AE44-503L SERIES

PRODUCTION DISPLAY SYSTEM

(WITH OPTION 509)

ATS APPLIED
TECHNICAL
SYSTEMS

AE44-503L PRODUCTION DISPLAY SYSTEM (WITH OPTION 509)
REV 04/17/01

DESCRIPTION

The AE44-503L Series Production Display System is a stand-alone production pacing (Goal) and monitoring (Actual) display. It includes a four digit red display for the Production Goal and a four digit green display for the Production Actual Count. The Production Goal is adjustable to provide from one count per second to one count every 9999 seconds. The digits are four inches high and are visible up to 200 feet away.

This manual will use the term "the AE DEVICE", in some cases to cover all versions of displays.

The model numbers of the AE44-503L Series are derived from the digit size and the number of digits in each line of the display, followed by the suffix 503L. For example the AE44-503L is a Four Inch, Four-Digit display. For two-sided versions, the model number would have /2. For example: AE44/2-503L would be the model number for a Two-Sided, Four Inch, Four Digit Production Display System. For your specific model number and hardware configuration refer to the drawings at the back of this manual.

For multiple display systems, remote displays can be added at distances up to 2000 feet away. These are available in sizes ranging from 1" high to 12" high digits.

The AE44-503L Series Production Display Systems can be factory configured with Option 509 for computer data acquisition and control.

SPECIFICATIONS

Digits: Four Inch High, Seven Segment Digits. Red dot LED's for the Goal and Green dot LED's for the Actual.

Number of Digits: Two lines with four digits per line. See the drawings at the back of this manual for your specific model.

GOAL (RED)

Count Rate: Four BCD Push-Wheel Switches are provided to adjust Goal Count Rate from 1 count per second to 1 count per 9999 seconds. When the RUN/HOLD switch is set to the RUN mode, the Goal display will begin to count at the rate selected.

ACTUAL (GREEN)

Count Rate: Up to 25 pulses per second (25Hz)

Count Signal: 12V DC to 120V DC pulse (>20 msec),
                            Can be jumpered for NPN or PNP transistor, or dry contact closure input. See the cable-wiring tables in the WIRING section of this manual.

Run/Hold: A Run/Hold switch is provided. In the Hold position the Goal Count is stopped. Actual Count is NOT stopped.

Resets: Built-in front panel reset push buttons are provided for Goal Reset and Actual Reset.

Power: 120 VAC, 60 Hz (20VA). Eight-foot power cord is provided. Optional power includes 50 HZ, 12 VAC, 12 to 15 VDC and 220 VAC.

Accuracy:	Synchronous with the AC power line when power is applied. On battery backup a 0.005% crystal time base is used.
Battery standby:	Self-charging, 9V Ni-Cad.
Operating Temperature:	0 to 50 Degrees C
Enclosure:	Black painted steel with .118" thick acrylic lenses. The enclosure is 0.062" thick steel (all 3 pieces). See the drawings at the back of this manual.
	(2) Mounting studs (1/4-20 x ¾) are provided on the back panel.
Signal Wiring:	A ten-foot color-coded cable provides all signal wiring.

Options

Option 509:	Option 509 provides an I/O Interface for the AE44-503L. This option allows a host device such as a PC, to communicate with one or more (up to 32) AE44-503L's with Option 509 installed. AEQuery software and an RS232/485 I/O Adapter (ATS P/N: 9200-0509) are required. The software uses the computer's RS232 port to send and receive data from up to 32 individually addressed AE Devices. AEQuery can store the Goal and Actual counts, Interval and Actual switch settings, and run time of each AE Device on the system. AEQuery can also clear (reset to zero) the run time of one or all AE devices. The data collected can be printed or saved to a file for use by other programs.
	A separate ten-foot, two conductor, color-coded data cable is provided with this option.

For all other options refer to the drawings at the back of this manual for additional specifications.

<u>**INSTALLATION**</u>

MOUNTING

The AE44-503L Display can be mounted using the two ¼-20 x ¾ mounting studs on the back panel. Things to consider for mounting include ambient light, viewing area, ambient temperature, dirt or dust. Refer to the specific drawings.

