RY032AE AlphaEntry™
32-OUTPUT
SIGNAL RELAY BOARD

APPLICATION

The RY032AE AlphaEntry™ 32-Output Signal Relay Board is used primarily with our AlphaEntry™ software, to replace a conventional intercom (or video-intercom) type door entry station with a PC-based graphical directory and calling system. It's versatility allows its use in other specialty relay applications as well.

This installation and wiring manual should be used in conjunction with the AlphaEntry™ Software User Manual (# AEMANUAL) for complete system operation.

PROCEDURE

1. Read installation instructions for this unit to determine proper location and installation method.
2. Install equipment.
3. Check wiring and connect. Observe all local and national electrical and building codes.
4. Apply power and check unit operation.

INSTALLATION AND EQUIPMENT LOCATION

The RY032AE relay board(s) should typically be installed as close to the PC as possible and relatively close to an accessible source of 117-120VAC power, for the required model# KE-PWR5/2A plug-in power supply. Six (6) convenient mounting holes allow the unit to be mounted to a board or wall surface (using stand-offs or spacers).

Make sure to mount the RY032AE board(s) in a dry and ventilated environment, and keep away from any source of potential electrical interference. Mount all RY032AE boards away from AC power wiring, transformers, fluorescent lights, light dimmers or other electrical devices. Do not overtighten screws. Make sure the RY032AE boards are not twisted or buckled. Observe all local and national electrical and building codes! **NOTE: the RY032AE boards are computer quality boards, and should be handled and installed with care. Do not subject to static, or to extreme environmental conditions, and try not to place your fingers on the board's electronic components.**

WIRING

Route all cables away from AC power wiring, transformers, fluorescent lights, light dimmers or other electrical devices. Protect cable from damage. Shielded cable should be used where required, and if cables cannot be run adequately spaced away from any source of electrical interference.

CONNECTIONS

Once the RY032AE boards are mounted properly, and before connecting, make certain wires are free from shorts or grounds. Make connections as shown on Page 4, and as detailed in the following instructions.

RY032AE 32-OUTPUT RELAY BOARD(s)

1. Connect the model# CT032AE6 interface cable from the PC's RS-232 Serial Output, to the **Serial IN** connector on the 1st RY032AE board, as per Fig. 4 on page 4. **NOTE: if your PC does not have a conventional 9-pin type serial connector, you can use an available USB port, by plugging the CT032AE6 cable into a USB to Serial Adapter (equivalent to BAFO technologies model# BF-810).** This RY032AE board will be considered Board #1 for programming purposes. Do not force the plug onto the connector, and make sure it is oriented and aligned as shown on the drawing. **NOTE: the model# CT032AE6 cable is a basic 6 foot long cable. You may add additional extension cables (to the 9-pin DIN Female connector end only), as needed, to a MAXIMUM of 200 feet in total. Do not cut or splice the CT032AE6 cable as it has integrated electronics to provide all of the necessary RS-232 level translation**

between the PC and our RY032AE board. Make sure any extension cables are high quality, shielded RS-232 type extension cables only. Failure to use the correct shielded cable or exceeding the 200 foot maximum cable length from the PC to the RY032AE board(s) can result in improper or erratic relay function.

2. If more than one (1) RY032AE relay board is used, you must connect a model# CT032AEJ jumper cable from the **Serial Out** connector from the 1st RY032AE board to the **Serial IN** connector on the next RY032AE, continuing to add jumpers as additional RY-032AE boards are required. Each CT032AEJ jumper cable is only 12 inches long, so make sure the multiple RY032AE boards are as close together as feasible for proper wiring connections, while still allowing room for wiring the 32 output relay terminals.

3. **On the LAST RY032AE board only**, connect the model# KE-PWR5/2A 5VDC power supply, using the provided Female plug connector to the **Serial Out** connector. This 5VDC regulated power supply should be used only to power the RY032AE board(s) and should not be used to power any other equipment. Make sure to align the connector properly to the 5 pins, as you did for the CT032AE6 cable. **NOTE: DO NOT APPLY THIS 5VDC POWER UNTIL ALL WIRING HAS BEEN CHECKED AND ALL OTHER CONNECTIONS HAVE BEEN MADE.**

4. Connect one wire (COMMON WIRE) to either of the Common terminals marked **COMM** on the 1st RY032AE board and jump this wire to either of the Common terminals marked **COMM** on the next RY032AE board, and continue until all of the **COMM** terminals on all of the RY032AE boards are jumpered together. You may use either of the screw terminals marked **COMM** on each RY032AE board, as these are internally connected together on the board circuitry. We provide two (2) **COMM** screw terminals to make it easy for you to connect multiples COMMON wires on each board. Connect this 'COMMON' to the wire that would normally connect to one side of all of the pushbuttons on a typical intercom or video-intercom entry door station.

