100 Housel Ave. | P.O. Box 535 | Lyndonville | NY | 14098

800-821-6001
585-765-2254 | fax 585-765-9330
www.monroe-electronics.com

INSTRUCTION MANUAL

Model 3000R-149
PROGRAM TIMER

Monroe Electronics
100 Housel Ave | Lyndonville | NY | 14098
800-821-6001 | 585-765-2254 | fax 585-765-9330
monroe-electronics.com

P/N 1340123
050704

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3000R-149 SOFT KEY OUTLINE ..... SOFTKEY.LST

GENERAL DESCRIPTION

The Monroe Electronics 3000R-149 Program Timer is a microprocessor-based timing controller with applications in such industries as Cable/Commercial Television, Broadcasting and Telephony.

The 3000R-149 Program Timer provides the following capabilities:

- Capacity for 999 events
- 16 open collector outputs
- Computer RS-232 serial port for uploading and downloading information via external modem using SYNOPSIS 2 software.
- Hardcopy printout serial port
- Two serial ports for controlling Monroe's Series 3000 Switcher Panels Model 3000R-150
- Real-time clock with 7 day, 12 month programming
- Time resolution displayed to the minute and second
- Easy to use, "Soft-Key" programming
- Two module slots for:
    - Model 617B Balanced Stereo Audio/Vertical Interval Video switch with two 2x1 or one 4x1 configuration
    - Model 618 Dual 2X1 RF switch
    - Model 619 16 Open Drain outputs

SPECIFICATIONS

Clock Accuracy: Better than 4 sec/day on battery back-up.

Battery Back-up Internal: 3.6 volt; Retains memory indefinitely.

Front Panel:
- Display: LCD; 2 line/40 character
- Output Indicators: 20 LEDS; 16 output status, 4 module/port status

Back Panel Connectors:
- Computer Port: RJ11 (4 wire) RS-232
- Printer Port: RJ11 (4 wire) RS-232
- Port 1: RJ11 (8 wire) I^2C
- Port 2: RJ11 (8 wire) I^2C
- 16 Open Collectors: 36 pin Centronics (optional screw terminals)
- Rating: 30 volts DC @ 40 mAmp.

Voltage requirements: 117 VAC ±10%, 60 Hz.

Mechanical: 3.5in.H X 19in.W X 11.5in.D

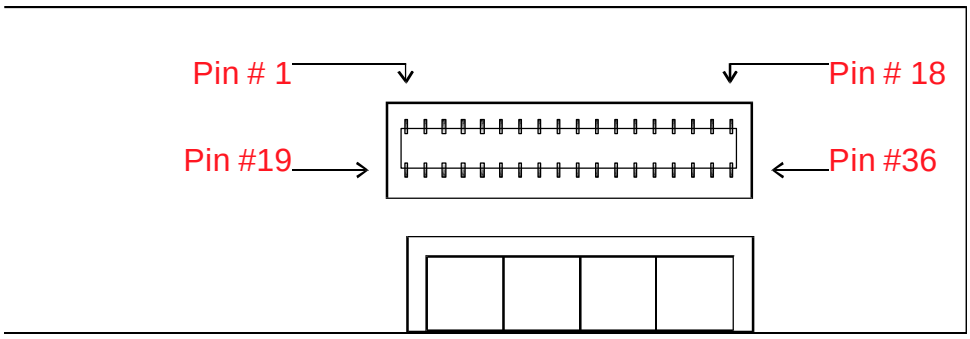
INSTALLATION

MOUNTING:

The 3000R-149 Program Timer requires a minimum of 3.5 vertical inches of space in a standard 19-inch wide E.I.A. equipment rack. Slide the unit into the rack frame and secure it using the 3000R/22M mounting hardware supplied with the unit.

OPEN COLLECTOR OUTPUT CONNECTIONS:

This Timer provides 16 open collector outputs, connected to the 36 pin Centronics female connector (J3) on the back panel of the program timer as shown below:

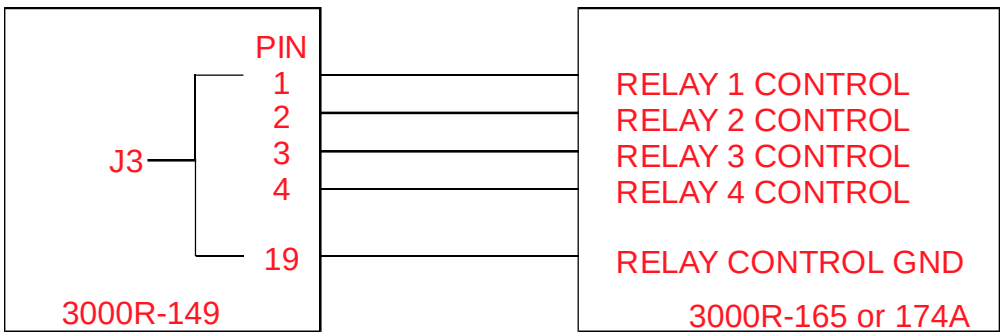


Pins #1 through #16 correspond to outputs #1 through #16 respectively.
Pins # 17 through # 36 are circuit common.