WIRING

An AC power cord is standard for the 120 VAC power. For any other power configurations, refer to the specific wiring diagrams provided.

The count signal inputs are also pre-wired and provided in the color coded, four-conductor cable. Refer to the cable-wiring tables below:

FOUR-CONDUCTOR CABLE WIRING TABLE

<u>Wire Color</u>	<u>Function</u>
Red	UNREG – 12 to 15 VDC output
Black	COM – logic common
Green	RUN / HOLD
White	COUNT Input
Shield	Tied to earth ground inside the AE44-503L.

<u>Wiring Examples:</u>

Applications include connecting an NPN transistor or dry contact to the Count Input. To connect an NPN transistor, connect the White wire to the transistor's collector and the Black wire to the transistor's emitter. To connect a dry contact push button switch to the Count Input, connect one side of the switch to the White wire, and connect the other side of the switch to the Black wire.
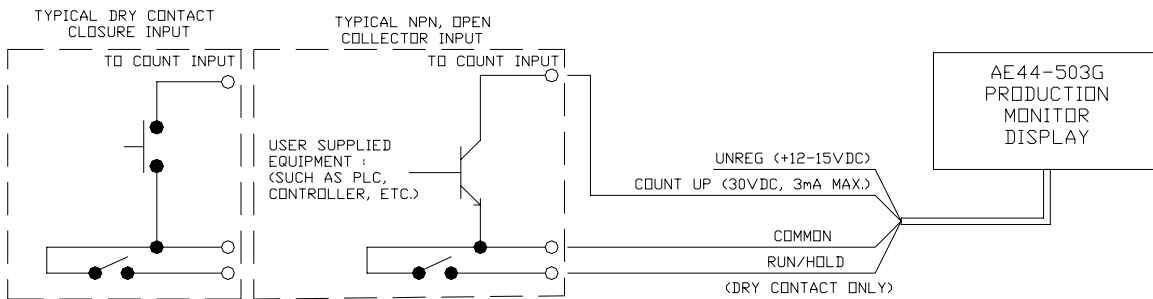
TYPICAL WIRING EXAMPLES : COUNT AND RUN/HOLD INPUTS

For Option 509 wiring and operation refer to the "AE44-503L's with Option 509" section of this manual.

OPERATION

Before applying power, be sure all wiring is completed.   Apply power to the unit. The displays will rotate during the power on self-test and then a version number will appear for a few seconds. Both displays will show all zeros. If a charged battery is installed, the self-test will be bypassed.

SETTING THE GOAL COUNT RATE

Set the Run/Hold switch to the Hold position. Set the desired Goal Count rate (interval) using the Push-Wheel switches. The rate entered does not take effect until the Run/Hold switch is set to the Run position. The rate cannot be changed on the fly. Any changes made to the rate while in the Run position will be ignored until the Run/Hold switch is set to Hold and then back to Run.

Each Push-Wheel switch has a range of 0 through 9. A setting of 0000 or 0001 will cause the Goal display to increment by one count every second when the Run/Hold switch is set back to the Run position (a setting of 0000 defaults to 0001).   A setting of 9999 will cause the Goal to increment by one count every 9999 seconds.

GOAL RESET

Press the Goal Reset push button on the front panel to reset the Goal count to 0000.

GOAL HOLD

Set the Run/Hold switch to the Hold position. The Goal display will stop incrementing until the Run/Hold switch is switched back to the Run position. Note that the Actual count can continue to be updated while the Run/Hold switch is in the Hold position.

USING THE COUNTER (ACTUAL)

Apply the <u>COUNT</u> signal by push button or transistor. The Actual display will be incremented by one count each time the Count signal is applied.

ACTUAL RESET

Press the Actual Reset push button on the front panel to reset the Actual count to 0000.

NOTE. If it is desired to reset both displays at once, one Reset button will need to be pressed a fraction of a second before the other. If both Reset buttons are pressed at the same time, the address of the device will be displayed.

