Networker

RS-485 Network System Slave

Operation Manual

August 2011

STRENGTH IN THE BUSINESS SM

Networker

CAUTION!
RISK OF ELECTRICAL SHOCK!
DO NOT OPEN!

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE THE COVER. DO NOT EXPOSE THE EQUIPMENT TO RAIN OR MOISTURE. NO USER SERVICEABLE PARTS ARE INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

WARNING!

THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FRE-QUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. IT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A COMPUTING DEVICE PURSUANT TO SUB-PART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE WHEN OP-ERATED IN A COMMERCIAL ENVIROMENT. OPERATION OF THIS EQUIP-MENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER AT HIS/HER OWN EXPENSE WILL BE REQUIRED TO TAKE WHATEVER MEASURES MAY BE REQUIRED TO CORRECT THE IN-TERFERENCE.

The lightning flash with the arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to consti-tute a risk of electrical shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) in-structions in the literature accompanying the appliance.

Introduction

The RS-485 Networker is designed to convert the RS-232 serial port output of the VSI-Pro to be a poll / select network. This allows the exceptions or all the data to be collected by one computer or DVR for up to 64 VSI-Pros.

Application

Many users of the VSI-Pro want to use exception processing but want this to be an automatic operation or done remotely. The Networker allows all exception data from up to 64 VSI-Pro to be recorded on one PC or DVR. The user can then later print out exceptions or data history for evaluation. With remote software like PC Anywhere, a remote location could dial into many sites and review exception history and provide a value added service their existing customers.

Theory

The VSI-Pro contains an internal data buffer of 24K bytes. The VSI-Pro can also be programmed for this buffer to hold all the on-screen data or just exceptions optionally containing Time/Date and other trigger text. The "Handshaking" option in the VSI-Pro allows for external hardware handshaking for this output port to be controlled by the "RTS" input. When this hardware handshaking input is false the data is saved to the internal buffer. When this input is true the data is sent out the serial port. The RS-485 Networker controls this handshaking signal to the VSI-Pro and when the networker is addressed by the host the data from the VSI-Pro is sent to the host. The data from each Networker is saved to a log file on the PC which can be read later as a data history from each VSI-Pro.

Networker

Up to 64 networkers can be connected on one RS-485 two wire network. A unique address for each networker is set by its internal dipswitch. The protocol is basically poll / select. The baud rate is set at 19.2K.

RS-232 to RS-485 Converter

A standard PC or laptop is used with the supplied software. The Converter converts the PC RS-232 to RS-485. The handshaking signals of the PC control the direction of the RS-485 communications.

RS-485 Networker

SPECIFICATIONS

Electrical Characteristics
Operating Voltage...................................9 - 12VDC DC Coax 2.1mm x 5.5mm
Supply Current...< 100mA @ 12VDC
Data Ports..........................1 x RS-232 (DB-9M), 1 x RS-485 Screw Terminal

Physical Characteristics
Size...86.5 x 50.1 x 24.3 mm / 3.4 x 1.9 x 0.9 in
Weight...22 g / 0.22 lbs
Case...Beige Metal

RS-232 Parameters
Baud Rate..19.2K
Data Bits...8
Parity...None
Stop Bits...1

Network Parameters
Standard..RS-485
Max Line Length...4000 ft
Cable Type...120 Ohm Terminated