The open collector outputs are normally open to circuit common and when switched 'ON' the output shorts to circuit common. Each open collector output rating is 30 volts DC or 40 mA, which means you can not apply more than 30 volts DC or exceed more than 40 mA at any voltage.

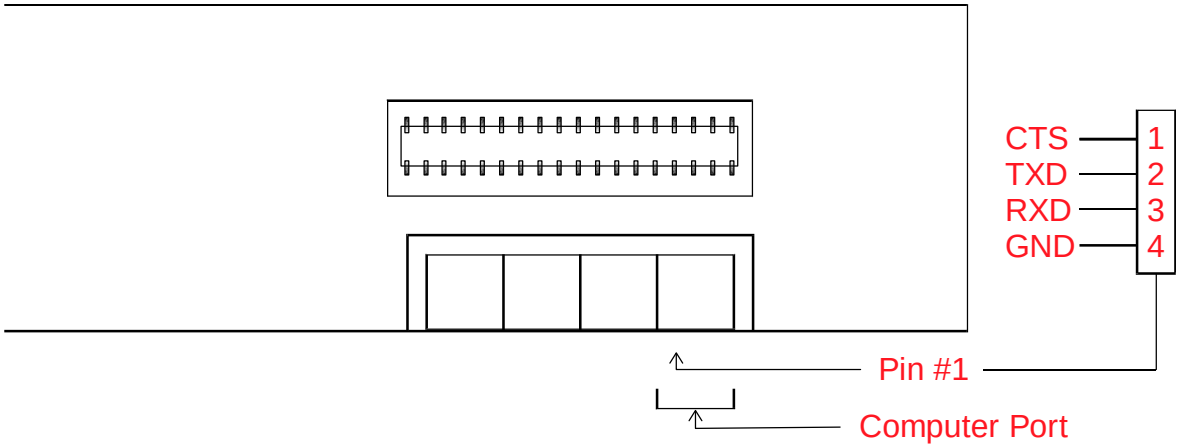
Use the 36 pin male Centronics connector provided with this Timer to solder control lines to your equipment. Make sure when soldering to the male connector that no solder shorts are present before plugging the male connector into the back of the program timer.

Typical connections are shown below for 3000R-149 to 3000R-165 or 3000R-174A Audio/Video Switcher Panel:



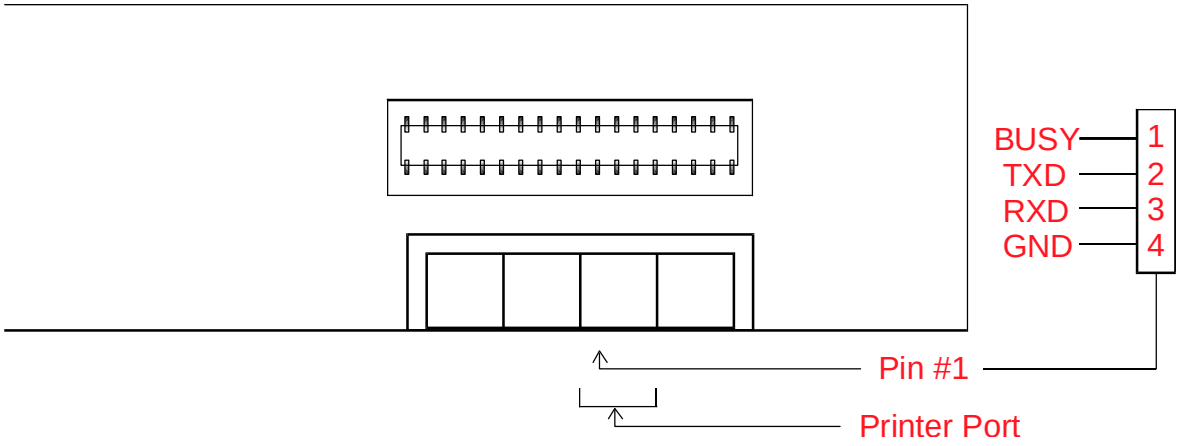
COMPUTER CONNECTION:

An RS-232 compatible port (J7) on the back of the Program Timer is for a computer or computer modem for down-loading or uploading programming information via optional SYNOPSIS 2 software. The port provided on the back of the Program Timer is an RJ11 6-4 connector. Connections for the computer jack are shown below and also on page 37. To use a modem on the computer input, the Timer must be properly set up. See pages 19 and 20.