POWER LOSS

If <u>power is lost,</u> a rechargeable battery backup system will store both counts for up to four hours. Also the COUNT and RESET signals are functional during power loss. For systems using active signal inputs, the COUNT and RESET functions will continue as long as the signal inputs are applied.
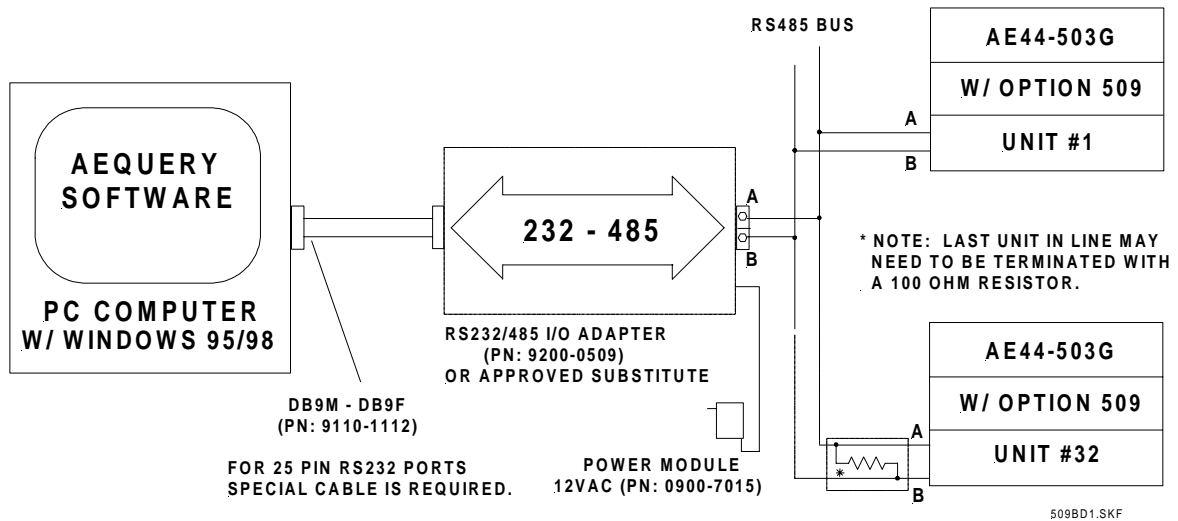
AE44-503L'S WITH OPTION 509

Option 509 provides an I/O Interface for the AE44-503L. This option allows a host device such as a PC to communicate with one or more (up to 32) AE44-503L's with Option 509 installed. AEQuery software and an RS232/485 I/O Adapter (ATS P/N: 9200-0509) are required. The software uses the computer's RS232 port to send and receive data from up to 32 individually addressed AE Devices. AEQuery can store the Goal and Actual counts, Goal and Actual switch settings, and run time of each AE Device on the system. This data can be printed or saved to file for use by other programs. AEQuery can also clear (reset to zero) the run time of one or all AE devices.

INSTALLATION

This Option is factory installed in the AE44-503L. A separate ten-foot, two conductor, color-coded data cable is provided for connection to the RS232/485 I/O Adapter (ATS P/N: 9200-0509). Up to 32 AE44-503L's with Option 509 can be connected in parallel (multi-dropped) to a single computer via the RS232/485 Adapter. The Adapter connects to one of the computer's RS232 ports. The Adapter requires 12 VAC power. A 12 VAC Power Module (ATS P/N: 0900-7015) is supplied with the Adapter. See the block diagram below:

NOTE: A 100 ohm resistor is usually required across lines A and B at the unit that is most distant from the computer.

OPTION 509 DATA CABLE WIRING

Wire Color	RS232/485 Adapter
Red	Terminal A
Black	Terminal B

SETTING THE UNIT ADDRESS

To set the address of an AE44-503L with option 509 installed:

Place the Run/Hold switch in the Hold position.

Set the push-wheel switches to the desired address (example: 0020 for address 20).

Then press both the Goal and Actual reset buttons at the same time, then release. The new address is now stored in non-volatile memory. The previous address will be displayed at this time.