5. Once all of the RY032AE boards are connected together, you need to set the 'DIP' switches on each board to the Board# you wish to use to identify each board. See Fig. 2 on page 3 for programming the 'DIP' switches on each RY032AE board. CAREFULLY, slide the 'DIP' switches ON or OFF as indicated on the chart (Fig. 4) shown on Page 3, using a small rubber or plastic (non-conductive) tool. You can install a maximum of 16 of the RY032AE boards on each AlphaEntry™ system, for a total maximum capacity of 512 relays. In order for the AlphaEntry™ software to properly signal an individual relay to activate, you must individually number the RY032AE boards (from 1 to 16). Since each relay is already numbered 1 to 32 on each RY032AE board, to trigger a specific relay to activate you need to know the Board# (1-16) and the Relay# (1-32) and set that information into the AlphaEntry™ residents database. **NOTE: EACH RY032AE BOARD MUST HAVE A UNIQUE BOARD#. FOR SIMPLICITY OF INSTALLATION, WE RECOMMEND THAT YOU NUMBER THE RY032AE BOARDS SEQUENTIALLY (1 TO 16), WITH THE ONE CONNECTED TO THE CT032AE6 CABLE BEING BOARD# 1, ETC., BUT YOU DO NOT HAVE TO NUMBER THEM SEQUENTIALLY.**

6. All of the 32 relays on each board come set from the factory as 'Normally Open' (NO). If you wish to change any of them to 'Normally Closed' (NC) operation, you can move the small Black jumper associated for that relay from the NO position to the NC position by moving it over one pin. **NOTE: SINCE ALL 32 OF THE RELAYS ON EACH RY032AE SHARE A SINGLE 'COMMON' TERMINAL, ALL 32 CONNECTIONS SHOULD BE OF THE SAME TYPE. FOR EXAMPLE, YOU SHOULD NOT MIX A 'TONE' TYPE INTERCOM SYSTEM WITH A 'BUZZER' TYPE SYSTEM ON THE SAME RY032AE BOARD.**

5VDC PLUG-IN POWER SUPPLY (KE-PWR5/2A)

1. Do not connect the 5VDC plug-in power supply to 117-120 VAC until entire installation is complete and all wiring is checked, and all RY032AE boards are programmed with the board numbers.

TEST AND CHECKOUT

1. Apply 5VDC power to the last RY032AE relay board.
2. Check for proper relay switching operation in accordance with the AlphaEntry™ software and use manual (# AEMANUAL).

NOTE: System warranty is void if this equipment is installed or used in any manner other than described in this manual and in the AlphaEntry™ software manual.

TROUBLESHOOTING

If any of the RY032AE boards fails to operate as required, review operating instructions again. If the equipment fails to operate as indicated in the instructions, check the following points:

1. **ENTIRE UNIT DEAD:** Check for 5VDC power. Check that the Green 'Power On' LED's on each RY032AE board are flickering. Check that the 5VDC power supply is being powered by 117-120 VAC primary power. Check for proper connections on any CT032AEJ jumper cables. Make sure the RS-232 serial cable (CT032AE6) is connected properly at both ends. If using any RS-232 extender cables, make sure they are wired and plugged correctly. Make sure the correct serial COM port is configured into the AlphaEntry™ system database, for that PC.

2. **INDIVIDUAL RELAY DOES NOT 'TRIGGER' PROPERLY:** Make sure you are connected to the correct relay on that board. Make sure the Board# and

Relay# is programmed properly in the AlphaEntry™ database. Make sure the board's DIP switch is programmed properly. try moving the selective wire to a different relay and see if that one can call the station. Check to see if that relay's individual diagnostic LED lights when the relay is called.

PLEASE NOTE: If these basic checkpoints fail to indicate the problem, there may be an equipment fault. Contact the factory or a qualified service representative. Thank you.

PROGRAMMING THE BOARD# USING THE 4-POSITION 'DIP' SWITCH FOUND ON EACH RY032AE BOARD
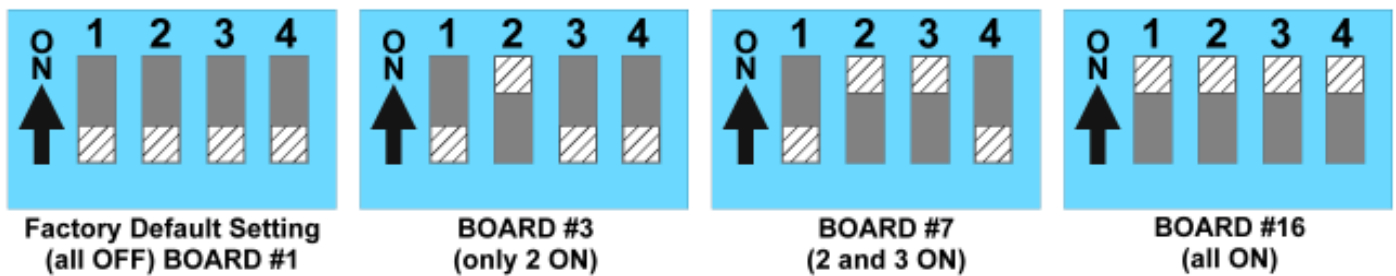
Fig. 1

