500ACS-L/H ANNOUNCEMENT CONTROL SYSTEM

SYSTEM HARDWARE

The 500ACS-L/H consists of a number of system level components which are the framework for building an IED Announcement Control System. The system level components which are included in the 500ACS-L/H part number are listed in Table 1 below.

COMPONENT	FUNCTION	DOCUMENTATION
500CPU-486/ 500P	Microprocessor Card/ Hard Drive Card	Section 3 Group 57 Sub A
Note: Systems installed before August, 2003		
510CPU	Microprocessor Card with Hard Drive	Section 3 Group 59 Sub A
Note: Systems installed after July, 2003		
405L/H	+5 VDC Power Supply	Section 10 Group 64 Sub A
415L/H	±15 VDC Power Supply	Section 10 Group 66 Sub A
0904	Networking Switch	Referenced later in this document
500M	ACS Mainframe	Referenced later in this document
500R	Digital Record/Playback Card	Section 3 Group 15 Sub A
500VS4L/H	KVM	Referenced later in this document

Table 1 - 500ACS-L/H Components

All of the above parts are required for a minimum ACS system. In addition, a number of 500C, 500D, and possibly 500DR cards are required. The numbers depend on the individual system configuration. The minimum system package will have room for any combination of ten 500C, 500D, and 500DR cards. Each system has to include at least one 500C card and one 500D card. If more than 10 of these cards are required for the system, it will be necessary to add a 500ACSE-L/H expansion package. The expansion package includes a 500M ACS Mainframe, two 415L/H Power Supplies for powering the extra load, and two 500CA9 Cable Assemblies which interconnect the mainframes. A maximum of 2 expansion packages can be added.

500M MAINFRAME

The 500M is the Mainframe for the 500ACS which includes the motherboard. It is designed to provide mounting means and connections to the plug-in cards which comprise the 500ACS. The 500M has 13 usable slots. The card slots are numbered from 1 to 13 with slot 1 being on the left as viewed from the front. Slot 13, the rightmost slot is the

COMPONENT	FUNCTION	DOCUMENTATION
500C	Microphone Station Interface Card	Section 3, Group 05
500D	Zone output Card	Section 3, Group 06
500DR	Relay Card	Section 3, Group 07

Table 2 - Additional Function Cards

only slot in which the 500CPU-486 Microprocessor Card can be mounted. The 500CPU-486 requires ±12 VDC. All other cards in the system, including the 510CPU, operate on ±15 VDC. To prepare slot 13 for the 500CPU-486 card, two jumpers must be placed in the CPU position. If the 500M is being used as an expansion mainframe, the jumpers should be set in the IED position so that other function cards such as the 500C or 500D cards can be used in this slot. See installation instructions for details.

The 500P Hard Drive Card is placed in slot 12, just to the left of the 500CPU-486. The cable assembly which connects the 500P to the 500CPU-486 (500CA4) is just long enough to reach between the two adjacent slots.

The 500R Digital Record/Playback Card is always supplied with a 500RT rear terminal strip and is located in the mainframe between the groups of 500C Microphone Interface Cards and 500D Zone Output Cards due to ribbon cable alignment.

If more than one mainframe is used, the 500CPU-486 or 510CPU Card, the 500R Card, and the 500P card must be mounted in the same mainframe.

The remaining function cards which make up the 500ACS are listed in Table 2. They are not included in the base package because their numbers vary widely depending upon system configuration.

The 500C Microphone Interface Cards which are ordered separately according to system requirements are supplied with 500FT Rear Terminal Strips. The 500FTs are mounted in the 500M at the factory according to system specifications. They provide connections for wiring to the microphone stations.

The 500D Zone Output Cards which are ordered separately according to system requirements are supplied with 500GT Rear Terminal Strips. The 500GTs are mounted in the 500M at the factory according to system specifications. They provide connections for wiring the zone outputs to other audio devices in the system.

The 500DR Relay Cards which are ordered separately according to system requirements are supplied with 500GT Rear Terminal Strips. The 500GTs are mounted in the 500M at the factory according to system specifications. They provide connections for wiring the relays to other devices in the system.

ACCESSORIES AND CABLES

ACCESSORIES

There are four accessory modules for the 500ACS which are supplied by IED but manufactured by third parties. These modules are identified in the table below and their specifications follow. The first three are required, but the 10Base-T to Fiber Optic Transceiver is optional, depending upon system configuration.

FUNCTION	IED MODEL NO.
10Base-T Ethernet Transceiver	0902
Note: Not used in systems with the 510CPU	
8 Port Ethernet Switch	0904
KVM	500VS4L/H

Table 3 - Accessories

Note: *All accessory hardware is subject to change without notice. Reference As-Built drawings and other project specific literature for exact accessory hardware information.*

10BaseT Ethernet Transceiver

This device is an RS422 to 10Base-T converter. It is used in the 500ACS to connect between the RS422 port on the 500CPU-486 Card and the 10Base-T Ethernet Switch. It is powered through the RS422 cable from the 500CPU-486 and does not need a separate power supply. The RS422 cable which connects to the 500CPU-486 is IED 500CA3, and the Ethernet cable which connects to the network switch is an IED 500CA6.

