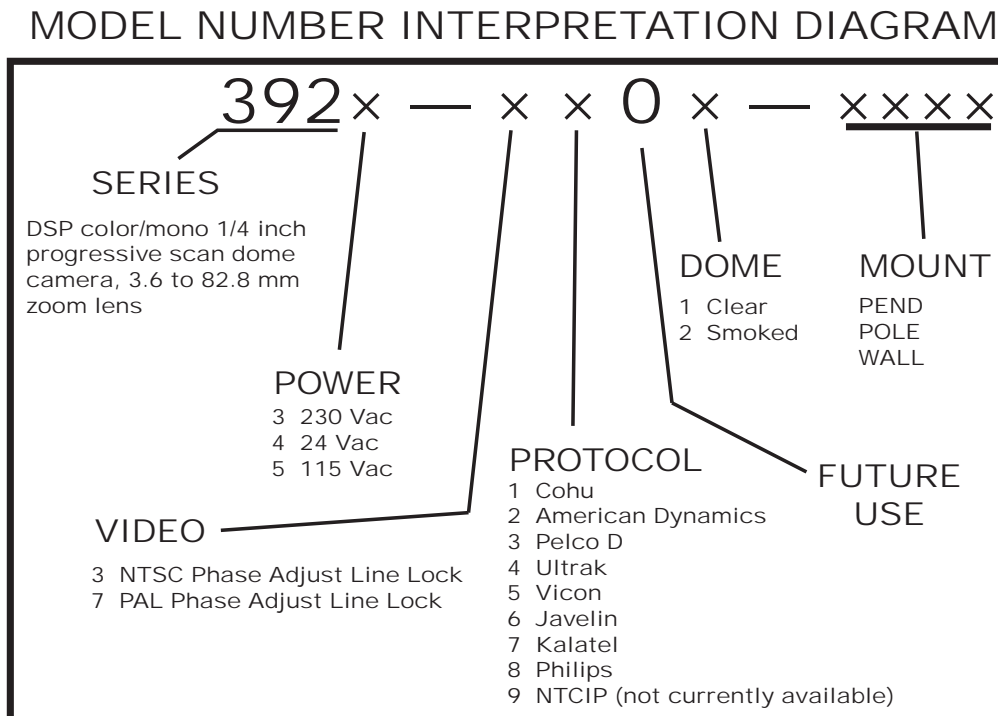
FUTURE USE

MOUNT

PEND
POLE
WALL

Figure 2. Model Number Interpretation Diagram

RS-232 or RS-422 serial communications.

The iDome is fully compatible with existing Cohu controllers. In case of power failure, all 64 preset positions are stored in nonvolatile memory.

Each iDome "address" within a surveillance system can be selected electronically from the Monitoring Center. There are no mechanical dip switches to set at the camera, and each unit responds to the central command only if addressed. This provides greater integration flexibility for the designer and more dynamic camera control for the operator

1.1.1 Control Software

WinMPC
WinMPC Graphical User Interface (GUI) software is available for setting the address and performing field tests when connected to a single camera. (It cannot be used to control more than one camera at a time.) The WinMPC software can be obtained at no cost from either the Cohu-Cameras.com web site or by mail on floppy disk

CAMS
The CAMS software is intended for controlling multi-iDome systems when the Cohu MPC Master Control Panel is the central control "intelligence" for the system. All control and response commands among the various equipment in the system pass through the Master Control Panel.

NetCAMS
The NetCAMS software is intended for controlling multi-iDome systems when a Windows based PC is the central control "intelligence" for the system. All control and response commands among the

various equipment in the system pass through the Net Cams Server.

1.2 MECHANICAL CHARACTERISTICS

Although the iDome is a single mechanical assembly for installation purposes, it actually consists of two primary subassemblies inside the dome: (1) the camera and (2) the positioner.

All camera circuits are contained within a sealed and pressurized environmental dome housing having either a clear or smoked window for viewing through by the camera lens. This dome is fully covered by a sun shield spaced slightly away from the housing itself. This minimizes heat buildup due to sunlight. Vent holes at the top of the dome must be kept clear to maintain air flow.

The iDome is a sealed and pressurized (dry nitrogen) unit intended for indoor or outdoor use under rain, snow, and other typical harsh weather conditions.

Communications circuits contained within the iDome are also protected from outdoor weather conditions. A single multiconductor cable passes through the mounting pendant to provide for all signal and operating power connections. Pin functions and layout are shown in figure 23.

2.0 INSTALLATION

Always preplan the installation to be sure that all required cabling and address assignments are completed. It may also be important to know the orientation of the iDome when it is mounted at its location. The Schrader valve should be accessible for for adding dry nitrogen if necessary.

The model number label indicated a mechanical home reference for all iDomes. Electrical home for panning is 90° clockwise from this position as viewed from above.

Table 2 lists the three basic mounting arrangements.

Table 2. Equipment vs. Model Number

MOUNT CONFIG.	iDOME	ARM	POLE BRACKET
Pendant	•		
Wall	•	•	
Pole	•	•	•

NOTE: Dot (•) designates items supplied for each mounting configuration.

2.1 UNPACKING AND RECEIVING INSPECTION

This iDome was thoroughly tested and carefully packed in the factory. Upon acceptance by the carrier, they assume responsibility for its safe arrival. Should you receive this item in a damaged condition, apparent or concealed, a claim for damage must be made to the carrier. To return an iDome or related product to the factory for service, please contact the Customer Service Department for a Return Authorization Number." If a visual inspection shows damage upon receipt of this shipment, it must be noted on the freight bill or express receipt and the notation signed by the carrier's agent. Failure to do this can result in the carrier refusing to honor the claim." When the damage is not apparent until the unit is unpacked, a claim for concealed damage must be made. Make a mail or phone request to the carrier for inspection immediately upon discovery of the concealed damage. Keep all cartons and packing materials. Since shipping damage is the carrier's responsibility, the carrier will furnish you with an

PENDANT MOUNT

WALL MOUNT

POLE MOUNT

Figure 3. Basic Mounting Configurations

inspection report and the necessary forms for filing the concealed-damage claim

2.2 STATIC DISCHARGE PROTECTION

Procedures in this manual do not require entry into the housing of the iDome. However in the event that an open unit were available, the following precautions should be followed:

CAUTION

This iDome contains sensitive devices that can be damaged by static discharge. Use appropriate static control methods when working inside the iDome.

Components used in modern electronic equipment, especially solid state devices, are susceptible to damage from static discharge. The relative susceptibility to damage for semiconductors varies from low with TTL to high with CMOS. Most other semiconductors fall between TTL and CMOS in susceptibility to static discharge. As a minimum, therefore, observe the following practices when working inside this or any other electronic equipment:

1. Use conductive sheet stock on the work bench surface.
2. Connect the sheet stock to ground through an 1 megohm or greater value resistor.
3. Use a wrist strap connected to ground through an 1 megohm or greater value resistor when working at the bench.
4. Maintain relative humidity of the room above 30 percent. This may require a room humidifier. Working on circuits with relative humidity below 30 percent requires extraordinary procedures not listed here.
5. Use antistatic bags to store and transport an exposes chassis, circuit boards, and components. Use new antistatic bags. Old, used bags loose their static protection properties.

This list serves as a reminder of the minimum acceptable practices. Be sure that all static discharge devices at the work bench are properly installed and maintained." Standard grounding mats and wrist straps purchased for use at work benches are supplied with leads having current limiting
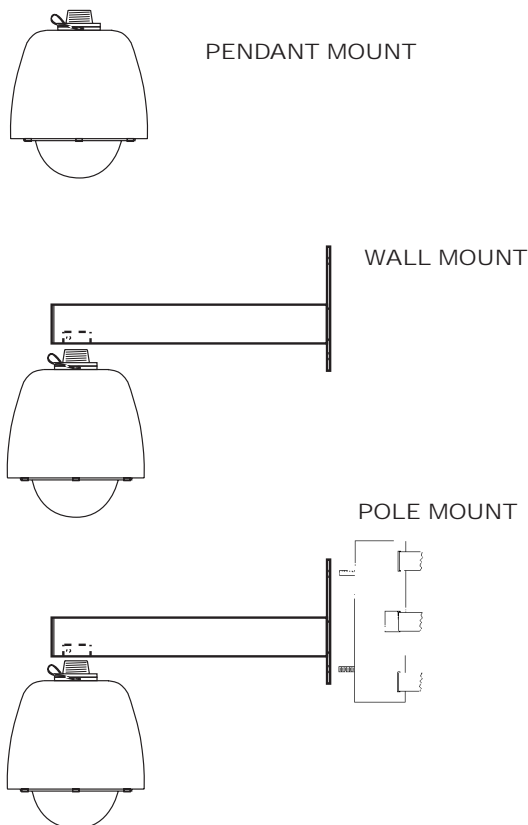
resistors for safety. Never substitute with a grounding lead not having the resistor.

2.3 INSTALLATION FUNDAMENTALS

2.3.1 Basic Mounting Configurations

An iDome can typically be mounted in any one of three mechanical configurations (figure 3):

1. Pendant Mount

The basic configuration. The iDome hangs directly from a supplied 1.5-inch female NPT (national pipe thread) support. This support must provide for the connector of a multiconductor cable to pass down through the 1.5-inch pipe nipple for mating with the iDome.

2. Wall Mount

This mounting arrangement requires an arm that bolts to the wall. The iDome hangs from the end of this arm.

3. Pole Mount

This mounting arrangement is similar to the Wall Mount -- except that the mounting arm attaches to a bracket fastened to a pole instead of directly bolting to a wall.

Table 2 summarizes the major items supplied for each of these three installation methods. Each of these installations will be expanded upon in a later sections.

2.3.2 Installation Checklist

Before starting the installation of an iDome the following check lists should be read for an overview of the process.

