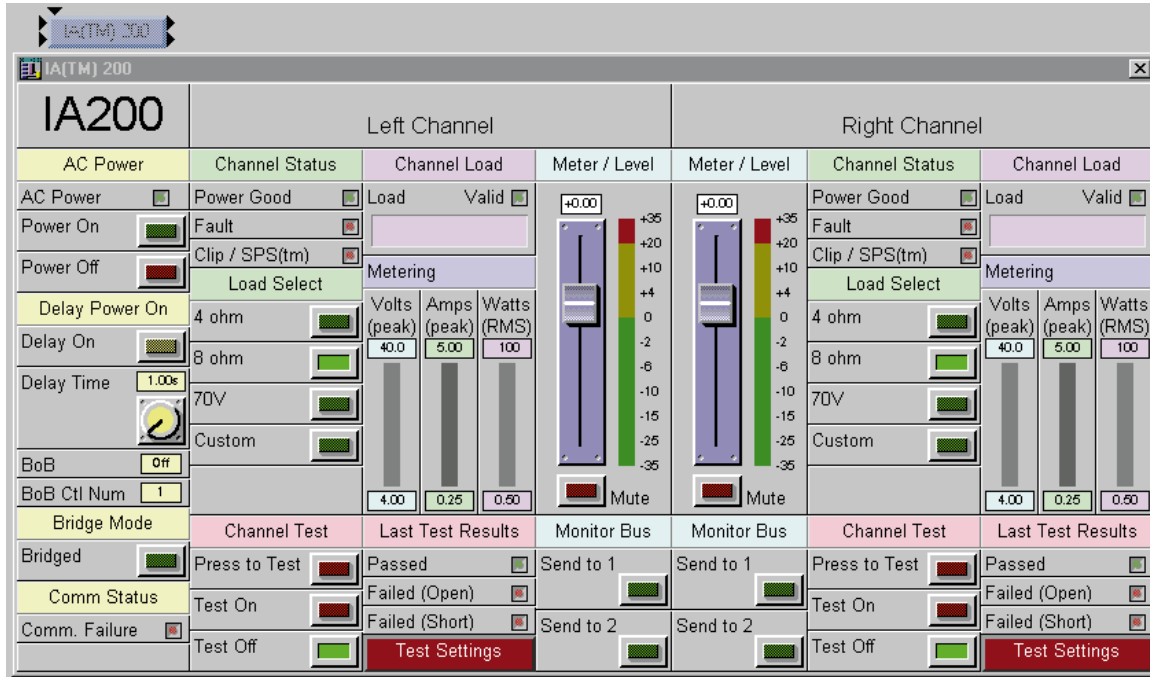


# AmpWare™

The **AmpWare™** software module now offers MediaMatrix® on-screen monitoring facilities for Peavey's IA Series amplifiers, specifically the IA™200, IA™400 and the IDC™-150TII. Used in conjunction with the appropriate associated hardware components, the system offers fault and clip metering, real-time impedance measurements, and delayed power-up with subsequent power status.



AmpWare™  
Software

## DEVICES

Three basic software devices are required for implementation of amplifier control and monitoring: **A/A-AC8 Network** device, **A/A-AC8™** devices and specific **Amplifier** devices.

AmpWare (TM)	▶	Δ/A - AC8(TM) Network On COMM 1 [\$]
Automatic Mixer	▶	A/A - AC8(TM) Network On COMM 2 [\$]
Crossover	▶	A/A - AC8(TM) Network On COMM 3 [\$]
Delay	▶	A/A - AC8(TM) Network On COMM 4 [\$]
Diagnostics	▶	A/A - AC8(TM) [\$]
Distribution Amp	▶	IA(TM) 200 [\$]
Dynamics	▶	IA(TM) 400 [\$]
Equalizer	▶	IDC(TM) 150TII (230v) [\$]
Input/Output	▶	IDC(TM) 150TII [\$]