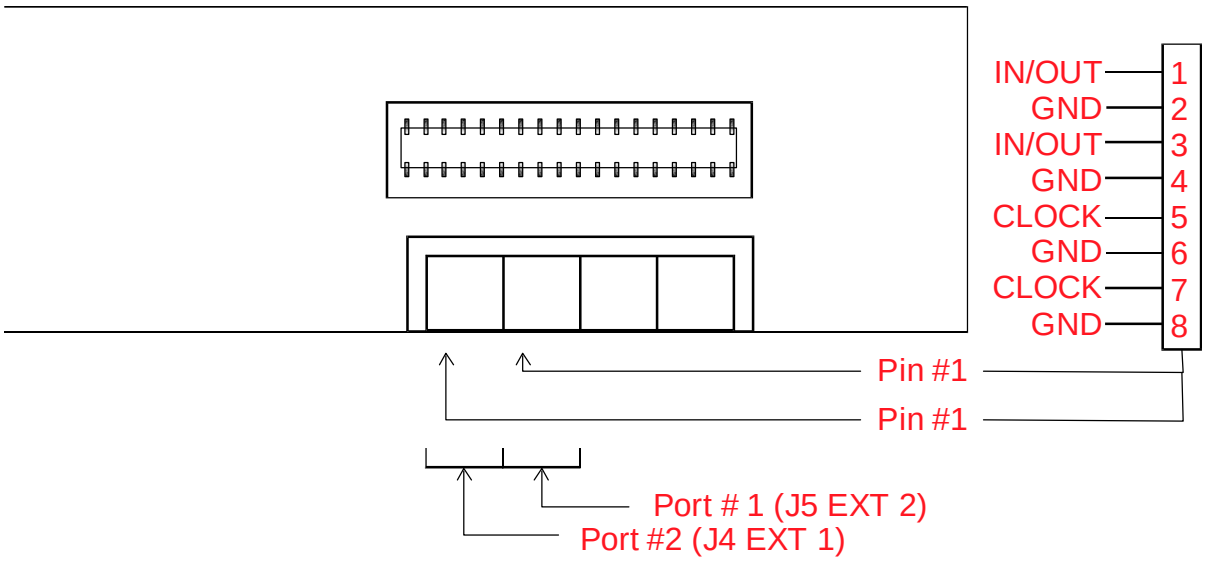
PRINTER CONNECTION:

An RS-232 compatible port (J6) on the back of the Program Timer supports a serial printer. The port provided on the back of the Program Timer is an RJ11 6-4 connector. A printer, when connected to the program timer, logs or lists events. Connections for the printer jack are shown below and also on page 37. To use a printer, the Timer and the printer must be properly set up. See pages 20-22.



I^2C PORT #1 AND #2:

The two I^2C ports provided on the back of the Program Timer interconnect the Model 3000R-150A Switcher Panel with the 3000R-149 Program Timer. Port #1 controls one 3000R-150A and Port #2 controls the second 3000R-150A. Connect the RJ11 8 pin cable (supplied with 3000R-150A) into the back of the Program Timer and the other end to the 3000R-150's RJ11 8 pin connector. Port #1 on the Program Timer is EX1 and Port #2 is EX2. Pin connection for Port #1 and Port #2 is shown below:



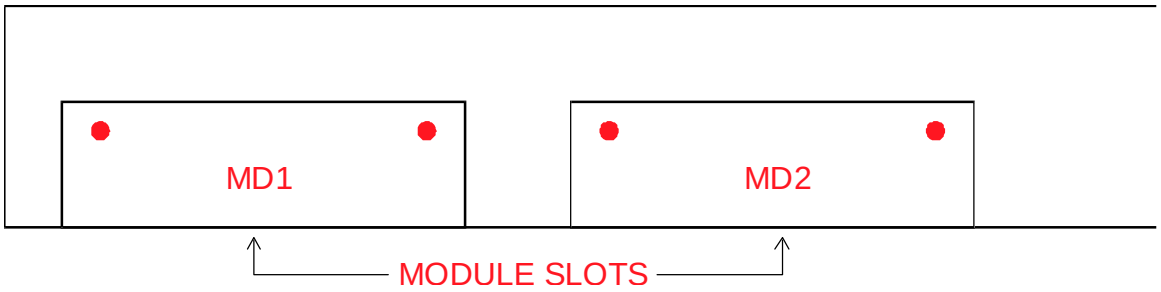
MODULE INSTALLATION:

The 3000R-149 Program Timer provides two openings in the back of the Program Timer for installation of Monroe's modules. To install a 617B, 618, or 619 module into the Program Timer follow the procedure below:

1 - Remove the two screws holding on the blank cover over the module opening. Save the screws for module installation and discard the blank cover.