2.3.2.1 Test Bench Checkout - To check out an iDome and set its address at a test bench before taking it into the field for installation, use the following as a guideline:
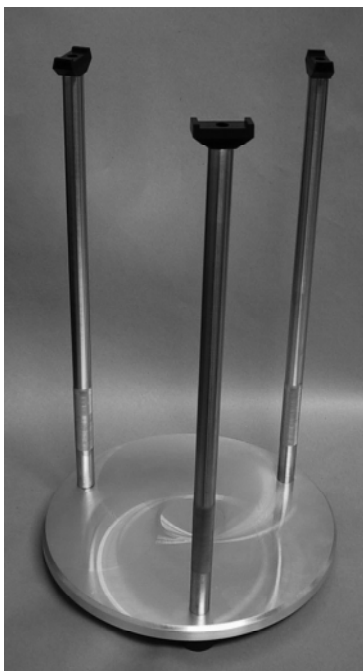
1. Mount the iDome to a test stand (figure 4). This

**Figure 4. Model 8540B Test Stand (23-inch height).
(Model 8540A -not shown- provides 38-inch height)**
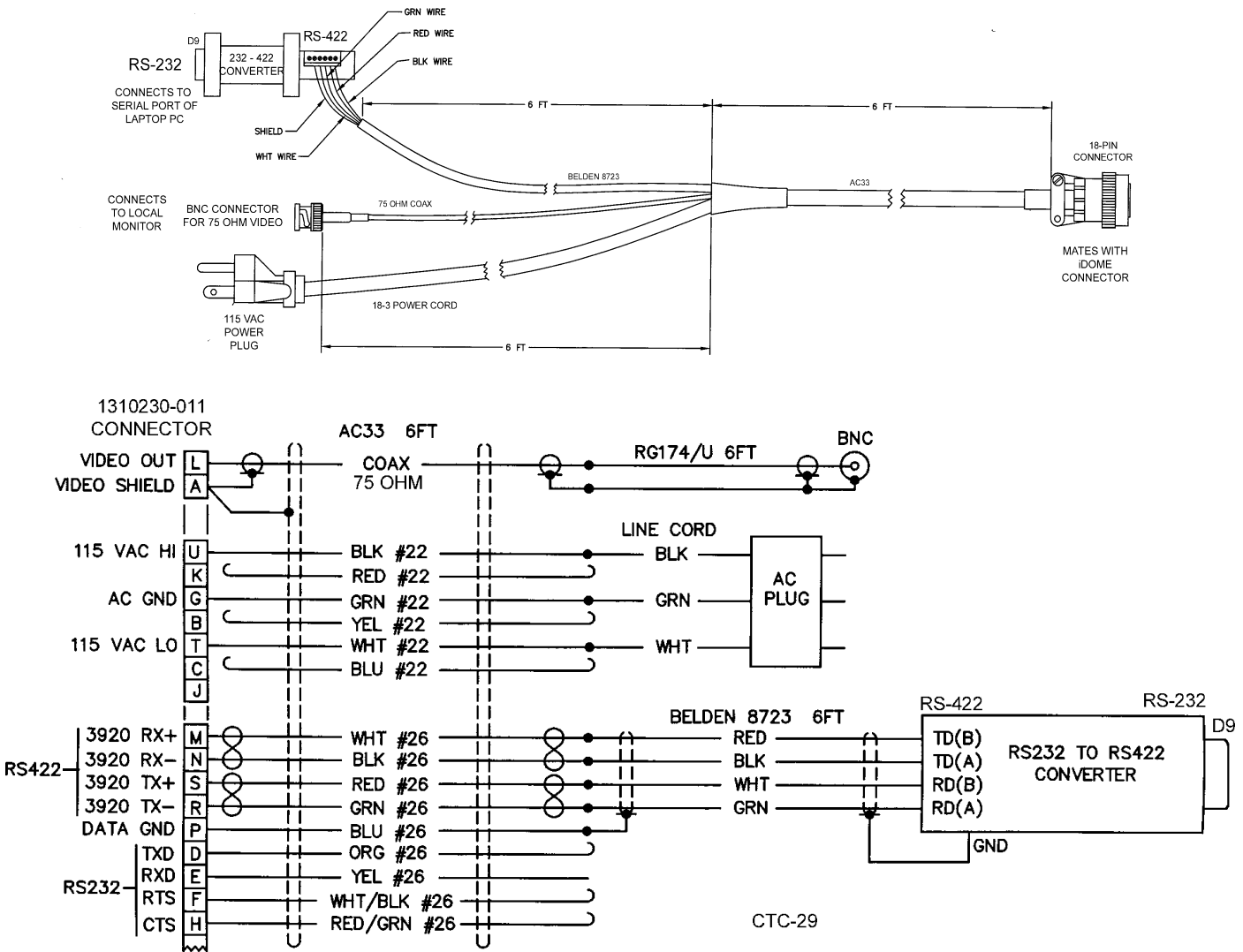
Figure 5. Type CTC-29 Cable , Test/Setup, Wiring Diagram

(Also Available from Cohu as P/N 3010100-001)
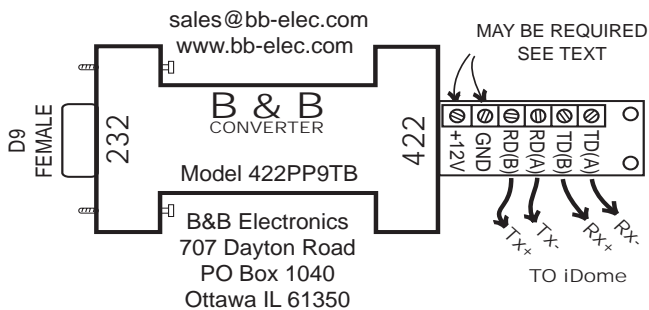
Figure 6. Typical RS-232 to RS-422 Converter

This converter changes the RS-232 output of a PC to RS-422 for communications with an iDome during field setup and testing.

A local PC with **Win MPC** software typically is used in this application.

If this converer is plugged into the RS-232 output from an F/O converter, 12 V dc operating power will likely have to be applied to the 12 V dc terminal lugs. These F/O to RS-232 converters typically do not have sufficient current on the handshake lines to power the 232/422 converter. This application of the 232/422 converter would typically occur as part of a fixed installation inside an equipment cabinet located near an iDome. The 232/422 converter would be part of a type CA-295C cable.

1.5-inch NPT Nipple

Dome

Safety Strap

Lock Bolt (1)

Figure 7. Quick Disconnect Assembly

Step 4 assumes that the iDome operates from 115 V ac power. If a 230 V ac iDome is to be operated from this cable, a 115/230 adapter will have to be used. This cable cannot be used with an iDome operating from 24 V ac. Different connector pins are used.

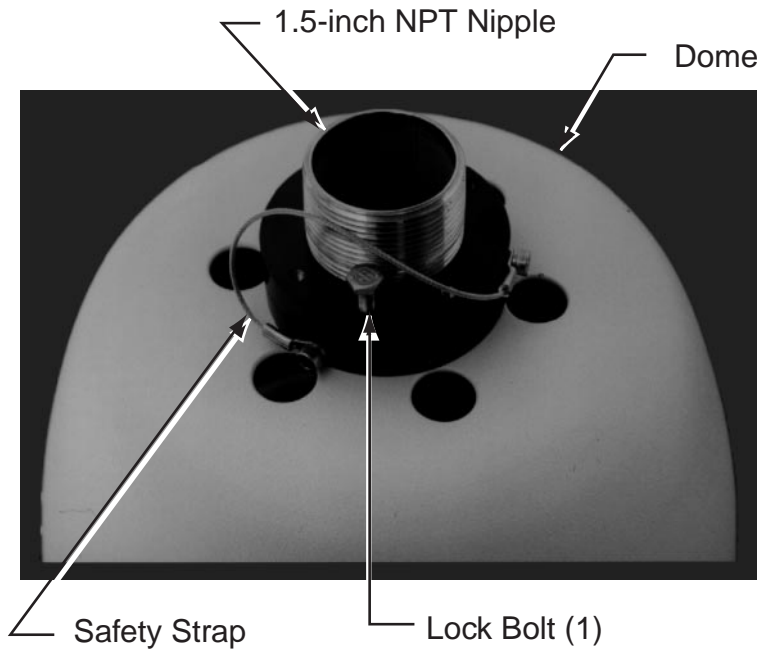4. Connect the power plug of this cable to 115 V ac — or for a 230 V ac iDome, use an adapter on this plug to connect to 230 V ac. (This cable cannot be used with 24 V ac iDomes.)

5. Connect a tv monitor to the cable. This monitor must be terminated with 75 ohms. Monitors typically have a rear panel switch to select either 75 ohms or no termination (Only the end of the coax cable can be terminated with 75 ohms. Any other equipment connected on the cable in a loop-through arrangement must present a high impedance to the line.)

stand is also available with another set of three legs that increases it from a 20-inch height to 38 inches.

2. Connect the test cable (figure 5) to the connector at the top of the dome

3. Connect the other end of the cable to the laptop. (Either a test cable with integral RS-232 to RS-422 converter or separate converter must be used. See figures 5 and 6.)

WALL

Route system cable through hole in wall into Arm

ARM

1.5 NPT for dome quick disconnect adapter

Use weather-tight gasket between Arm and wall

Figure 8. Wall Mount Arm

UNLESS OTHERWISE NOTED ALL DIMENSIONS IN INCHES
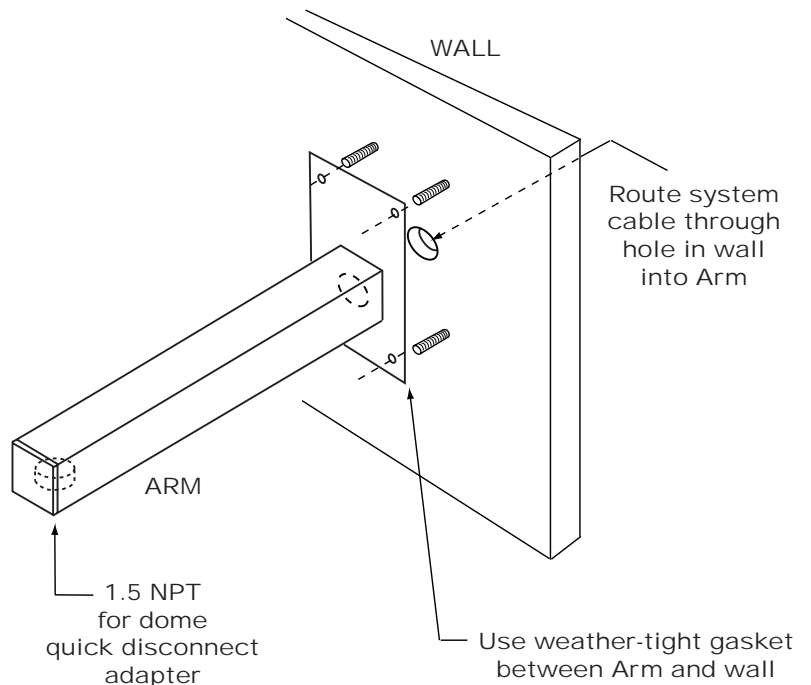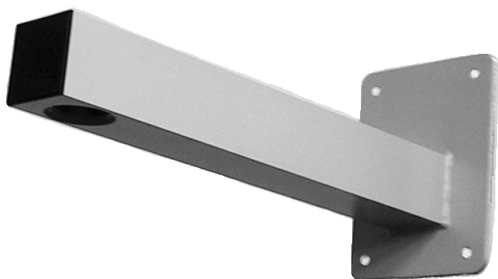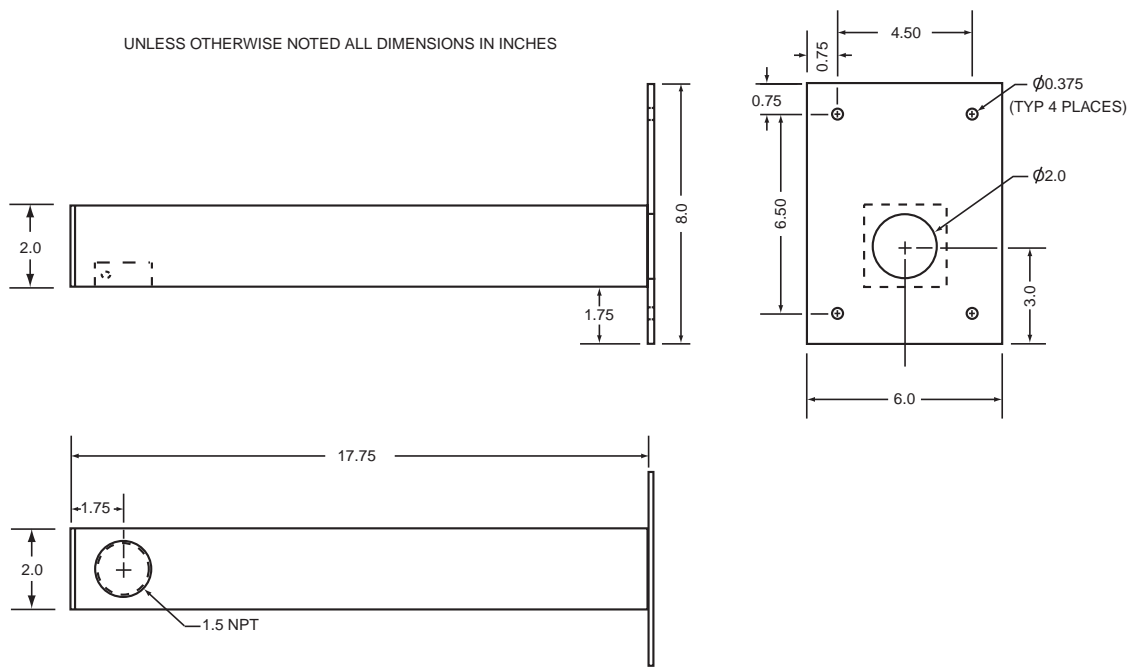
Figure 9. Arm Dimensions