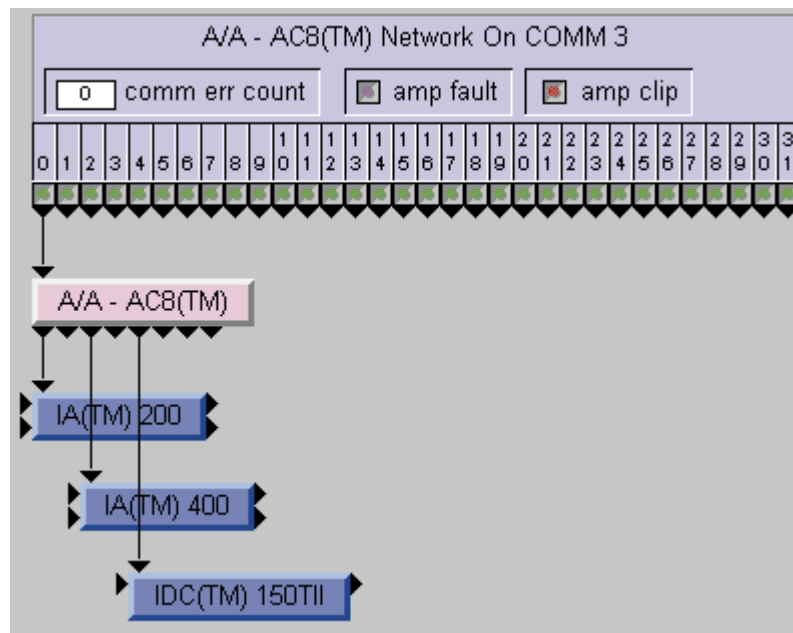
AmpWare™ Device Algorithms



MediaMatrix®

## DEVICES (cont.)

The devices appear on-screen as the following graphics:

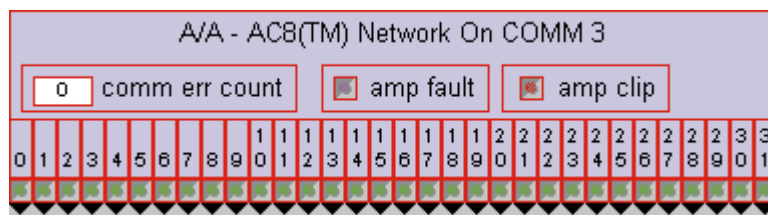


**AmpWare™ Device Algorithms**

## How to Connect

The **control output nodes** (wire nodes on the bottom) of the **A/A-AC8 Network** device should be wired to **A/A-AC8** devices. There are 32 nodes, one for each of the possible RS-485 network addresses, that an A/A-AC8 box can be set to. These nodes correspond, left to right, to addresses 0 through 31. The output nodes of the A/A-AC8 are then wired to the **Amplifier** devices. The amplifier devices also have audio input and output nodes.

A/A - AC8  
NETWORK  
ON  
COMM (X)



**AmpWare™ AC8 Selected for Com Port "3" Insert**

The **A/A-AC8 Network device** is responsible for controlling an RS-485 communications network of **A/A-AC8 Eight Channel Amp Control** boxes. Each A/A-AC8 device is the virtual representation of a physical A/A-AC8 box on the network and each amplifier device represents an amplifier connected to an A/A-AC8 box. One A/A-AC8 Network device, one or more A/A-AC8 devices and one or more amplifier devices are graphically wired together by the view file designer in a manner that logically represents the physical network of devices.



## Controls and Operation

There are no user or operator controls within the **A/A-AC8 Network** device.  
 Double-clicking on the device opens the following system status window:

**A/A-AC8(TM) Network On COMM 3**

0 comm err count     amp fault     amp clip

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 2 2 2 2 2 2 2 3 3

**A/A - AC8(TM) Network On COMM 3**

COM 3    Status open success     Fault on some amp     Clip on some amp

Hard Error Count 0 (Click to clear)

This panel intentionally left blank.