DVR System Configuration

The Networker connects directly to the VSI-Pro along with the cash register and/or optional interface adapter. The 2 conductor RS-485 network is run to each and every Networker in the system and then back to the Hydra. Each Networker must have a unique address set by its internal dipswitch corresponding to the register or camera number. The Hydra then translates this address and stores the data from the respective number to that camera number in the DVR. All the text recieved from that cash register whether being all the data or just exceptions is stored on the DVR.
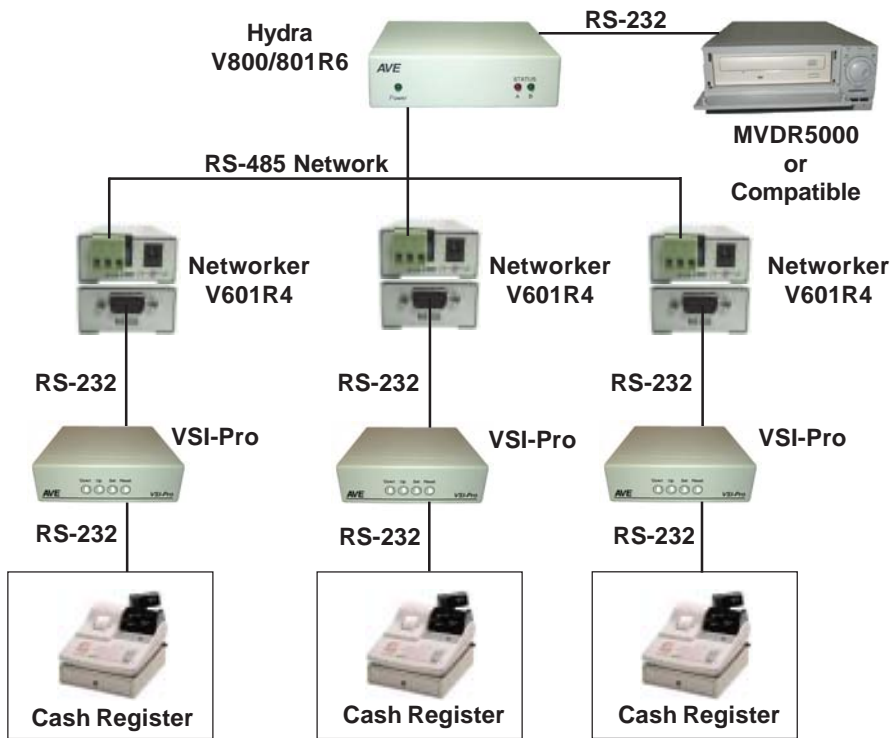
Note: Setting the DIP switch of Hydra for support the MVDR5000 can found in the Hydra manual.

Figure 1: DVR Network Diagram

![AVE logo] *RS-485 Networker*

Cable Diagram

The Networker uses a bi-directional 2-wire RS-485 data bus to communicate to the master device. The device at each end of the network must be terminated. Therefore JP9 jumper in the last Networker will be terminated along with the master device.
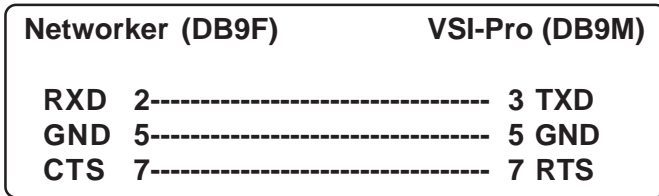
```
Networker (DB9F)                VSI-Pro (DB9M)

 RXD  2---------------------------------- 3 TXD
 GND  5---------------------------------- 5 GND
 CTS  7---------------------------------- 7 RTS
```

Figure 2: Networker to VSI-Pro Cable Diagram

NOTE: The VSI-Pro must be programmed for "Hardware Handshaking" to enable the internal buffer of the VSI-Pro to hold the transaction or exception data until commanded by the Networker.

```
Hydra                           Networker
RS-485                          RS-485
 (+)  ------------------------------------ A
 (- ) ------------------------------------ B
 GND ------------------------------------  GND
```
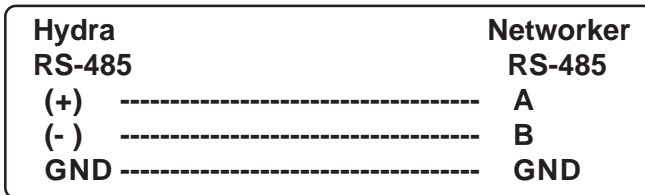
Figure 3: Hydra to Networker Cable Diagram

```
Hydra (DB9M)                    PC/DVR (DB9F)

 GND 5  -------------------------------- 5 GND
 TXD 3  -------------------------------- 2 RXD
```
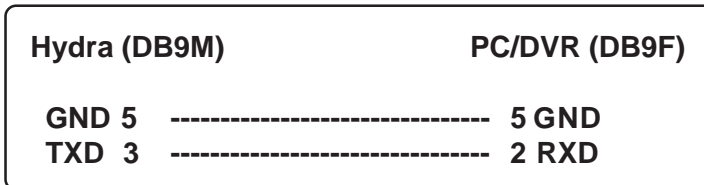
Figure 4: Hydra to PC/DVR Cable Diagram