6. Install Win MPC software on the laptop. (See section 2.12 for details about using Win MPC.)

7. Establish the required communications parameters

8. Set (or verify) the iDome address (When installed in the system, each item of equipment must have a unique address). Place this address on the iDome with a removable piece of masking tape.

9. Verify proper operation of all the various functions controllable through the Win MPC menus.

10. Release the iDome for field installation after it has been determined all functions are working.

2.3.2.2. Field Installation Procedure - Use the following outline to become familiar with the steps requried to install an iDome at its field location:

1. Route the cable to the mounting location of the iDome.

2. Route the cable through any mounting arms or brackets.

3. Remove the safety strap from the iDome quick disconnect fastener

4. Thread the nipple portion of the quick disconnect into the mounting bracket or arm.

5. Route the cable down through this nipple and attach it to the iDome connector

6. Attach the dome half of the quick disconnect to the half mounted to the arm or other bracket. (If a particular orientation is required be sure to mount it correctly positioned.)

7. Attach the safety strap back to the other half of the quick disconnect.

8. Connect the laptop to the iDome at the junction box or equipment cabinet.

9. Verity (or set) the address and check all operations.

10. Release the iDome for service.

2.4 EQUIPMENT SUPPLIED

Depending on the mounting configuration, several variations of equipment can be supplied. See table 2 for a list of the basic differences between models.

PEDD (Pendant Mount). See figure 7.

Pendant mounting is the most basic of the three mounting arrangements. The top half of a quick-disconnect assembly is threaded into a site supplied 1.5-inch NPT mount.

WALL (Wall Mount). See figure 8.

With a wall mount the iDome hangs from the end of an arm which is attached to a wall. Figure 9 gives dimensions of the arm and adapter plate. This wall must not only have four mounting bolts but also a hole centered between these bolts through which the cable must pass. A weather-tight gasket should be used between the arm and wall.

POLE (Pole Mount). See figure 10.

Mounting to a pole is similar to mounting to a wall. For mounting to a pole, the four mounting bolts are provided by a bracket. This bracket is attached to the pole by stainless steel straps. This strapping requires a special tensioning tool.

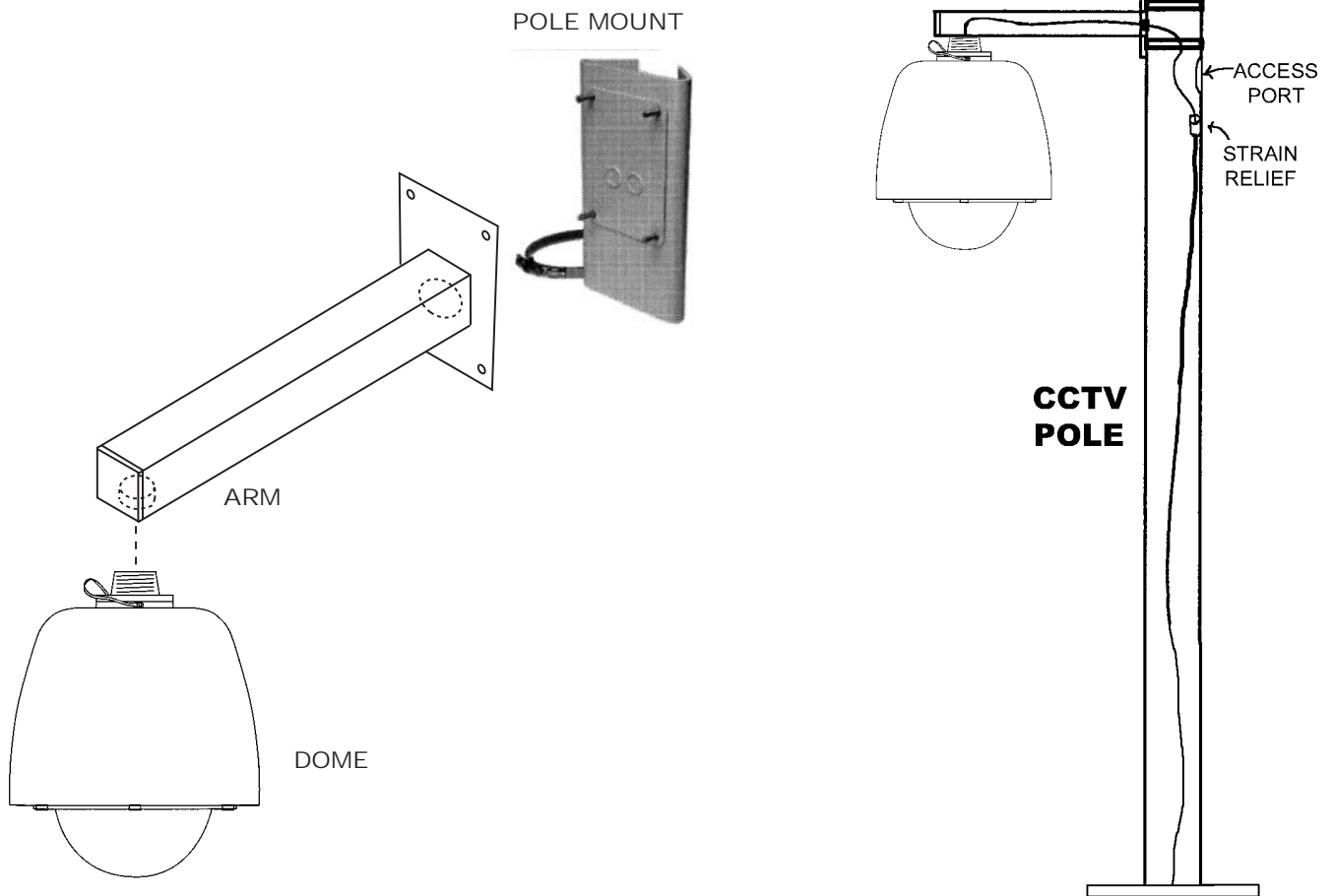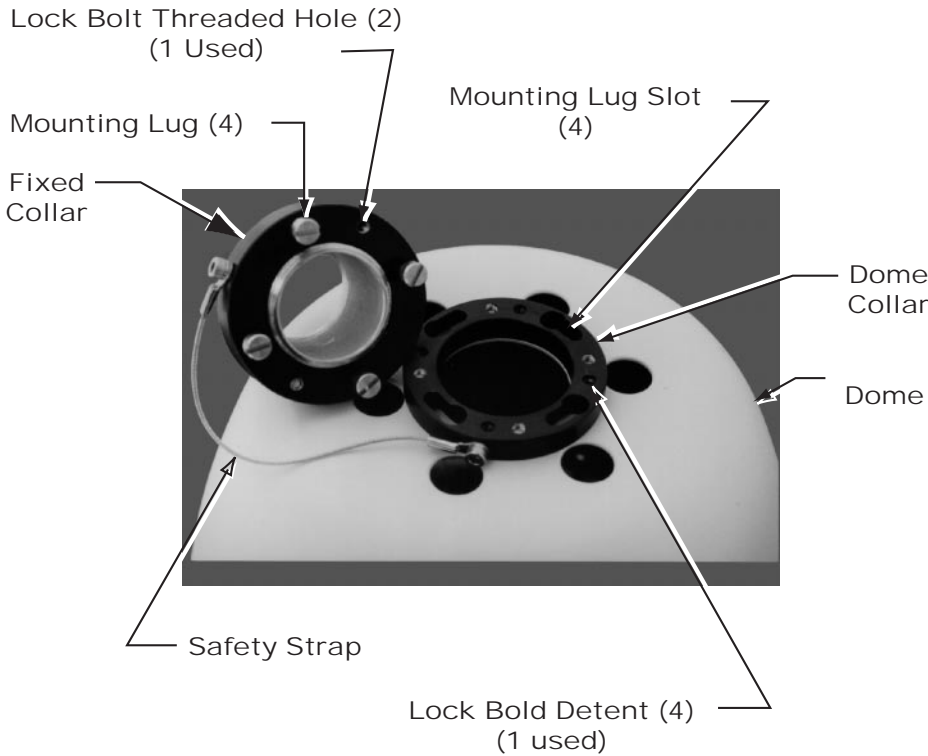Cable routing when using a pole mount depends

Figure 10. Typical Pole Mount

Lock Bolt Threaded Hole (2)
(1 Used)

Mounting Lug (4)

Mounting Lug Slot
(4)

Fixed
Collar

Dome
Collar

Dome

Safety Strap

Lock Bold Detent (4)
(1 used)

NOTE:

Dome can be mounted to fixed collar at any of
four positions - in 90° increments

Position the Dome between 90° increments by
rotating the Fixed Collar ±45° with a strap wrench

Figure 11. iDome Quick Disconnect Mounting

Figure 12. Strap Wrench

upon the situation encoun-
tered. It can either be directed
down behind the pole bracket
or, if arrangements have
been made for this, into the
pole. Junction boxes, drip
loops, and weather proof
integrity of the connectors
must be considered before
starting the installation.