Unit Addr	Unit Status	Unit Found	Unit Addr	Unit Status	Unit Found
0	not wired	<input checked="" type="checkbox"/>	16	not wired	<input checked="" type="checkbox"/>
1	not wired	<input checked="" type="checkbox"/>	17	not wired	<input checked="" type="checkbox"/>
2	not wired	<input checked="" type="checkbox"/>	18	not wired	<input checked="" type="checkbox"/>
3	not wired	<input checked="" type="checkbox"/>	19	not wired	<input checked="" type="checkbox"/>
4	not wired	<input checked="" type="checkbox"/>	20	not wired	<input checked="" type="checkbox"/>
5	not wired	<input checked="" type="checkbox"/>	21	not wired	<input checked="" type="checkbox"/>
6	not wired	<input checked="" type="checkbox"/>	22	not wired	<input checked="" type="checkbox"/>
7	not wired	<input checked="" type="checkbox"/>	23	not wired	<input checked="" type="checkbox"/>
8	not wired	<input checked="" type="checkbox"/>	24	not wired	<input checked="" type="checkbox"/>
9	not wired	<input checked="" type="checkbox"/>	25	not wired	<input checked="" type="checkbox"/>
10	not wired	<input checked="" type="checkbox"/>	26	not wired	<input checked="" type="checkbox"/>
11	not wired	<input checked="" type="checkbox"/>	27	not wired	<input checked="" type="checkbox"/>
12	not wired	<input checked="" type="checkbox"/>	28	not wired	<input checked="" type="checkbox"/>
13	not wired	<input checked="" type="checkbox"/>	29	not wired	<input checked="" type="checkbox"/>
14	not wired	<input checked="" type="checkbox"/>	30	not wired	<input checked="" type="checkbox"/>
15	not wired	<input checked="" type="checkbox"/>	31	not wired	<input checked="" type="checkbox"/>

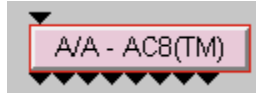
**Selected Com port and connection status**

**Indicates Fault or Clip on any amplifier in the system**

**Shows status of all "found" A/A-AC8 amp control devices**

**Indicates the number of communication errors between the system controller card and the AmpWare RS-485 card since the last Compile. This may be cleared by clicking on it. Range 0 to 1000.**

**AmpWare™ AC8 Selected for Com Port "3" - Open Child Window Insert**

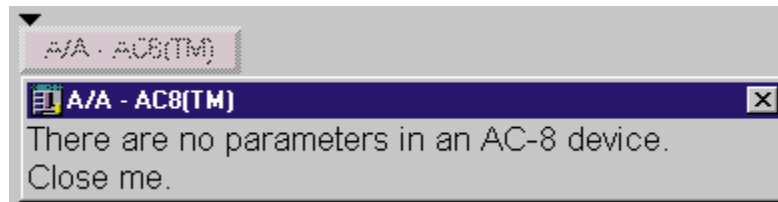
**A/A-AC8**

An **A/A-AC8** device represents a physical A/A-AC8 amp control box on the network. The control input node (the wire node on the top) should be wired from the **A/A-AC8 Network** device's control output that corresponds to the network address that the A/A-AC8 device has been set to. The A/A-AC8 Network control outputs correspond, left to right, to addresses 0 through 31.

The eight control output nodes (bottom) should be wired to the appropriate amplifier devices. This device will interface with eight channels of amplification (4 x stereo, 8 x mono amplifiers or the appropriate mix). It should be noted that if four stereo amplifiers are in use, it is necessary to wire every other (1,3,5 & 7) node to the amplifier devices.

Controls and Operation

There are no user or operator controls in the A/A-AC8 device.

AMPLIFIER  
DEVICES

One Amplifier device is required per power amplifier. The Device menu contains devices for the currently available AmpWare ready mono and stereo power amplifiers.

The control input node (wire node on top) should be wired to one of the control output nodes on an AC8 device. This wiring should reflect the physical wiring of an amplifier to an AC8 box. A Mono Amplifier device can be connected to any of the AC8 device's eight control outputs; a Stereo Amplifier device must be wired to an odd numbered control output (1, 3, 5 or 7), in which case the following even numbered outputs (2, 4, 6 or 8) cannot be used.

The audio program material must be routed through the amplifier device to allow for gain control and insertion of test tones for load monitoring and status test.



The complete amplifier monitor and control window is shown in the figure on page 1. The amplifier control window can be broken down in the following control areas:

### AC Power Window



The **AC Power** section allow you to turn the selected power amplifier on and off and provides a Power Status LED.