Address Selection

Each Networker unit on the RS-485 network must be set with a unique network address. The address is selected using Switches No. 1 - 5 from the bank of DIP switches inside of the unit. Changing address will be effective before power up only.

The address must correspond to the DVR channel or camera number that the text is to be associated with.

JP8=Off ADDRESS	JP8=On ADDRESS	DIPSWITCH				
		5	4	3	2	1
0	32	Off	Off	Off	Off	Off
1	33	Off	Off	Off	Off	On
2	34	Off	Off	Off	On	Off
3	35	Off	Off	Off	On	On
4	36	Off	Off	On	Off	Off
5	37	Off	Off	On	Off	On
6	38	Off	Off	On	On	Off
7	39	Off	Off	On	On	On
8	40	Off	On	Off	Off	Off
9	41	Off	On	Off	Off	On
10	42	Off	On	Off	On	Off
11	43	Off	On	Off	On	On
12	44	Off	On	On	Off	Off
13	45	Off	On	On	Off	On
14	46	Off	On	On	On	Off
15	47	Off	On	On	On	On
16	48	On	Off	Off	Off	Off
17	49	On	Off	Off	Off	On
18	50	On	Off	Off	On	Off
19	51	On	Off	Off	On	On
20	52	On	Off	On	Off	Off
21	53	On	Off	On	Off	On
22	54	On	Off	On	On	Off
23	55	On	Off	On	On	On
24	56	On	On	Off	Off	Off
25	57	On	On	Off	Off	On
26	58	On	On	Off	On	Off
27	59	On	On	Off	On	On
28	60	On	On	On	Off	Off
29	61	On	On	On	Off	On
30	62	On	On	On	On	Off
31	63	On	On	On	On	On

Table 1: Address Selection
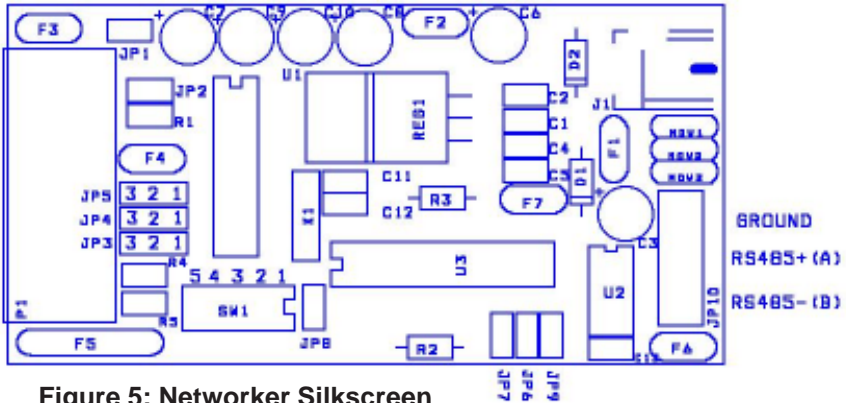
Networker Jumper Settings

Figure 5: Networker Silkscreen

To change the jumper settings of the Networker the cover must be removed. Do so with a Philips type screwdriver and set the appropriate jumpers.