Factory Default Setting (all OFF) BOARD #1   BOARD #3 (only 2 ON)   BOARD #7 (2 and 3 ON)   BOARD #16 (all ON)

Fig. 2

BOARD #	SWITCH 1	SWITCH 2	SWITCH 3	SWITCH 4
1	OFF	OFF	OFF	OFF
2	ON	OFF	OFF	OFF
3	OFF	ON	OFF	OFF
4	ON	ON	OFF	OFF
5	OFF	OFF	ON	OFF
6	ON	OFF	ON	OFF
7	OFF	ON	ON	OFF
8	ON	ON	ON	OFF
9	OFF	OFF	OFF	ON
10	ON	OFF	OFF	ON
11	OFF	ON	OFF	ON
12	ON	ON	OFF	ON
13	OFF	OFF	ON	ON
14	ON	OFF	ON	ON
15	OFF	ON	ON	ON
16	ON	ON	ON	ON

Programming Notes:
1. Make sure the 5VDC power supply that powers the RY032AE boards is OFF (un-plugged) and make sure the serial cable CT032AE6 is un-plugged as well. Follow this same power-off procedure for adding or changing boards.
2. Each RY032AE board MUST be programmed with the correct BOARD# (from 1 to 16).
3. Using the chart above (Fig. 2) and a small Rubber or Plastic (non-conductive) tool, gently set the 4 DIP switches into the correct ON/OFF positions, by sliding them Up or Down as required.
4. DO NOT program the same BOARD# into more than one RY032AE board.
5. You do not have to number the boards sequentially as they are mounted and jumpered, as long as each board has a unique BOARD#.
6. See the chart above (Fig. 1) to see how BOARD# 1, 3, 7 and 16 are programmed (for reference purposes only).
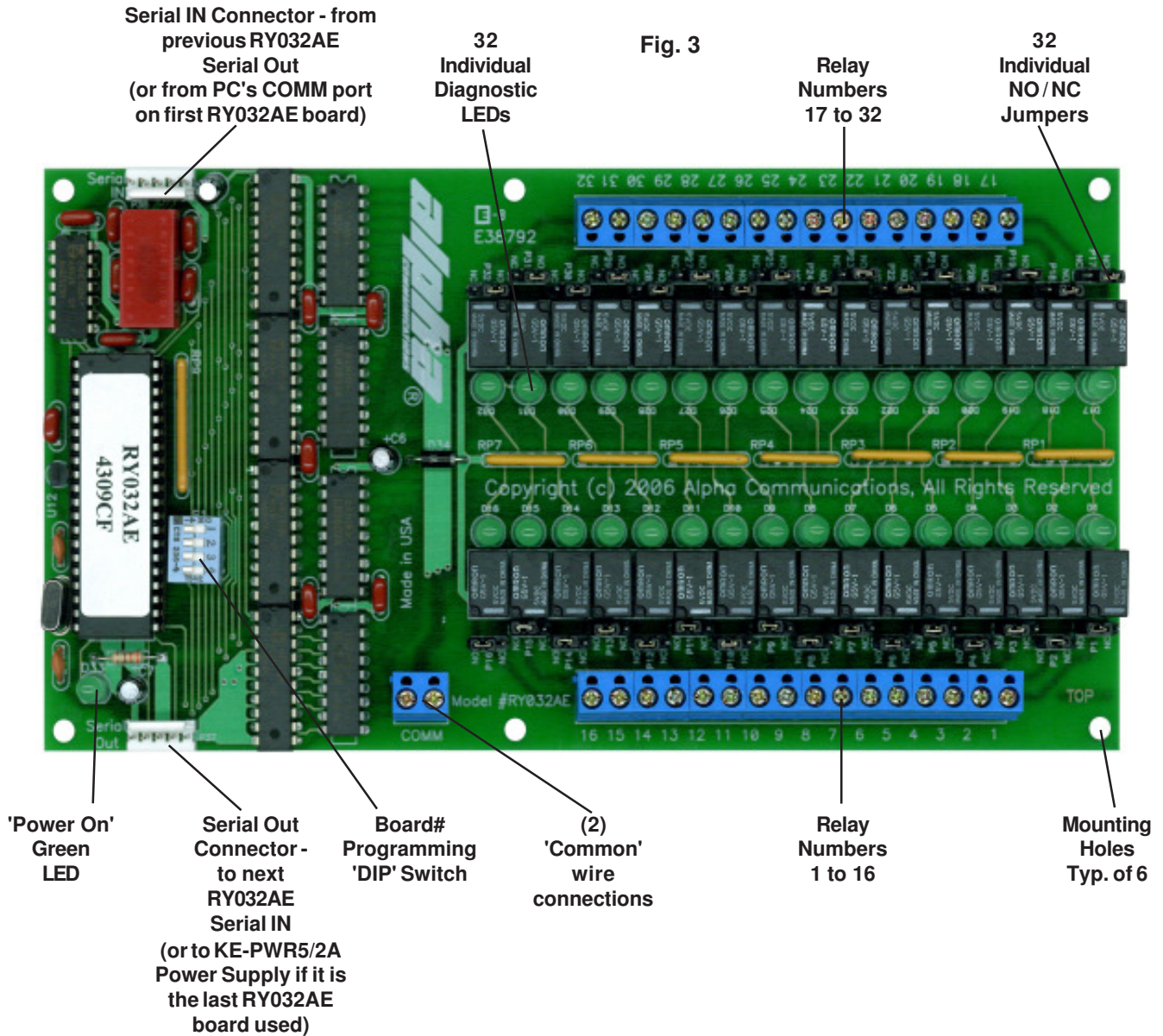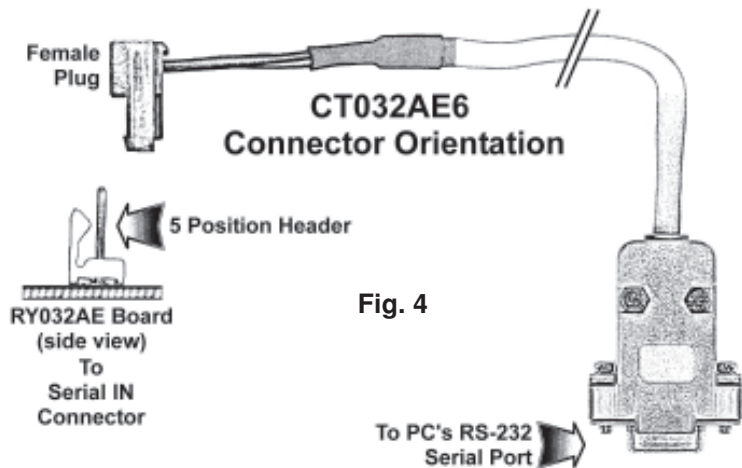
RY032AE IMPORTANT COMPONENT LOCATIONS