2.5 EQUIPMENT REQUIRED BUT NOT SUPPLIED

5/16 stainless steel mounting
hardware

Cable, multiconductor or
individual cables

Male BNC cable connector

Win MPC test and setup GUI

Data control such as CAMS
or NetCAMS GUI

2.6 POWER REQUIREMENTS

There are three versions of the
iDome related to power:

115 V ac (Model 3925-xxxx-x)

230 V ac (Model 3923-xxxx-x)

24 V ac (Model 3924-xxxx-x)

The model number lable is attached to the bottom of
an iDome. (Electrical home for camera pan is 90°
clockwise from this lable viewed from above.)

At 120 V ac 60 Hz the iDome heaters draw 72 watts
during cold weather when the thermostat has them
turned on. Otherwise power consumption is 27
watts with the stepper motors idle or 50 watts when
they are active. Thus the maximum power draw at
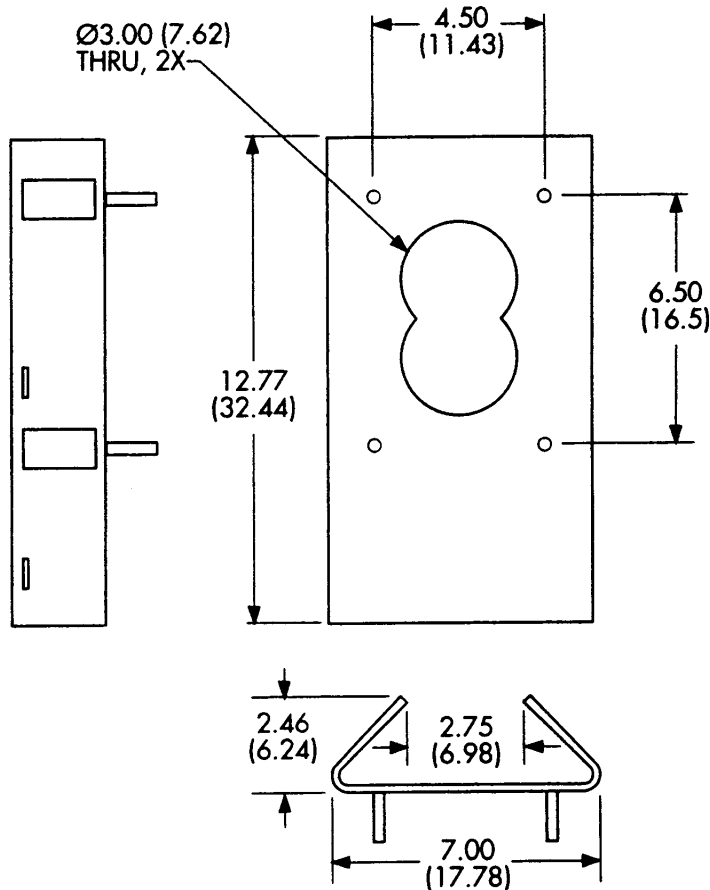any one time is 122 watts at 120 V ac.

All electrical connections to and from the iDome are
made through a single cable entering at the top.

Power for 115 and 230 V ac versions of the iDome
use the same connector pins ("U" hot/high and "T"

DIMENSIONS IN INCHES (CM)

Figure 13. Pole Mount Dimensions

low/neutral).

But for 24 V ac versions of the iDome, pins "B" (hot/high) and "T" (low) are used.

Ac ground in all cases is pin "G."

2.7 PENDENT MOUNT INSTALLATION

An iDome in the pendent configuration is its most basic form. No mounting arms or adapters are provided. The 1.5 inch NPT pipe thread on top the dome is attached to an appropriate mount supplied by the installer. Provisions must be made for the cable to pass through this mount down through the quick disconnect mount (figure 11) and onto the connector on top the iDome.

2.8 WALL MOUNT INSTALLATION

With a wall-mount installation, a support arm bolts to a wall and the iDome then hangs from the end of that arm.

1. Remove the safety strap from the top half of the quick disconnect (the half with the threaded nipple attached).

2. Thread the quick disconnect nipple into the mounting arm and tighten with a strap wrench (figure 12).

Table 3. Required Cable Characteristics

CONDUCTOR FUNCTION	CHARACTERISTICS
VIDEO	RG-59/U (75 ohm), 100 % copper conductor, 95% minimum braided shield
DATA	2 pair, twisted with overall shield, 26 AWG minimum (Belden 8723 or equivalent)
POWER	3-CONDUCTOR, 22 AWG (Belden 19401 or equivalent)
NOTE: For distances exceeding 250 feet, please contact an Application Engineer at Cohu Electronics.	

Figure 14. Mast Arm Mount

115VAC
SOURCE

12 VDC
POWER
SUPPLY

DOME

CABLE
ER8508A3

NOTE: THE VIDEO LINE
MUST BE TERMINATED
WITH 75 OHMS FOR
PROPER OPERATION

CAMERA   HOST   VIDEO   POWER

RS422   OUT   IN   +12 VDC

NOTE: This panel is optional. It is used only
when on-site control of an iDome is desired
for setup and maintenance operations

CENTRAL
CONTROL
STATION

(FRONT OF TYPICAL LOCAL CONTROL PANEL)

LOCAL   LOCAL   VIDEO   IRIS   FOCUS   ZOOM   TILT   PAN
             OUT
RS-232   HOST   OPEN   AUTO/MAN   NEAR   AUTO/MAN   TELE   UP   RIGHT
                                 CLOSE   FAR   WIDE   DOWN   LEFT
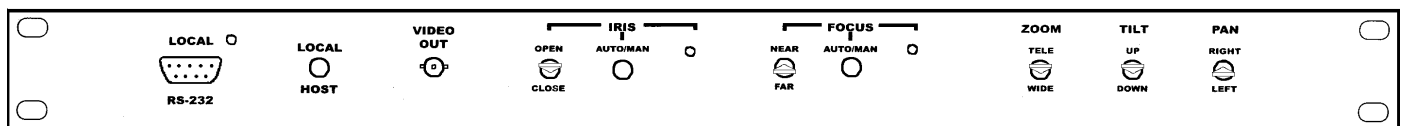
Figure 15. Interconnection Diagram, iDome to a Typical Local Control Panel

EQUIPMENT CABINET

NOTE: THE VIDEO LINE
MUST BE TERMINATED
WITH 75 OHMS FOR
PROPER OPERATION

FIBER OPTIC
TRANSCEIVER

75 OHM
VIDEO IN

75 OHM
COAX

FO

RS422
DATA
TERMINAL
STRIP

TWISTED PAIR
SERIAL DATA
WIRES
(LUGS ADDED)

115
VAC

POWER
CORD

CONDUIT

CONDUIT

FO CABLE

115 VAC
RS422
iDome
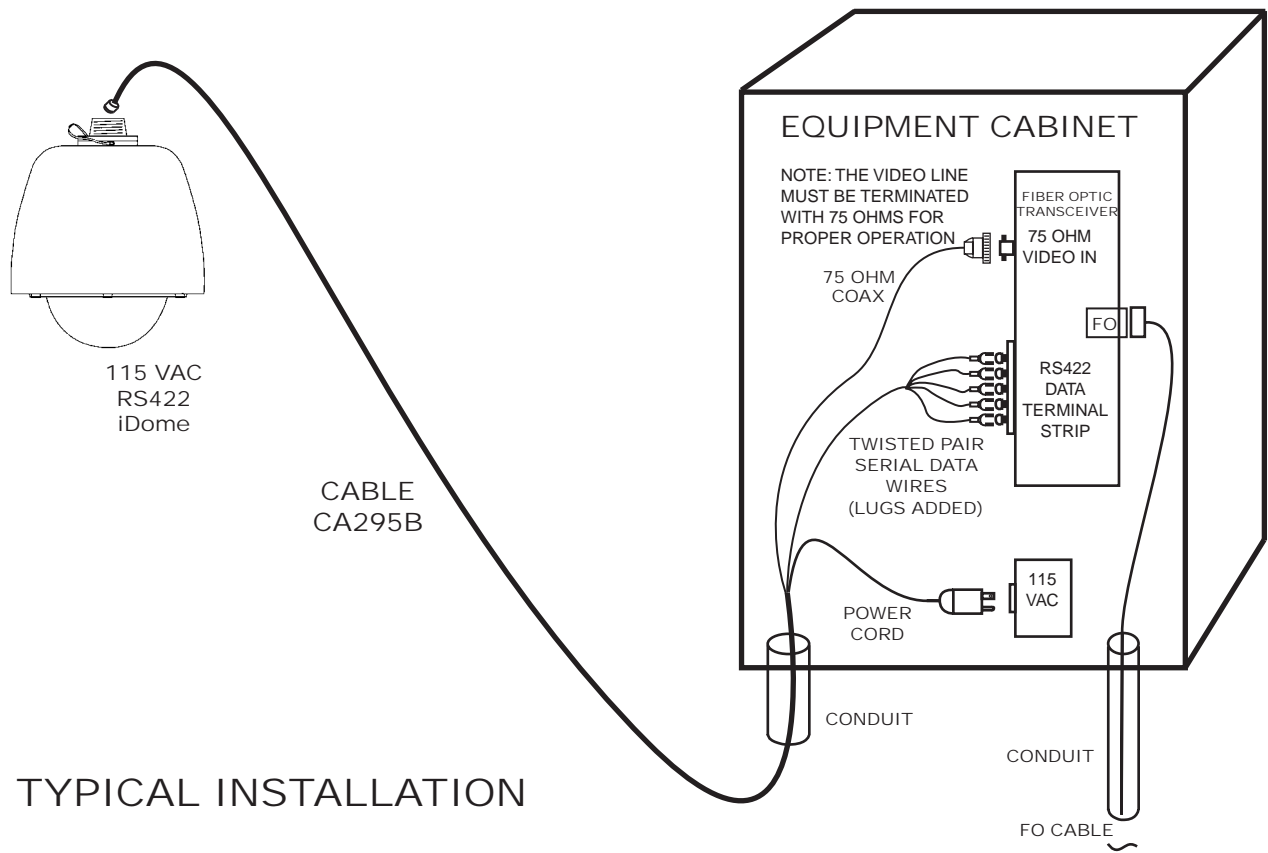
CABLE
CA295B

TYPICAL INSTALLATION

Figure 16. Interconnection Diagram, iDome to Equipment Cabinet

3. Verify that the system cable is accessible for connection to the iDome connector at the end of the arm. This cable typically must pass through the wall and into the arm.

4. Route the system cable out of the wall and into the back of the wall mount arm. Continue the cable through the arm and out the hole at the iDome mounting location.