Jumper Setting and Default (in Bold Type) to RS485

JP1	**OPEN**/CLOSE	Disable/Enable 12VDC via DB9M Pin 9
JP2	**OPEN**/CLOSE	Disable/Enable DTR True Output
JP3	**CLOSE 1-2**	Enable CTS to be output on DB9M Pin 7
JP3	CLOSE 2-3	Enable RST to be input on DB9M Pin 7
JP4	CLOSE 1-2	TXD to DB9M Pin 3 **(OPEN)**
JP4	CLOSE 2-3	TXD to DB9M Pin 2 **(OPEN)**
JP5	CLOSE 1-2	RXD to DB9M Pin 2
JP5	**CLOSE 2-3**	RXD to DB9M Pin 3
JP6	**OPEN**/CLOSE	Disable/Enable Alarm1 on DB9M Pin 1
JP7	**OPEN**/CLOSE	Disable/Enable Alarm 2 on DB9M Pin 9
JP8	**OPEN**/CLOSE	Bank Select (See Address Chart)
JP9	**OPEN**/CLOSE	Disable/Enable RS485 Terminatation with 120 Ohm.

DB9M Pin Out

1	--------------------	Alarm 1	6	------------------	N/C
2	--------------------	RXD/TXD	7	------------------	RTS/CTS
3	--------------------	RXD/TXD	8	------------------	N/C
4	--------------------	DTR	9	------------------	Alarm 2 / 12VDC
5	--------------------	GND			

RS-485 Networker

8

PC System Configuration

The Networker connects directly to the VSI-Pro along with the cash register and/or optional interface adapter. The 2 conductor RS-485 network is run to each and every Networker in the system and then back to the PC via an RS-232 to RS-485 adapter. Each Networker must have a unique address set by its internal dipswitch corresponding to the register or camera number. The Networker PC software on the PC will control the network collecting data from each VSI-Pro in the system. The data is then stored in a log file for each VSI-Pro which can be used by other programs for databasing, downloading or printing.
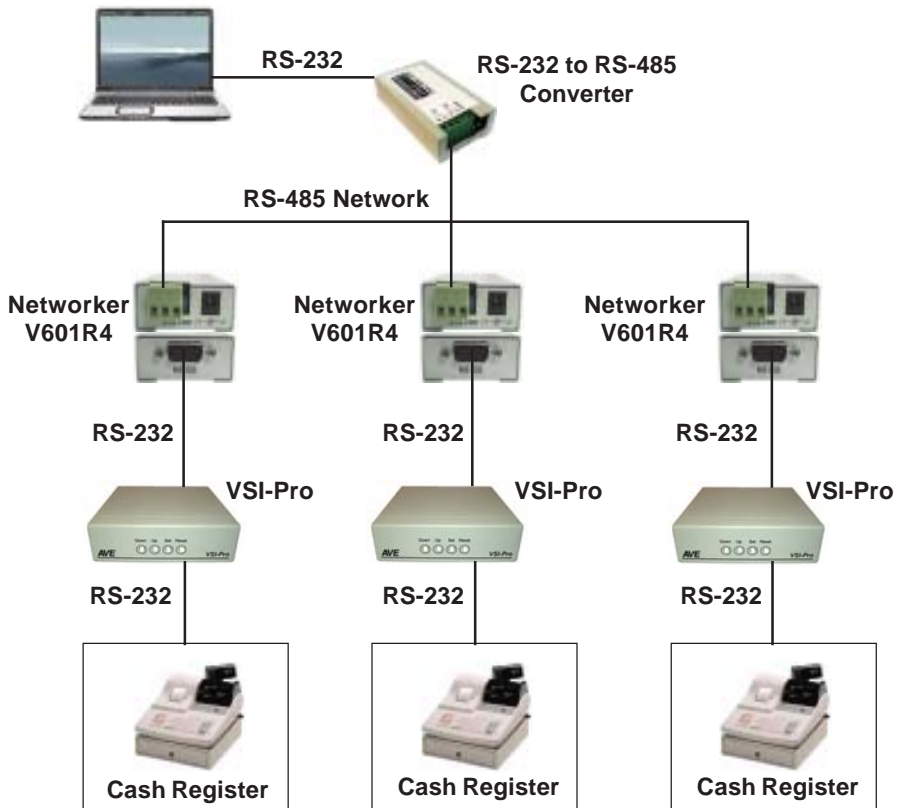
Figure 6: PC Network Diagram

The Networker Software ver 2.3

The Networker Software allows up to 64 VSI-Pros and Cash Registers to be configured on an RS-485 network and report all the transaction data back to a single monitoring computer.