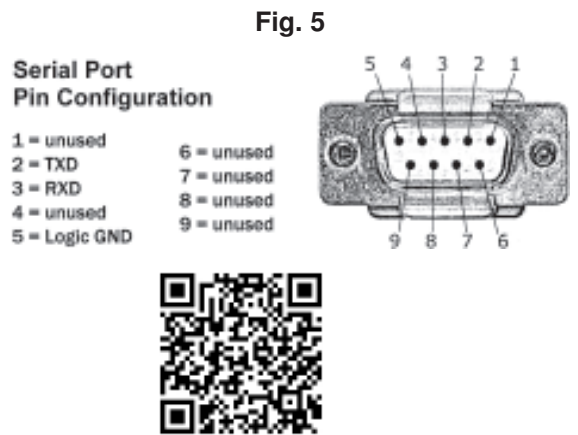**Serial IN Connector - from previous RY032AE Serial Out (or from PC's COMM port on first RY032AE board)**

32 Individual Diagnostic LEDs

Fig. 3

Relay Numbers 17 to 32

32 Individual NO / NC Jumpers

'Power On' Green LED

Serial Out Connector - to next RY032AE Serial IN (or to KE-PWR5/2A Power Supply if it is the last RY032AE board used)

Board# Programming 'DIP' Switch

(2) 'Common' wire connections

Relay Numbers 1 to 16

Mounting Holes Typ. of 6

Female Plug

CT032AE6 Connector Orientation

5 Position Header

RY032AE Board (side view) To Serial IN Connector

Fig. 4

To PC's RS-232 Serial Port

Fig. 5

Serial Port Pin Configuration

1 = unused
2 = TXD
3 = RXD
4 = unused
5 = Logic GND

6 = unused
7 = unused
8 = unused
9 = unused