5. Install a weather tight gasket between the arm and the surface of the wall.

6. Bolt the Arm to the wall.

7. Attach the cable plug to the iDome connector.

9. Orient the iDome properly and attach it to the

other half of the quick disconnect mounted to the arm.

10. Reattach the safety strap.

11. Proceed to section 2.12.4, the checkout procedure.

2.9 POLE MOUNT INSTALLATION

A pole mount installation is similar to the wall mount installation except that the arm fastens to a bracket (figure 13) attached to the pole instead of directly to a wall. Attaching the pole mount to a pole requires the use of a tensioning tool to properly tighten and secure the stainless steel straps.
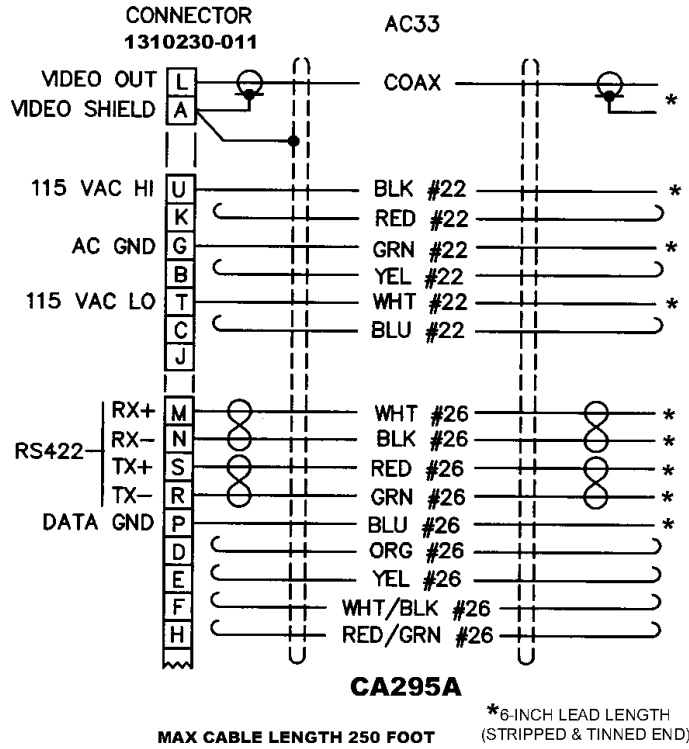
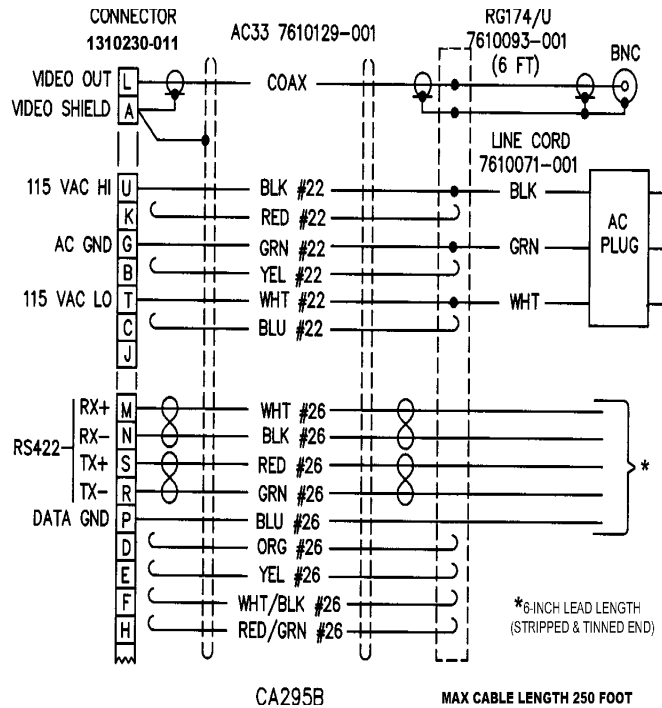Figure 17. Cable CA295A (RS-422) Wiring Diagram

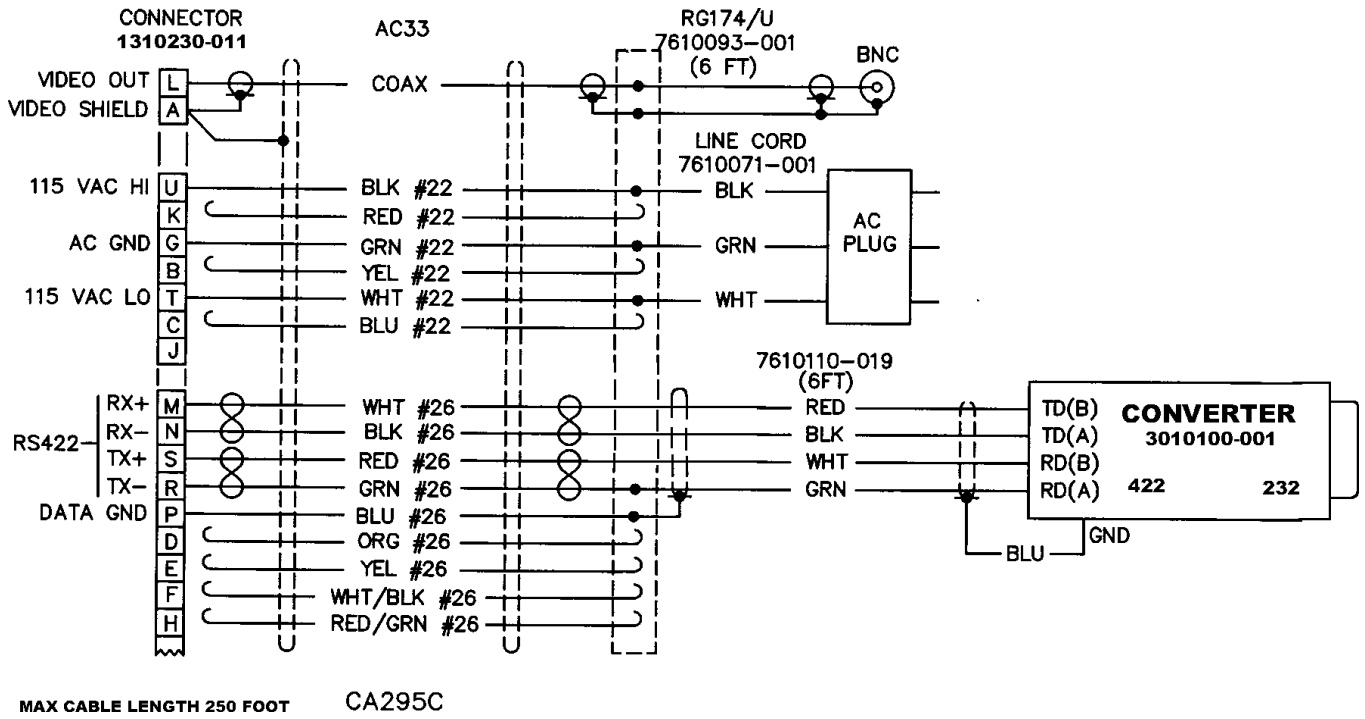Figure 18. Cable CA295B (RS-422) Wiring Diagram
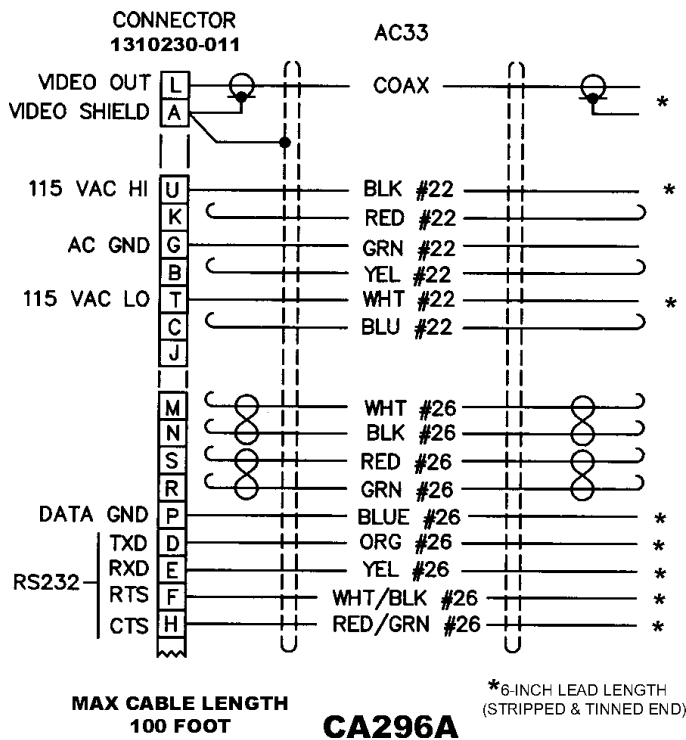
Figure 19. Cable CA295C (RS-422) Wiring Diagram

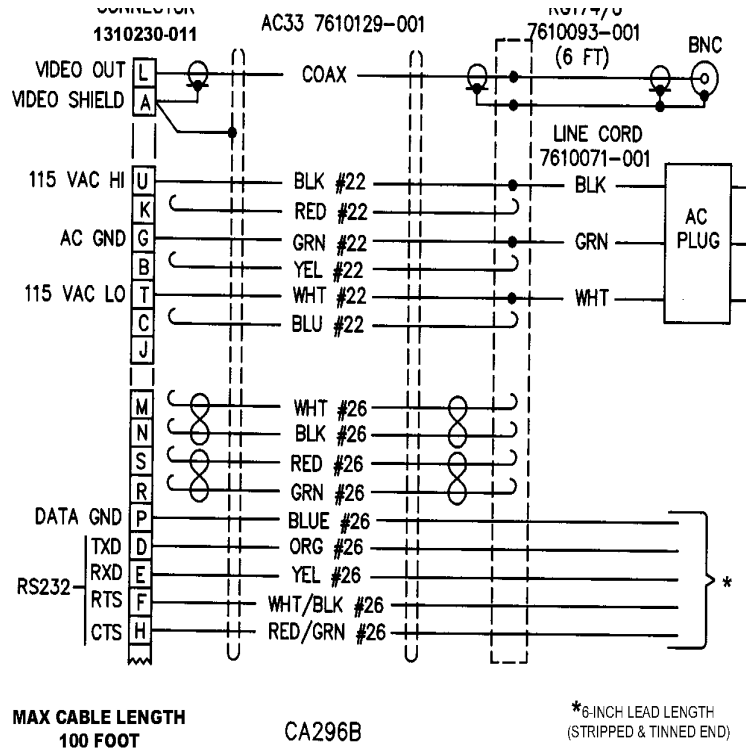**Figure 20. Cable CA296A (RS-232) Wiring Diagram**