Finally, place the Run/Hold switch back to the Run position.

WARNING. Be sure each AE Device on the system has a unique address. If two or more units on the system have the same address, the data acquired from these units will be unreliable. Normally it will be garbled. Even if good data is received, one can't be sure which of the conflicting units it came from.

CHECKING THE CURRENT UNIT ADDRESS

WARNING. The unit address must be checked in the Run position. Since the Reset switches are used to check the address, both the GOAL and ACTUAL counts will be reset to zero when checking the address.

To check the unit address:

Place the Run/Hold switch in the Run position.

Press and hold both the Goal and Actual reset buttons at the same time.

The displays will read the address stored.

Release both Reset buttons.

AEQUERY SOFTWARE

AEQuery software, when used with the RS232/485 Adapter, will allow a computer to communicate with up to 32 different AE44-503L's with Option 509. This software uses one of the PC's RS232 ports, either Com1 or Com2, for communication with the AE Device.

INSTALLATION

AEQuery is usually provided on 3-½ inch floppy disks. Run "setup" from the first disk and follow the installation wizard.

OPERATION

Once the system of AE44-503L's with Option 509 and the AEQuery software are installed, click on the AEQuery Icon to start the program. Click on "Setup" to choose the desired RS232 port (Com1 or Com2). Click "Setup" again to change the RTS Polarity if necessary. Some RS485 adapters use Positive True logic and while others use Negative True logic for the RTS signal. The ATS adapter (p/n 9200-0509) is a negative true device. Other approved adapters may use positive true logic device. Click "RTS". Click either "Positive True" or "Negative True".

Choosing the wrong polarity won't damage anything. It will only result in the scans producing "No Data".

Click on either the "Scan One" or "Scan All" buttons to acquire data from the AE44-503L's. The data will begin to show up on the screen arranged in columns. Figure 1 below shows an example of scanning all 32 units, with 15 units on line. If "Scan One" is selected, you will be prompted for the address of the unit to be scanned.

Figure 1 – Formatted Data Form

To print a report of the displayed file, click "File" and then select "Print" from the pull-down menu. The data can now be saved as a comma-separated value (".csv") file which can then be reopened by AEQuery or used with other programs such as EXCEL for other data reports. To save the data, click on "File" and choose "Save" from the pull-down menu. Save the data to a filename of your choice. To open a file, click on "File", and select "Open" from the pull-down menu. Choose the desired file to open.

CLEARING THE RUN TIME

AE44-503L PRODUCTION DISPLAY SYSTEM (WITH OPTION 509)
REV 04/17/01

To clear the run time (reset it to zero) of one unit:

1. Click "Utilities".
2. Click "Clear Run Time".
3. Click "Clear One Unit".

You will be prompted for the address of the unit that you want to clear.

To clear the run time (reset it to zero) of all units (addresses 1 – 32):

Click "Utilities".
Click "Clear Run Time".
Click "Clear All Units".

TECHNICAL SUPPORT

For any questions concerning installation and operation of this product, contact our factory at:

<div align="center">

PHONE (800) 444-7161
OR
FAX (318) 797-4864

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SERVICE POLICY

It is recommended that all service for this product be done by the factory or by a factory authorized service representative. Applied Technical Systems will provide ongoing service support in and out of warranty. Send your repairs to:

<div align="center">

APPLIED TECHNICAL SYSTEMS
849 KING PLACE
SHREVEPORT, LA 71115

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APPLIED TECHNICAL SYSTEMS
WARRANTY POLICY

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ATS warrants its products to be free of defects in material and workmanship for a period of 24 months from the date of purchase. ATS will repair or replace any product returned to its authorized factory service center within the warranty period so long as there is no evidence that the product has been abused, misused, damaged by lightning, overloads of any kind or water, or altered in any way.

Products returned for warranty must be returned with freight prepaid. ATS will pay normal freight charges to return the product to the customer. Special premium freight requested by the customer will be charged to the customer.

ATS disclaims any warranties expressed or implied, including merchantability and/or fitness for a particular purpose. In no event shall ATS be held liable for incidental or consequential damages.