Installation
1. Open the VSI-Pro CD
2. Click Setup at X:\Software\Networker Setup\Networker v2.3\Setup.exe

3. Click OK Button
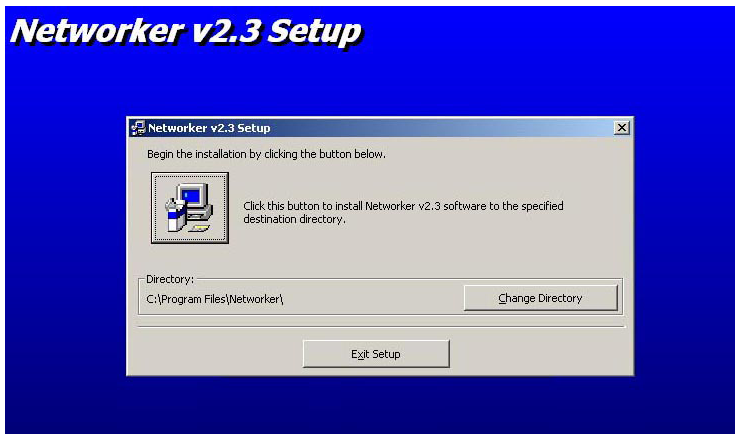
4. Click button Change Directory for changing directory and then click button Setup to begin setup.
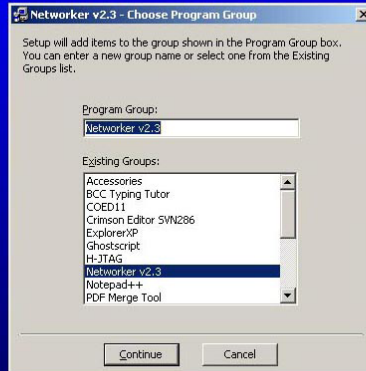
5. Setup will add the item to the group showing in the Program Group box

6. Click button OK for Networker Software Rev. 2.3 setup was completed successfully.

How to use the Networker Software

Run the Networker Software ver 2.3

Pull Down the Select Comport Menu to select ComPort and select 32 Address when using less than 32 registers and select 64 if using more than 32 registers. The Networker Software Window will appear:

Select ComPort Window
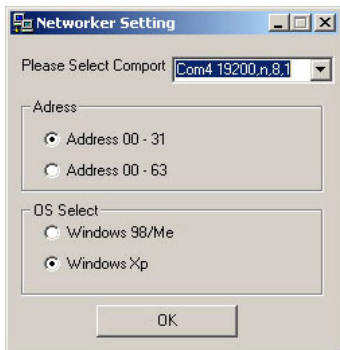
Networker Software Window
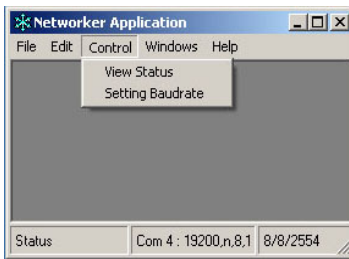
View Status

Select the Control Menu then select View Status drop down list. The View Status windows will appear:

The **Yellow** Led is indicated when a Networker is Detected.

The **Red** Led is indicated when no Networker at that Address.

The **Blue** Led is indicated when the alarm has occurred.

The **Green** Led is indicated when receiving data.