AC “instant” on

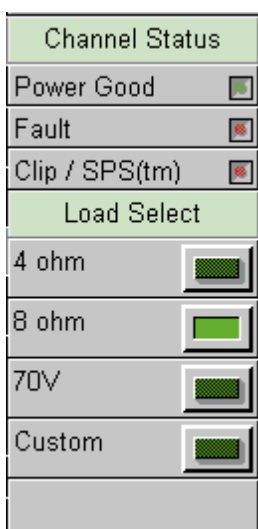
AC “instant” off

**Delay Power On** provides a user-definable Power-Up sequence. The Delay On button activates this feature.

**Delay Time** allows you to set the delay time between the power-switch closure and amplifier power on. Adjustable from 1 second to 2 minutes. This can be used to minimize the in-rush current requirements to the amplifier rack.

A **BoB control port** can be assigned for an external switch to activate the Delay On sequence.

### Channel Status



**Power Good indicator** -The amplifier channel is reporting internal good power when illuminated.

**Fault indicator** -The amplifier channel is **not** reporting internal good power when illuminated.

**Clip / SPS™** indicator - amplifier channel is clipping or limiting when illuminated.

**Note:** If both channels of a stereo amplifier are not reporting internal good power, the unit is assumed to be off and no fault is reported.

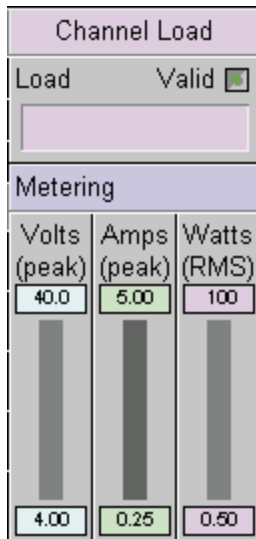
The **Load Select** switches are selected to calibrate the **Load Metering** and monitoring functions to the required load. The **Custom** Load Switch allows the user to provide calibration of Voltage, Current and Power settings other than for the standard 4 or 8 ohm power ratings.

The **Bridge Mode** switch (not shown here) provides the calibrated settings for Bridge Mode operation.

**Note:** These settings are factory calibrated for the selected amplifier device type.

### Channel Load

The **Load** window shows the real-time impedance when the **Valid LED** is illuminated. This measurement is in ohms ( $\Omega$ ) and is shown using either music or test tones as the source material.



**Valid** indicator - illuminates when there is sufficient voltage and current present to compute a valid measurement of load impedance.

The upper **Volts/Amps/Watts** represent the maximum calibrated settings allowable for the selected power amplifier type and impedance selections.

**Volts** (peak) - displays the peak voltage measured at the amplifier output.

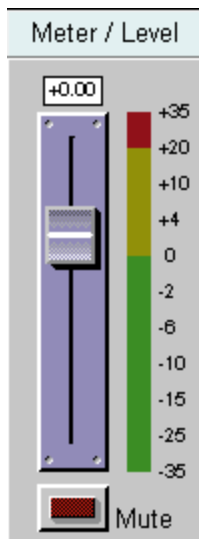
**Amps** (peak) - displays the peak current measured at the amplifier output.

**Watts** - displays the product of the Voltage and Current measured at the amplifier output (RMS power) calculated as

$$\text{Watts (RMS)} = \frac{\text{Volts (peak)} \cdot \text{Amps (peak)}}{2}$$

The lower indicators are real-time indicators of peak volts, peak amps and RMS power in watts.

### Level/Monitor Bus



The Amplifier device contains an integrated Level device and Peak Meter device for each channel.

#### **Meter**

Indicates the peak signal level at the output of the device. When a Channel Test is in progress, this will indicate the level of the test tone being sent to the device.

#### **Fader**

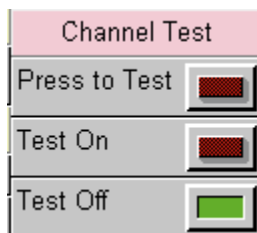
Controls the level of the program material passing through the device. This does not affect the level of the test tone applied when in Test Mode.

#### **Mute**

Mutes the program material passing through the device. This does not mute the test tone passed when in Test Mode.

### Channel Test

Amplifier testing is provided within the **Channel Test** section. Controls are provided to select the channel for test, the appropriate signal frequency and level to provide valid testing for the speaker device attached to that amplifier channel.