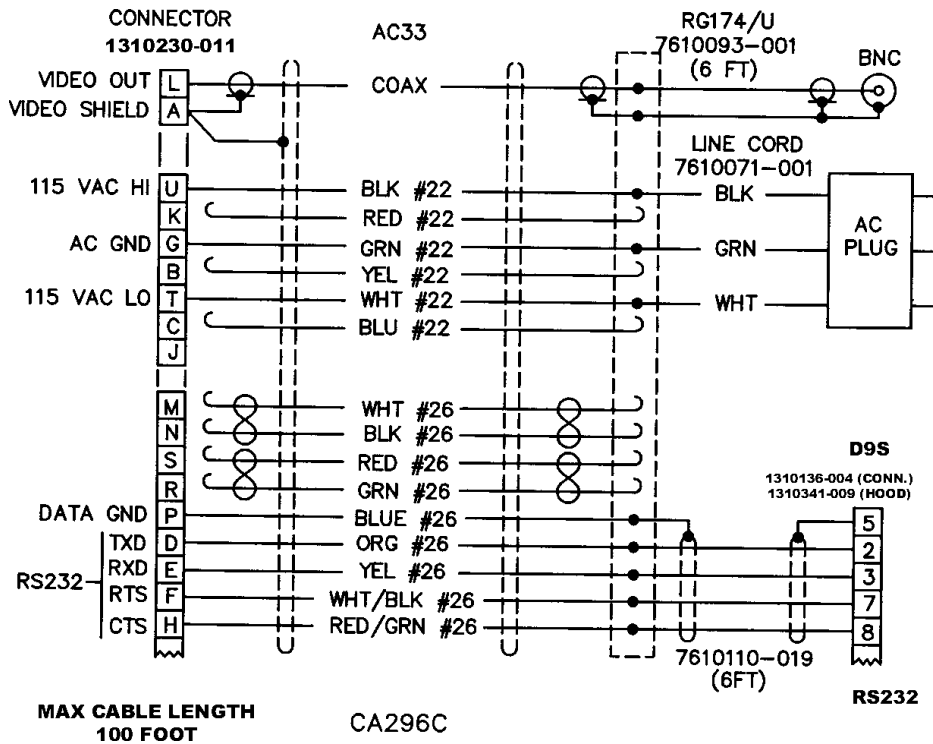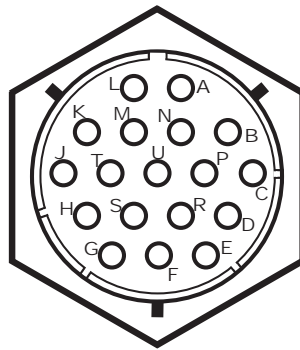**Fitgure 21. Cable CA296B (RS-232) Wiring Diagram**

Figure 22. Cable CA296C (RS-232) Wiring Diagram

115/230 VAC VERSION

115 or 230 V ac ⎡ hot/line — U
⎣ neutral — T
115 or 230 V ac Ground — G
422 ⎡ Response Out + (Tx+) — S
⎣ Response Out - (Tx-) — R
422 ⎡ Command In + (Rx+) — M
⎣ Command In - (Rx-) — N
422 Ground — P
75 ohm coax ⎡ Video Shield — A
⎣ Video out — L
Spare — B
Spare — C
Spare — J
Spare — K
232 ⎡ CTS — H
⎣ RTS — F
232 ⎡ Response Out (Tx) — D
⎣ Command In (Rx) — E

Mating view of connector on the dome housing. Pin layout same as wiring view of mating cable connector.

24 VAC VERSION

Spare — U
24 V ac low — T
115 or 230 V ac Ground — G
422 ⎡ Response Out + (Tx+) — S
⎣ Response Out - (Tx-) — R
422 ⎡ Command In + (Rx+) — M
⎣ Command In - (Rx-) — N
422 Ground — P
75 ohm coax ⎡ Video Shield — A
⎣ Video out — L
24 V ac low — B
Spare — C
Spare — J
Spare — K
232 ⎡ CTS — H
⎣ RTS — F
232 ⎡ Response Out (Tx) — D
⎣ Command In (Rx) — E

Figure 23. iDome Pin Layout Functions

Table 4. iDome Connector Functions

PIN	FUNCTION
A	Video Shield (75 ohm)
B	24 V ac high
C	not used
D	RS-232 Response Out (Tx)
E	RS-232 Command In (Rx)
F	RS-232 RTS
G	24 or 115 or 230 V ac Ground
H	RS-232 CTS
J	not used
K	not used
L	Video Out (75 ohm)
M	RS-422 Command In + (Rx+)
N	RS-422 Command In - (Rx-)
P	RS-422 Ground
R	RS-422 Response Out - (Tx-)
S	RS-422 Response Out + (Tx+)
T	24 or 115 or 230 V ac neutral (low)
U	115 or 230 V ac line (hot/high)

An iDome is wired for either 24, 115, or 230 V ac. The model number designates which power configuration is present.

Table 5. Communications Settings

COMMUNICATIONS FUNCTION	SETTING
Port	COM 1 (Typical. Verify)
Baud Rate	9600
Pan/Tilt	Var Speed P/T
	Max Pan Speed = 15
	Max Tilt Speed = 15
Comm Mode	PC to MPC Receiver
Camera	Day/Night
Receiver	iDome/iView

Figure 24. Typical Win MPC Screen and laptop
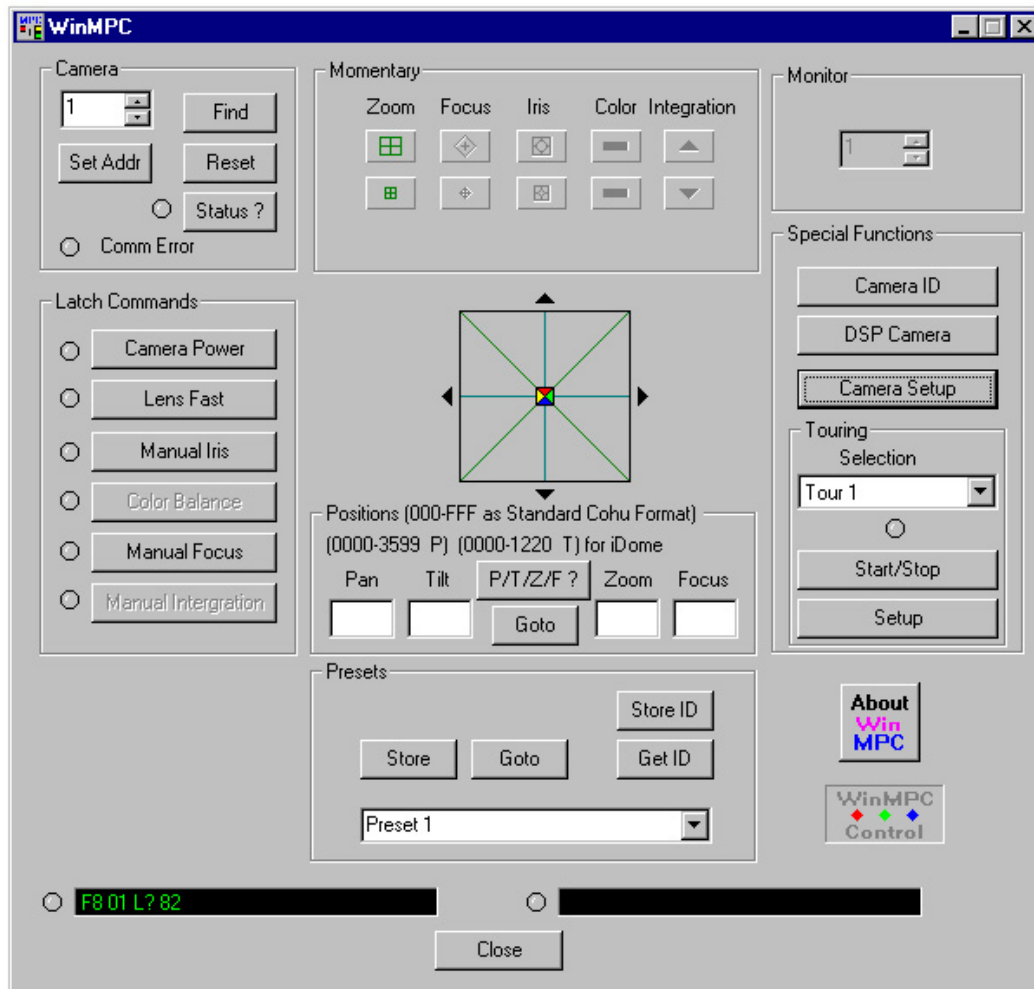
Figure 25. Typical Win MPC Main Screen
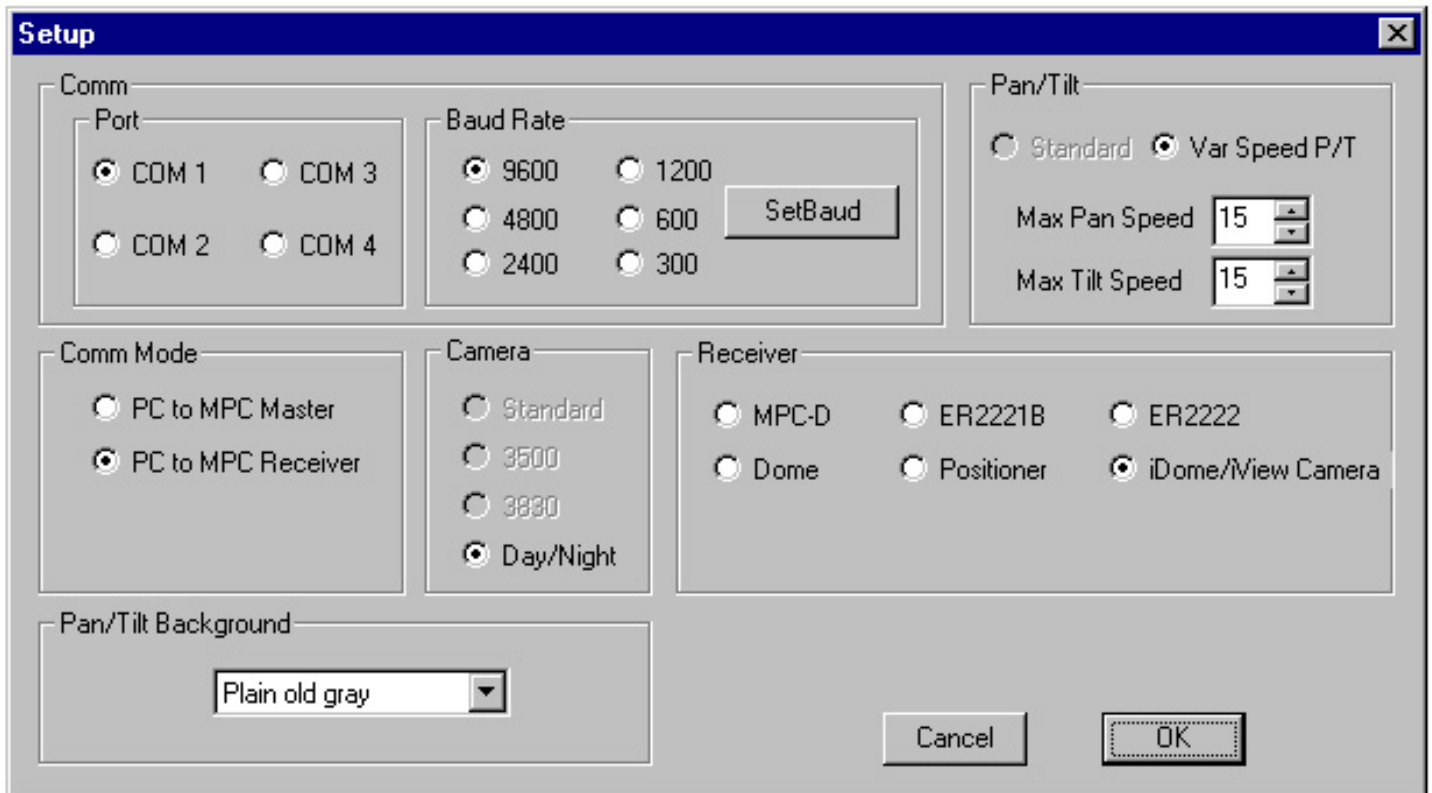
Figure 26. Typical Win MPC Communications Setup Screen