RS-485 Networker
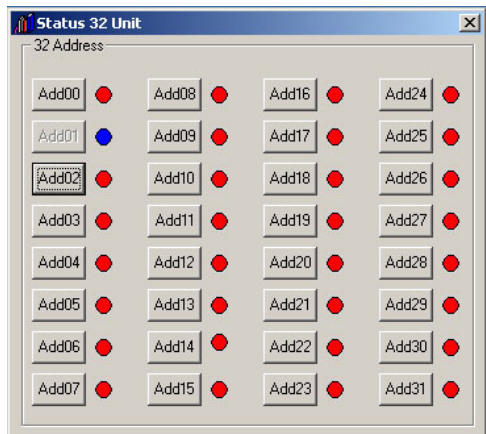
Transaction Windows

The Networker software can be configured to display in a windowing horizontal format below or tiling in a vertical format for view all the transaction data or information. All data files are stored separately as independent files on the PC and can be downloaded or searched locally or remotely to find specific transaction data or information. This can be used in conjuction with Windows-based DVR or Cash Register software and eliminates the use of an additional PC for the collection, search, or transmission.
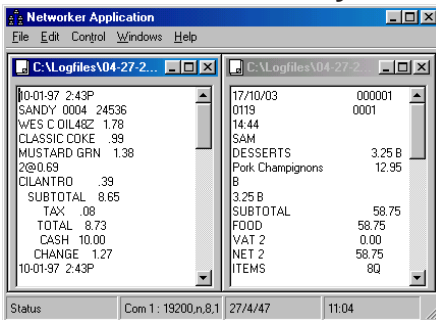
Windows Cascade
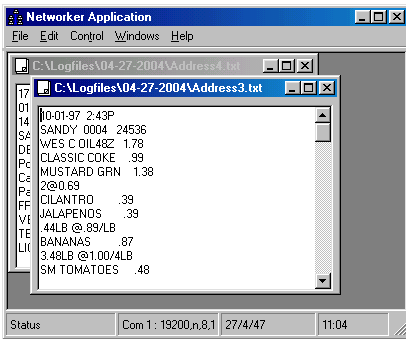
Windows Tile Horizontally
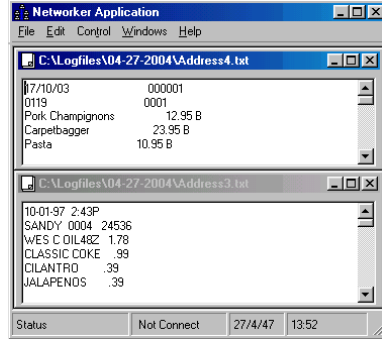
## Windows Tile Vertically

Files Menu

The Logfiles directory contains all the files with the name extension Address1.txt, Address2.txt, etc corresponding to the address of the Networker. These files are updated continuously. If you copy and then delete the file, a new log file will be created with the same number as new data is recieved. Viewing the files is updated every 2 seconds.

Logfiles

Select the File Menu then select Open... drop down list. The Logfiles directory will appear:
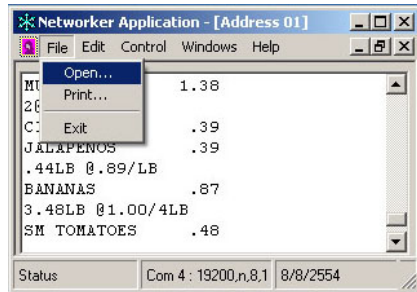
Logfiles Directory
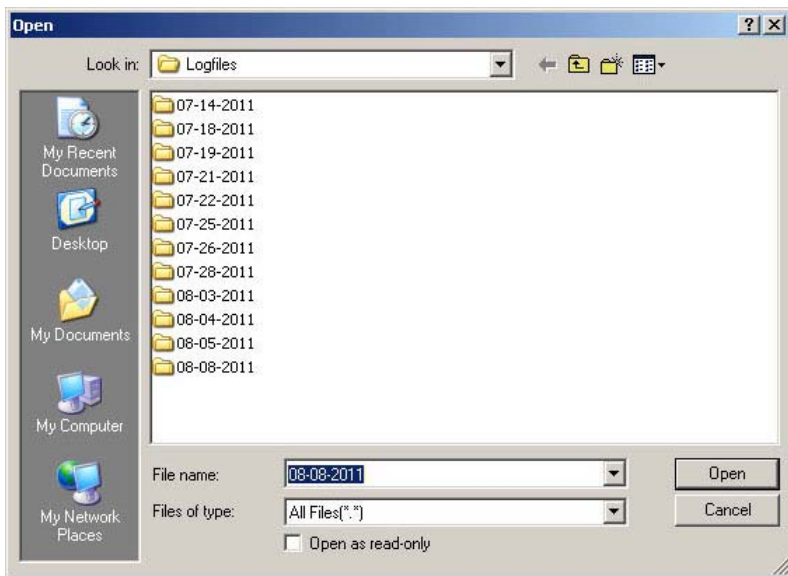
LIMITED WARRANTY
(Terms and Conditions)