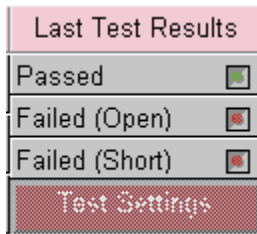
**Press To Test** - momentarily routes the test tone to the amplifier when pressed, restores the program material when released.

**Test On** - a latching version of the press to test button. Routes the test tone to the amplifier.

**Test Off** - cancels the test in progress and routes the program material to the output.



## Channel Test Results



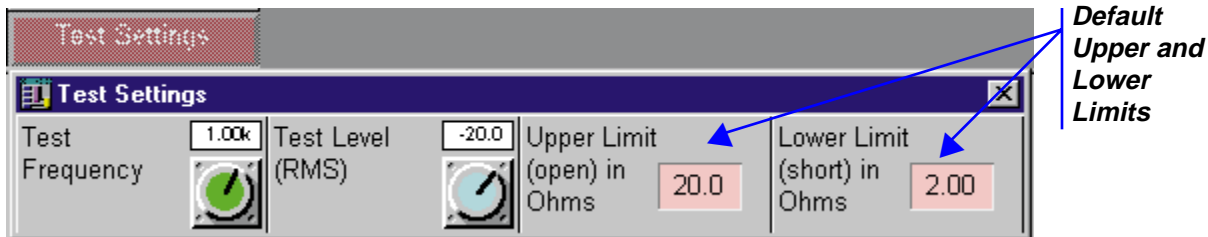
**Passed** indicator - illuminates if the last measured impedance was within the acceptable range the last time the channel was tested.

**Failed (Open)** indicator - illuminates if the measured impedance indicated an open circuit the last time the channel was tested.

**Failed (Short)** indicator - illuminates if the measured impedance indicated a short circuit the last time the channel was tested.

## Channel Test Settings

The Amplifier device contains an integrated Sine Generator device for generating a test tone when in Test Mode. Double-clicking the Test Settings block opens up the child window shown below:

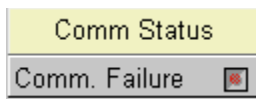


**Test Frequency** - adjusts the frequency of the test tone generator.

**Test Level** - adjusts the RMS level of the test tone.

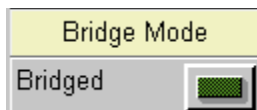
**Upper Limit** - adjusts the impedance level above which you want the load to register “open”.

**Lower Limit** - adjusts the impedance level below which you want the load to register “short”.



## Communications Status

**Comm. Failure** indicator - this indicator illuminates to indicate that the communication link between the MediaMatrix computer and the AC8 connected to the amplifier has failed.



## Bridged Mode - a note

**Bridged** - this button must be pressed if the power amplifier is operating in Bridged mono mode. Failure to do so will cause incorrect voltage, current and power measurements.

**Note:** This button does not put the amplifier in Bridged mono mode. See your amplifier documentation for information about how to do this.

## Monitor Bus

The AC8 unit has a two-channel internal summing bus for monitoring the outputs of the attached amplifiers. This summing bus can be wired by the system installer back to a MediaMatrix BoB Analog input for remote amplifier monitoring. By pressing one or both of the Send buttons, the output of the amplifier is summed to the corresponding AC8 monitor bus. Multiple amplifiers can be assigned to the same bus, allowing the user to monitor low, mid or high sections individually or as a summed unit.



**Send to 1** - sends the amplifier output to the AC8 monitor bus Number One.

**Send to 2** - sends the amplifier output to the AC8 monitor bus Number Two.



# AmpWare<sup>™</sup>

## HARDWARE INSTALLATION

OPERATING  
GUIDELINES

For a detailed operational description of the **AmpWare**<sup>™</sup> associated hardware, please refer to the following Peavey publications:

**A/A-AC8<sup>™</sup> Eight Channel Amplifier Controller Operating Guide**

(Peavey publication #80300389)

**IA<sup>™</sup> 200 Stereo Power Amplifier Operating Guide**

(Peavey publication #80300296)

**IA<sup>™</sup> 400 Stereo Power Amplifier Operating Guide**

(Peavey publication #80302391)