1. Remove the safety strap from the top half of the quick disconnect (the half with the threaded nipple attached).

2. Thread the quick disconnect nipple into the mounting arm and tighten with a strap wrench (figure 12).

3. Verify that the system cable is accessible for connection to the iDome connector at the end of the arm. This cable typically must pass into the back of the pole mount and then into the arm - although various other cable routing configurations are possible.

4. Route the system cable through the mounting and out the hole at the iDome quick disconnect.

5. Provide for weather tight mounting at the pole mount bracket.

6. Bolt the Arm to the bracket.

7. Attach the cable plug to the iDome connector.

9. Orient the iDome properly and attach it to the other half of the quick disconnect mounted to the arm.

10. Reattach the safety strap.

11. Proceed to section 2.12.4, the checkout procedure.

2.10 ALTERNATE MOUNTING METHODS

Other mounting configurations are possible. For example, figure 14 shows a mount suitable for attaching to an arm suspended over a roadway or other location. This mount straps to the arm and is threaded for 1.5 inch NPT mounting. Installing this arm mount requires the use of a strap tensioning tool.

2.11 CABLING REQUIREMENTS

The cable attached to the iDome usually routs to a nearby junction box or equipment cabinet from where another cable is connected to.

Always pre-plan all system cabling before starting an installation. Before an iDome is bolted in place, the cable from the junction box or cabinet must be available to attach to the iDome at its mounting location.

If an iDome is to be operated via its RS-422 pins on the connector then one of the three versions of a type CA295 cable should be used. These are shown in figures 17 through 19.

If an iDome is to be operated via its RS-232 pins on the connector then one of the three versions of a type CA296 cable should be used. These are shown in figures 20 through 22.

2.11.1 RS-422 CABLE INTERFACE TO THE iDOME

Figure 17 shows cable CA-295A for making RS-422 interconnections between the iDome and a junction box. This box is typically located nearby or in an equipment cabinet in the area. All leads at the j-box end are stripped and pre tinned in preparation for spade lugs or other mounting method.

Figure 18 shows cable CA-295B for making RS-422 interconnections between the iDome and an equip-ment cabinet. It has a BNC connector for the video and a three-pin plug for 115 V ac power. Data leads are stripped and pre tinned.

Figure 19 shows cable CA-295C for making RS-422 interconnections between the iDome and an equip-ment cabinet when RS-232 serial communications is available at that cabinet. This version of the cable has a BNC connector for video, three-pin plug for 115 Vac power, and an RS-232 / RS-422 converter prewired to the cable for data communications. Data connections would be made to the RS-232 terminals of the converter. (Figure 6 shows a typical 232/422 converter. The terminal labels used on various models of these converters differ, so it is important to read the literature accompanying the converter being used.)

This converter typically operates from power derived at the RS-232 connector, but in some cases this power source is not sufficient. In such a case, 12 V dc must be applied to the 232/422 converter. Wire lead inputs are available on the converter for 12 Vdc.

2.11.2 RS-232 CABLE INTERFACE TO THE iDOME

Figure 20 shows cable CA-296A for wiring between the iDome and a junction box where RS-232 communications is available. All leads at the j-box end are stripped and pre tinned in preparation for spade lugs. This j-box is typically located nearby or in an equipment cabinet in the area.

Figure 21 shows cable CA-296B for connecting between the iDome and an equipment cabinet where RS-232 is available. It has a BNC connector for the video and a three-pin plug for 115 V ac power. The RS-232 Data leads are stripped and pre tinned.

Figure 22 shows cable CA-296C. It connects be-tween the iDome and an equipment cabinet when RS-232 serial communications is available on a D9 subminature connector. This cable also has a BNC connector for the video connection and a three-pin plug for 115 V ac power.

Table 3 lists some basic characteristics required for a typical cable. Table 4 is a pin function list of the iDome connector. This table shows pin U as the line (hot) input for 115 or 230 V ac. An iDome is internally wired for either 115 V ac or 230 V ac. Be sure to know which operating voltage an iDome requires before applying power to a unit.

Also, iDomes operating from 24 V ac use pin B as the "line" (hot) input. This voltage shares pin T for the "neutral" (low) input with 115 and 230 applica-tions.

Figure 23 shows pin layout of the iDome connector and gives the function of each of the pins.

2.12 GUI INTERFACE

As previously mentioned, several GUI interfaces are available for use with this iDome.

1 Win MPC is used to control a singleiDome during installation or maintenance operations. This can be done either at a central shop facility or at the site location of the IDome.

2. CAMS is used to control multiple iDome systems

when an MPC Master Control Panel is being used as the central control point.

3. NET Cams is used to control systems with multiple iDome when the central control is a Net Cams Server.

2.12.1 Win MPC Setup

CAUTION

Do not connect WinMPC to more than one iDome (or other addressible equipment) at a time. The address setting function of WinMPC will set the address of all equipment on a cable TO THE SAME ADDRESS - making the system inoperative.

When WinMPC (figure 24) is used to set up the iDome it must be isolated from all other iDomes in the system. This generally is no problem since the iDome setup is performed either at a test bench location or at the actual iDome site itself. If the address setting function of WinMPC were to be sent to multiple iDomes they would all have identical addresses programmed into their memory. Since all iDomes (and other addressable equipment) in a system must have a unique address, this would result in an inoperative system.

2.12.2 Establishing Communications

 Since each iDome in the system must have a unique address, it is probably best to set all iDome addresses at a test bench located at the central distribution location prior to sending each of them out to the field installation sites. Providing a central control location for all address assignments may ensure that no duplications occur.

Before the address can be set or any other setups made, it is necessary to establish communications with the iDome. Figure 25 shows the home screen of WinMPC. Proceed as follows:

1. Under the FUNCTION menu area of the window, click on SETUP. The Comm setup window menu should appear. Figure 26 shows the communications setup window of Win MPC. Table 5 summarized the required selections.

a. Receiver to "iDome/iView Camera

b. Select the Port being used on the PC (Com1, Com 2, Com 3, Com 4)

c. Baud Rate to "9600" (Click "Set Baud")

d. Comm Mode "PC to MPC Receiver"

e. Camera to Day/Night" (default)

f. Receiver to IDome"

2. Under the Pan/Tilt menu area:

a. Select "Var Speed P/T" (default)

b. Max Pan Speed to "15"

c. Max Tilt Speed to "15"

3. Under the Pan/Tilt Background menu area:

a. Select "None"

4. Click on "OK" to exit the setup window.

2.12.3 Setting the iDome Address

After the initial setup, it is a good idea to allow WinMPC to search for the existing iDome address: This will verify that communications has been established.

Click on the FIND button at upper left of the screen. A pop-up window will appear while WinMPC searches for all allowable camera addresses (0 to 223). The factory default setting is "1."

CAUTION

WinMPC is intended to be connected to one iDome at a time. If it were to be connected into a system of iDomes and the address Set Function used, all iDomes (or other equipment) in the system would have their identifications set to the same address.

If this is not the required address for this iDome, then change the address number to the required address and click on "Set Address."

Click on the FIND button again to confirm that this new address has been accepted.

2.12.4 Checkout Procedure

After communications has been established with the iDome various functions should be tested to verify proper operation. This can be done using the WinMPC interface. Check all the Momentary func-
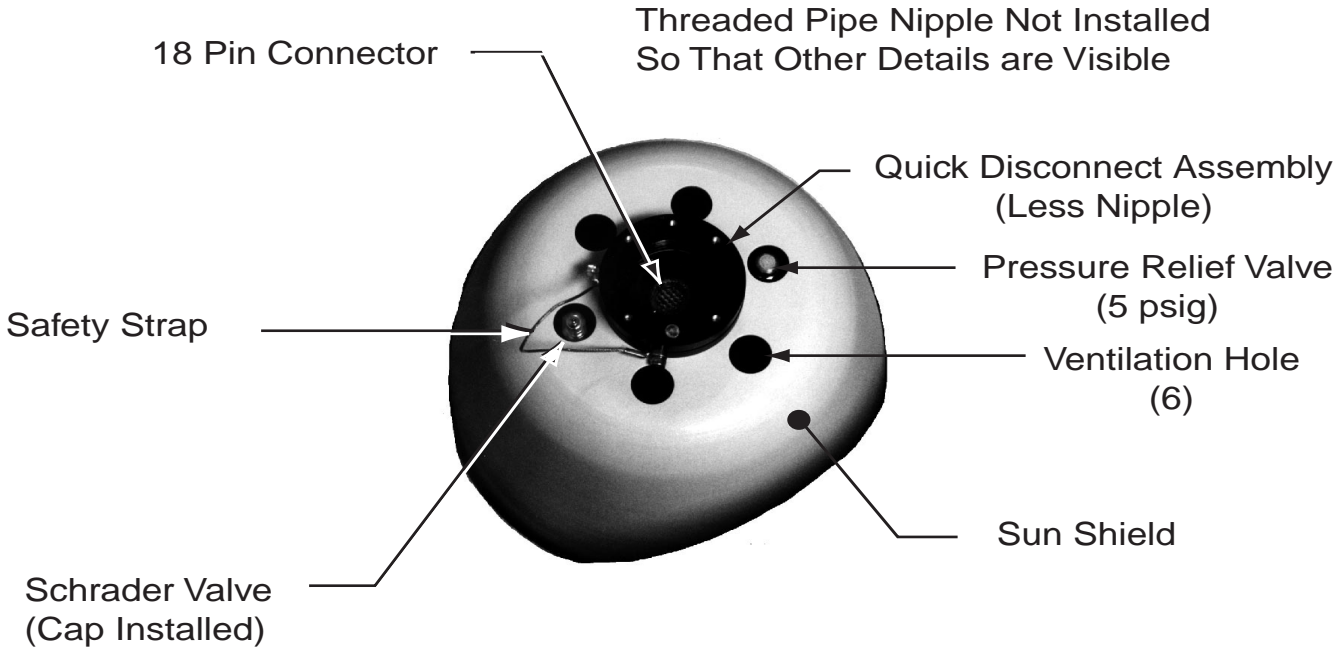
18 Pin Connector

Threaded Pipe Nipple Not Installed
So That Other Details are Visible

Quick Disconnect Assembly
(Less Nipple)

Pressure Relief Valve
(5 psig)

Safety Strap

Ventilation Hole
(6)

Sun Shield

Schrader Valve
(Cap Installed)

Figure 27. iDome Maintenance Features

tions: zoom, focus, iris, color, and integration. Latch commands also should be tested: camera power, lens fast, manual iris, and color balance. Several presets should be set and then reestablished to verify their operation. After presets are established, the tour function should be tested for proper operation. Once it has been verified that the iDome is operating properly it can be released for use.