For **2 years** from the date of shipment, Seller warrants to Buyer that the Product is free from defects in material or workmanship **under normal use and service.** Equipment manufactured by other than Seller but furnished by Seller carries the same warranty to Buyer as Seller receives from the other manufacturer, notwithstanding any provision to the contrary. If Buyer has specified a particular manufacturer's product which is not the brand standardly supplied by Seller, Buyer shall look only to the other manufacturer's warranty and Seller shall not warrant such item.

EXCLUSIONS. Seller's warranty does not cover the following:

(1)   in-transit damage claims, improper handling by carrier or post office (Note: only the consignee of the shipment can file a claim with the common carrier)
(2)   damages caused by incorrect use, modification, carelessness, improper storage, hostile operating conditions, or unauthorized service, installation or repairs without proper training from the Seller
(3)   damages caused by fire, flood, lightning, collision, acts of God or other events beyond the control of Seller
(4)   products or parts thereof that have had serial numbers removed, altered or defaced
(5)   products returned without an RMA number and sales or delivery receipt showing the date of original purchase
(7)   use of components that do not meet Seller's specifications
(9)   external parts such as cabinets or keypads
(10)   periodic maintenance and adjustments resulting from normal use

WARRANTIES EXCLUDED, SELLER EXPRESSLY DISCLAIMS AND EXCLUDES ANY EXPRESS OR IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS OR IS INCONSISTENT WITH THE WARRANTY HEREIN EXPRESSLY SET FORTH.

NON-WARRANTY CLAIMS. In the event Buyer makes a warranty claim and Seller's warranty does not apply, Buyer shall reimburse Seller for all reasonable expenses incurred by Seller in diagnosing the installation/repair problem.

AVE STRENGTH IN THE BUSINESS **RS-485 Networker**

NORTH AMERICA
American Video Equipment (AVE)
2501 Central Parkway, Suite C-1,
Houston, Texas 77092, USA
Tel: 713-686-8409, 281-443-2300
and 800-550-4464
Fax: 713-686-8509, 281- 443-8915
Email: aveus@aveusa.com
www.americanvideoequipment.com

UNITED KINGDOM
AVE Multiview
Endeavor House 3rd Floor
Coppers End Rd.,Stansted
Essex, CM24 1SJ, UK
Tel: 440-845-600-9323
Fax: 440-845-600-9363
Email: ave-uk@multiview.net
www.multiview.net

EUROPE
AVE Europe LTD
123 Millennium Business Park
Ballycoolin, Dublin 15, Ireland
Tel: 353 1 864 7450 Fax: 353 1 864 7451
Email: sales@ave-europe.eu
www.ave-europe.eu

ASIA
AVE Thailand Co., Ltd.
147 Soi On-Nut 44
Sukhumvit 77 Rd., Suan Luang
Bangkok, 10250 Thailand
Tel: 662-331-9364, 662-331-9285
Fax: 662-331-9365
Email: ave@avethailand.com
www.avethailand.com (English)
www.ave.co.th (Thai)