**IDC<sup>™</sup>150TII Industrial DC Backup Power Amplifier Operating Guide**

(Peavey publication #80302291)

**MediaMatrix<sup>®</sup> Mainframe<sup>™</sup> Series publication**

(Peavey publication #80300396)

BASIC  
SYSTEM  
REQUIREMENTS

To implement amplifier monitoring using the Peavey MediaMatrix<sup>®</sup> Mainframe with MWare<sup>™</sup> V2.1 or greater, you will need the following minimum devices:

AmpWare<sup>™</sup> software kit, which includes:

AmpWare<sup>™</sup> software module and software “key”

RS-485 Network Communications card

A/A-AC8<sup>™</sup> Eight Channel Amplifier Controller

(one per 8 amplifier channels)

Amplifier model IA<sup>™</sup>200, IA<sup>™</sup>400 or IDC<sup>™</sup>150TII

ACI<sup>™</sup>-2 Amplifier Control Interface

(one per amplifier)

The following cables will be required for installation. These are not available from, nor supplied by Peavey:

Appropriate 2-conductor shielded cable, length as required:

RS-485 card to A/A-AC8

(DB-9F connector) to (bare wire - Phoenix connector)

A/A-AC8 to A/A-AC8 (maximum 32 units)

(bare wire - Phoenix connector) to (bare wire - Phoenix connector)

A/A-AC8 to IA<sup>™</sup> or IDC<sup>™</sup> Series amplifier

RJ-45 to RJ-45 telephone-type cable

One (1) required for each amplifier



MediaMatrix<sup>®</sup>

## RS-485 Card

Supplied with your **AmpWare** kit is an RS-485 Serial Communications Interface Communications Card. The RS-485 Standard permits a balanced transmission line to be shared in a party line mode. As many as 32 driver/receiver pairs can share a two-wire party line network. The last drop in the party line **must** be terminated with a 120W resistor.

Care should be taken in the choice of cabling when working with extremely long runs (>1000') to ensure minimum transmission line losses. In general, polyethylene cables offer much lower attenuation than PVC cables.

## RS-485 Card - Basics

Before specifying AmpWare™ for your system, you should verify you have an ISA slot available for the RS-485 card. Due to the variation in MediaMatrix system loading with DSP (digital signal processing) cards, it is possible that there would be no available slots.

The card is shipped from Peavey configured for Com Port 3 and IRQ 10. If you ordered your MediaMatrix system with the Amp Monitoring option, ignore this section. These instructions will be most useful to you if you are installing AmpWare as a field upgrade to an existing system or if you wish to change the configuration to Com Port 4 for any reason.

If you are using a serial mouse on Com1 and AmpWare on Com3, you may run into an IRQ conflict if you have not changed the default Com3/IRQ4 setting. Please ensure that you have set the interrupt controller for Com3 to IRQ10 (see RS-485 Card-COM Port Assignment). Large systems may have all Com ports used in conjunction with PASHA™ Serial Control, the mouse and AmpWare™. If this is the case, you may wish to specify and use a PS/2-style (bus) mouse.

**STOP** : If you are not familiar with the terminology being used at this point, you should request aid from your I.S. (Information Services) group.

## RS-485 Card Set-up

Remove RS-485 card from anti-static bag.

Locate the following switches and jumpers on the card and set as follows:

Set the Port Address DIP switch S1 to:

MSB **1111101** LSB, where **1="OFF"** and **0="ON"**

Set the Port 1, IRQ Select, JP3 to **"10"**

Set JP4B - **closed**, JP5B - **closed**, JP6B - **open\***

Set JP1A-422, JP1B-485, JP1C-485, JP1D-SD, JP1E-RT IN

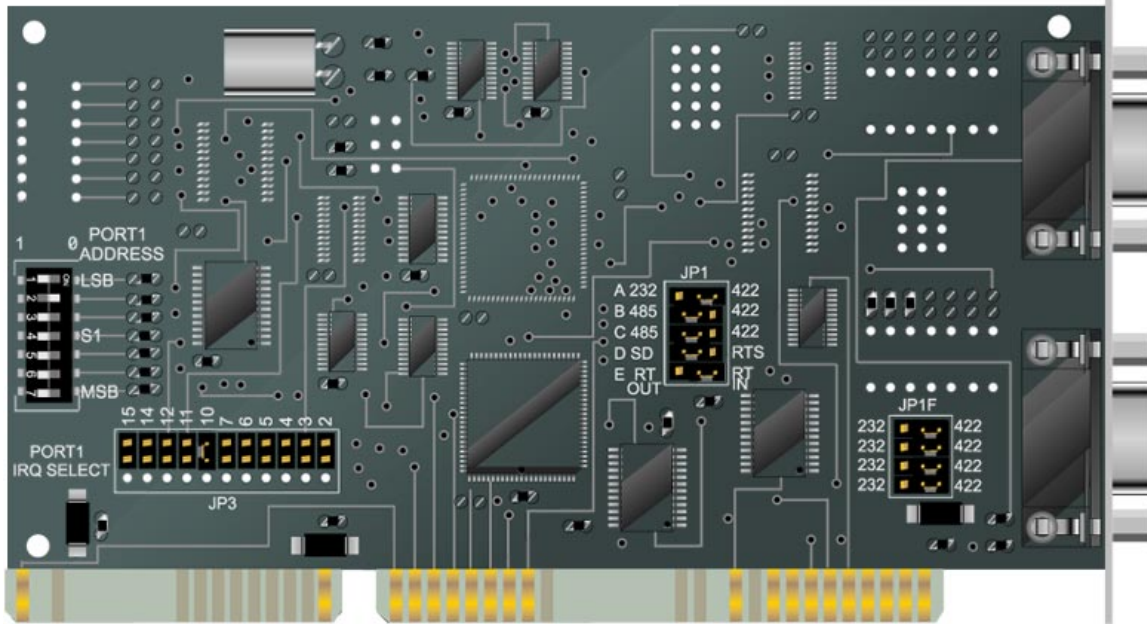
Set JP1F all to 422

(see manual and attached drawing for further details)

\* Depending on the revision of AmpWare RS-485 card, these jumpers may not be used. Instead, there may be surface mount jumpers already installed, as shown on the drawing on the following page.



## RS-485 CARD - SET-UP/JUMPERS



### RS-485 JUMPER SETTINGS

#### RS-485 Card - Installation

#### **WARNING:**

Be sure to discharge any static electricity buildup before opening the MediaMatrix!

Assuming this is a field upgrade, to install the RS-485 card do the following:

Turn off power to the MediaMatrix mainframe.

Disconnect all video, keyboard, serial, mouse and BoB (Break-out-Box) cables.

Remove the mainframe from the rack.

Remove the top cover.

Pick any **full length** (16-bit) unused ISA slot. Although the serial card will work in a short (8-bit) slot, IRQs 10-15 will not be available.

Remove the expansion slot cover. Save the screw for installation of the RS-485 card.

Install the RS-485 card into the selected unused slot. Be certain that the card is inserted completely into the slot.

Secure the card with the mounting screw.

Replace the top cover.

At this time, you may wish to power up the mainframe and attempt to configure the port settings before installing the system back into the equipment rack.

#### RS-485 Card - COM Port Assignment

With the card installed, you must now tell the system what COM Port/IRQ settings are to be used.



Do the following:

1. Power up the mainframe
2. Run **WINDOWS**
3. From the **MAIN** Program Group, open the **Control Panel** (by double-clicking the mouse pointer on it)
4. Choose **Ports**
5. Select **COM3** and then **Settings**
6. Select **Advanced...**
7. Set the **Base I/O Port Address** to **03E8**
8. Set the **Interrupt Request Line (IRQ)** to **10**
9. Choose **OK**
10. Restart Windows

**NOTE:** Since the AmpWare RS-485 card is installed as COM 3, you must use the AmpWare device **AC8 NETWORK On COM 3**.

### RS-485 CARD - COM Port Assignment - troubleshooting

If you are unable to communicate with the card from your computer, double check that the Com port address and interrupt are properly set.

### RS-485 TO A/A-AC8 Wiring

The RS-485 card output is via the Port 1 (lower) DB-9 male connector. You will have to manufacture the DB-9 female cable connector to bare wire connections via the Phoenix connector on the rear of the AC-8.