2.13 PREPARATION FOR SHIPMENT AND STORAGE

For storage periods exceeding about one month, seal the unit in a vapor-proof bag containing a fresh desiccant pack.

Maintain the iDome storage environment within a range of -30 to 70 °C (-22 to 158 °F).

For shipment, package with enough foam padding or other packing material to prevent damage that can occur during shipping. The original shipping carton is a good container if it has not been damaged or subjected to excessive moisture. For shipping to the factory by Common Carrier, use the following address:

Cohu Electronics
3912 Calle Fortunada
San Diego, CA 92123-1827

Please contact the Customer Service Department for a Return Authorization (RA) number before sending any shipments to the factory:

cst@cohu.com
or
858-277-6700 extension 261

Prominently display the RA number on the outside of the shipping container(s) and on paperwork contained inside. Give a brief description of why the equipment is being returned and list the symptoms of any problems being experienced with the equipment.

3.0 OPERATION

3.1 Local Panel Control

System communications with an iDome sometimes passes through a local control panel located near the iDome. This panel can be put in LOCAL mode for on-site control of the Dome. Front panel

switches on this local panel provide various control functions. (Or a laptop can be plugged in to the front panel for control - see 3.2 below). A portable tv monitor must be connected to this panel for viewing the iDome video output. Local controls on the panel provide iris, focus, zoom, pan, and tilt functions to operate the iDome. This panel should be placed back to system mode after local control operations are completed; however, the panel will automatically revert to system mode after 30 minutes in the event that the pushbutton switch is not used to revert to system operation.

3.2 Local Laptop PC Control

A laptop PC running WinMPC software can connect with an iDome to control a full range of functions including the setting of its address. The laptop can connect to an iDome in several ways.

1. It can connect through the RS-232 connector on the front of a Local Control Panel is such a panel is available at the iDome site.

2. It also can be cabled directly to the iDome inter-face connector using the CTC-29 test cable (figure 5). This cable uses a 232/422 converter so that the iDome RS-422 communications connector pins are used.

3. A laptop could also be directly cabled to the RS-232 input pins of an iDome if desired. This cable for this would have to be constructed on site or special ordered.

4.0 MAINTENANCE

This maintenance section consists of two sections: troubleshooting and preventive maintenance. Figure 27 is a top view of the iDome showing various items related to maintenance operations.

For this illustration the 1.5-inch NPT nipple has been removed so that the 18-pin connector can be seen.

The quick-disconnect assembly an be rotated 1/4 turn to separate the two halves. Note that a safety strap connects the two halves so that the dome cannot accidentally fall. When installing the top (nipple) half of this assembly the safety strap is temporarily removed so that it can be threaded into the female threads of the supporting device. Always

be sure to immediately re-attach this strap after the dome half of the assembly is attached. Also snug down the locking bolt that secures the two halves of the assembly from turning.

4.1 Troubleshooting

The iDome System uses three types of signals: video, data, and power. Any one of these signals can be the source of improper iDome operation.

If the iDome System appears to be malfunctioning, the following sequence of troubleshooting steps can be used to isolate and correct the malfunction. The information below is based on typical sequence of steps that should be taken to isolate the source of trouble.

Step 1. Power Up/Start-Up Process-

NORMAL OPERATION:

Upon applying power to the iDome System, the unit will perform a start up routine. During this time, you should notice that the iDome Positioner will pan and tilt. This process is the iDome System initializing itself and locating its mechanical home reference points. Upon locating the reference points, it will stop moving. This process typically takes 5-10 seconds. As well at this time, you should see video from the iDome on your video monitor.

If your iDome is operational to this point, proceed to step 2. If not, then:

POSSIBLE MALFUNCTION SYMPTOM

1. iDome unit does not perform the start-up routine

Probable cause of failure is:

a. Proper Power is not being applied to iDome Unit.

i. Verify that the proper input voltage is being applied to the iDome and is present on the proper power input pins to the iDome. (Refer to the iDome Con-nector Pinout diagrams in this manual). Please check the power at the end of the cable that is connected to the iDome Connector, and/or, verify by using an Ohmmeter, that proper electrical continuity is present through the field cable on the proper pins at each end of cable as defined in this manual.

POSSIBLE MALFUNCTION SYMPTOM

2. No video on your monitor.

Probable cause of failure is:

a. Proper Power is not being applied to iDome Unit.

a. See step 1 above and correct

b. Poor/No Video

a. Check the field cable video connections for shorts, opens, and sound electrical connections between the video signal and video ground pins of the iDome and the Video Signal and video ground pin connections at opposite end of field cable. Please verify by using an Ohmmeter, that proper electrical continuity is present through the field cable on the proper pins at each end of cable as defined in this manual, and that no opens or shorts exist.

b Verify Video Monitor functions, and is turned ON.

c. Verify proper video input is selected on monitor (i.e. If video is connected into channel A of monitor, make sure you have channel A selected.)

STEP 2: Pan/Tilt/Zoom Control of the iDome

NORMAL OPERATION:

Upon verifying that proper operation of the Start-Up process and proper video is present on your monitor, as depicted above, setting/determining the communication address and operating pan/tilt zoom control functions of the iDome is the next step that normally will be taken. This process involves using the iDome communication address programmed into iDome, and establishing control. Cohu WinMPC software is the primary mechanism for initially verifying/performing these steps.

Press the "Find" button on the WinMPC software to determine the iDome units address. (Note: The factory default address is 001). If the iDome responds, WinMPC will report the communication address that it is set at. If the iDome unit responds with its address, refer to the iDome WinMPC GUI manaul (6X-1032) for setup and testing of unit. If it does not respond:

POSSIBLE MALFUNCTION SYMPTOM

3. Unit does not respond to WinMPC "Find" command

If you know the iDome units address, enter this address into the WinMPC address box. (If it has not been previously set, then the factory default address is 001.) Perform any pan/tilt command and see if the iDome unit responds. If the iDome DOES respond to these commands, then it is likely that the Response out lines from the iDome are not wired correct. Swap the wires connected to pins S and R of the iDome to see if this corrects problem. If not, please verify by using an Ohmmeter, that proper electrical continuity is present through the field cable on the proper pins at each end of cable as defined in this manual, and that no opens or shorts exist.

If no response is seen from the iDome, check the field cable data connections for shorts, opens, and sound electrical connections between the proper data signal pins of the iDome and the data signal pin connections at opposite end of field cable. Please verify by using an Ohmmeter, that proper electrical continuity is present through the field cable on the proper pins at each end of cable as defined in this manual, and that no opens or shorts exist.

4.2   Preventive Maintenance

The iDome System contains no user serviceable components. If there is a problem with your system, it must be returned to Cohu for authorized servicing.

As well, there are some periodic maintenance routines that may be necessary, in order to provide optimum operation and product performance. These procedures will generally only need to be performed on an as needed basis. However, it is recommended that a regular checkup (once every year or two) be performed to insure the following items are maintained.

1. Acrylic Window: The iDome acrylic window may need to be cleaned of any grime that may accumulate over time, as would be expected of an outdoor device. If the picture quality of the iDome becomes affected by excessive grime on the acrylic window, clean with a mild, nonabrasive detergent and water with a soft cloth.

2. Dry Nitrogen Pressure: The iDome is a sealed and pressurized device that over time, may need to be repressurized with dry nitrogen. Low pressure can be suspected when the iDome low pressure

message is displayed on the video signal (assuming the iDome alarm message is set to be enabled), and when internal moisture condensation is noticed on the interior of the iDome units acrylic window. If either one of these conditions is present, Cohu offers a lifetime "pressurization" warranty (Refer to Cohu's Warranty Statement). You may elect to send the unit into Cohu for repressurization of the dry nitrogen or elect to do so yourself. The iDome uses a standard Schrader valve to repressurize. Use only dry nitrogen for this purpose. Pressurize to 5 psig. A pressure relief valve releases pressure at 5 psig.

3. A visual check of the iDome units outer sunshield to insure the vent holes are not obstructed from allowing free air passage.

NOTE: The iDome System contains no user serviceable components. If there is a problem with your system, it must be returned to Cohu for authorized servicing.

WARRANTY

Cohu, Inc., Electronics Division, warrants equipment manufactured to be free from defects of material and workmanship. Any part or parts will be repaired or replaced when proven by Cohu examination to have been defective within two years from date of shipment to the original purchaser for standard CCD cameras and one year from date of shipment to the original purchaser for intensified CCD cameras and all other Cohu manufactured products.

Pressurized camera products include a lifetime pressurization warranty. Cohu wll re-pressurize at no charge returned environmental cameras not exhibiting evidence of physical damage due to misuse.

All warranty repairs will be performed at the factory or as otherwise authorized by Cohu in writing. Transportation charges to Cohu shall be prepaid by purchaser.

This warranty does not extend to Cohu equipment subjected to misuse, accident, neglect, improper application, or repaired or altered by other than Cohu or those authorized by Cohu in writing.

Television image pickup tubes, image intensifiers, lenses, and products manufactured by companies other than Cohu are warranted by the original manufacturer.

This warranty is in lieu of all other warranties expressed, implied, or statutory, including warranties of fitness for a particular purpose and merchantability, and set forth buyers sole remedy in connection with such warranties.

Cohu, in no event, whether as a result of breach of contract or warranty, tort (including negligence) or otherwise, shall be liable for any penalties regardless of reason; collateral, consequential, incidental, or exemplary damages, including without limitation, any loss of profit or revenues, loss of use of any equipment or goods, or removal or re-installation of equipment without prior written approval.

A Return Authorization (RA) number must be obtained from Cohu prior to returning any item for warranty repair or replacement.

COHU
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