The unit has 5 LED indicators as follows:

Receive	Unit is receiving data from the network
Transmit	Unit is transmitting data to the network
Collision	Collisions are occurring on the network
Link	Unit is properly connected to an active device
Power	Unit is receiving power

8 Port Fast Ethernet Switch

One unit can be used to form a peer-to-peer 10Base-T network with up to 8 users.

1. Data Rate . . . . . 10/100/1000 Mbps
2. Cabling
   - 10BaseT. . . . . Category 5 or better
   - 100BaseT . . . . . Category 5 or better
   - 1000BaseT. . . . . Category 5e or better
3. Topology . . . . . Star
4. Speed per Port
   - Half Duplex . . . . . 10 Mbps or 100 Mbps
   - Full Duplex . . . . . 20 Mbps or 200 Mbps
   - Gigabit Port . . . . . 1000 Mbps or 2000 Mbps
5. LEDs (Green) . . . . . Power, 1000, 10/100, FD/Col, Link/Act, Full/Half Duplex, 1000 Link Act, 1000 FD/Col

6. Power . . . . . 3.3 VDC, 5 A
7. Size . . . . . (48 mm x 186 mm x 154 mm) 1.88”H x 7.31”W x 6.6”D
8. Weight, Including power supply . . . . . (0.39 kg) 13.6 oz
9. Operating Temperature Range . . . . . (0 C - 50 C) 32 F - 122 F
10. Storage Temperature Range . . . . . (–20 C - 70 C) 32 F - 122 F
11. Operating Humidity Range . . . . . 10% - 85%, Non-Condensing
12. Storage Humidity Range. . . . . 5% - 90%, Non-Condensing

KVM

The Model 500VS4L/H permits control of four computers with a single keyboard and monitor (and mouse, if used). Computer selection can be make by keyboard or button on the unit.

1. Video modes supported . . . . . VGA, SVGA, MultiSync
2. Indicators
   Ready . . . . . 1 LED
   Port Status . . . . . 4 LEDs
3. Power . . . . . 9 VDC, 450 mA
   (Supplied by the included wall mount transformer)
4. Connectors (on rear of switcher)

DEVICE	CONNECTOR TYPE	INPUT	OUT TO PC
Keyboard	5-pin DIN	Female	Female
Monitor	15-pin Sub D	Female	Male
Mouse	9-pin Sub D	Male	Female

5. Size . . . . . (25.4 cm L x 18 cm W x 8.2 cm H) 10” L x 7.1” W x 3.2” H
6. Weight . . . . . (2.96 kg) 6.51 lb
   Including power supply

10Base-T Twisted Pair to Fiber Optic Transceiver

The Model 0900 is a media translator which converts between a 10Base-T twisted pair link and a 10Base-FL fiber optics link. This conversion provides a means to greatly extend the link distance. The operation of the module is transparent to the network, and maximum link distances can be used on both sides.

1. Twisted Pair Interface
   Maximum link distance . . . . . (100 m) 328 ft.
   Connector . . . . . RJ-45 8-pin jack
   Compatibility. . . . . IEEE 802.3 (10Base-T)
   Twisted Pair Connecting Cable . . . . . IED 500CA6
2. Fiber Optic Link Interface
   Maximum link distance. . . . . (2 km) 1.24 mi.
   Compatibility . . . . . IEEE 802.3 (10Base-FL)
   Fiber Optic Connector . . . . . ST type
   Fiber Optic Cable type . . . Multimode, 50/125, 62.5/125, or 100/140 micron
3. Indicators
   Fiber Optic Link Monitor . . . . . Green LED
   Twisted Pair Link Monitor . . . . . Green LED
   Traffic . . . . . Yellow LED
   Power . . . . . Red LED

4. Power requirement . . . . . 12 VDC, 500 mA
   Supplied by the included wall mount transformer
5. Size . . . . . (3.81 cm W x 10.8 cm L x 2.54 cm H) 1.5”W x 4.25”L x 1”H
6. Weight, Including power supply. . . . . 16 oz.

CABLES

All of the cables necessary to interconnect the IED 500ACS components are supplied with the system. Table 4 describes the cables and their functions.

CABLE	FUNCTION
500CA1	Adaptor ribbon cable, 10-pin header to PS-2 mouse and 5-pin keyboard
500CA2	Adaptor ribbon cable, 10-pin header to 15-pin sub D VGA monitor
500CA3	Adaptor cable, 10-pin header to 15-pin sub D Ethernet
500CA4	40-pin header IDE hard drive controller ribbon cable
500CA5	26-pin header parallel port ribbon cable
500CA6	8-pin modular cable, RJ45 connectors
500CA7	PC-type monitor extension cable, 15-pin sub D
500CA8	PC-type keyboard extension cable
500CA9	50-pin Ribbon Cable, Expansion Mainframe Interface

Table 4 - ACS Cables

POWER SUPPLY REQUIREMENTS

(2) 405L/H Power Supplies are required for each (3) 500M Mainframes. The number of 415L/H Power Supplies required is determined by the following equation:

Number of power supplies required =

$$\mathbf{1.25} + \left[(\textbf{Number of C cards})(\mathbf{.2}) + (\textbf{Number of D cards})(\mathbf{.07}) \right]$$

The result should be rounded upward to the nearest whole number. It includes (1) 415L/H power supply for backup.

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