2 - Slide the lower board into the card slides and push the module in until the module's panel is against the back panel of the timer. Secure the module with the two screws that you removed from the blank cover.

3 - Follow the setup procedure in this manual (page 12) for module setup.



FRONT PANEL KEY FUNCTIONS

The 3000R-149 Program Timer uses 'Soft-Key' programming, with a self-prompting LCD display. 'Soft-Key' programming allows keys to perform dual functions. The 10 keys under the display are for numerical entry along with the 'Soft-Key' information on the second line of the LCD display. The other three keys operate as follows:

CLEAR: Clears entry entered, and also displays '**' for I don't care in 'EDIT' mode.

EXIT: Exit backs up one 'Soft-Key' level in program when pressed.

ENTER: Enters information programmed in fields. Also used to leave field data shown as correct field data.

To display the 'Soft-Key' prompts press any key on the front panel.

OPERATION

SETTING REAL TIME CLOCK:

The 3000R-149 Program Timer's real time clock operates on a 24 hour clock. When first plugged into a 117VAC outlet, the display will show the following:

```
00/00/00 00:00:00  YEAR ?? (00-99)
```

To explain setting the real time clock we will use an example of entering:
June 11, 1989 at 1:53 pm

With the display showing:

```
00/00/00 00:00:00  YEAR ?? (00-99)
```

Enter: 8
Enter: 9

The display will show:

```
00/00/89 00:00:00  MONTH ?? (01-12)
```

Enter: 0
Enter: 6

The display will show:

```
06/00/89 00:00:00  DATE ?? (00-30)
```

Enter: 1
Enter: 1

The display will show:

```
SU 06/11/89 00:00:00  HOUR ?? (00-23)
```

Enter: 1
Enter: 3

The display will show:

```
SU 06/11/89 13:00:00  MINUTE ?? (00-59)
```

Enter: 5
Enter: 3

The display will show:

```
SU 06/11/89 13:53:00 PUSH ENTER TO START
```

Press: Enter

The real time clock starts when 'ENTER' is pressed and displays the time to the second. The display will show:

```
SU 06/11/89 13:53:01
CLK OUT CMP PRT
```

SETUP:

The Program Timer must be setup (configured) for your type of installation. This setup consists of resetting the real time clock, setting outputs to momentary or latching, selecting output groups, setting modules, EX1 and EX2 (I^2C) ports, setting computer information, and setting printer information.

With the display shown as below: [if not press 'EXIT' (1 or more times) until display is shown as below]

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

SET = SETUP SYSTEM CONFIGURATION
EDT = ADD EVENTS, DELETE ALL EVENTS, PACK EVENTS
VUE = VIEW EVENTS, MARK EVENTS FOR PACK REMOVAL
LOG = LOG EVENTS TO PRINTER
LST = LIST MEMORY TO PRINTER

Press: Key under ‘SET’.

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

CLK = SET REAL TIME CLOCK
OUT = SET OUTPUT CONFIGURATION
CMP = SET COMPUTER CONFIGURATION
PRT = SET PRINTER CONFIGURATION

SETUP CLOCK:

With the display shown as below: [if not press ‘EXIT’ (1 or more times) until display is shown as below]

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under ‘SET’.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under ‘CLK’.

The display will show:

```
SU 06/11/89 13:53:05  YEAR ?? (00-99)
```

Use the example as explained in 'Setting real time clock' (page 6) to change real time clock setting. We will assume the clock is correct.

Press: 'Exit' twice to return back to the display shown below:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

SETUP INTERNAL OUTPUTS:

With the display shown as below: [if not press 'EXIT' (1 or more times) until display is shown as below]

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'SET'.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under 'OUT'.

The display will show:

```
SETUP WHICH OUTPUTS?
INT MD1 MD2 EX1 EX2
```

INT = INTERNAL 16 OPEN COLLECTORS
MD1 = INTERNAL MD1 SLOT (for 617B, 618, or 619)
MD2 = INTERNAL MD2 SLOT (for 617B, 618, or 619)
EX1 = SERIAL PORT 1 (for 3000R-150A Switcher Panel)
EX2 = SERIAL PORT 2 (for 3000R-150A Switcher Panel)

Press: Key under 'INT'.

The display will show:

```
SW 123456789*0123456        - =MOMENTARY
 1   2   3   4   5   6   7   8       MOR
```

MOR = MORE SOFT KEYS
* = tens digit

Press: Key under a number to toggle display for momentary output operation. Numbers shown on the top line represent latching output for that corresponding output **A (-) represents momentary (pulsed) output for that corresponding output**. Outputs **MUST be in latching operation** for use with Model 3000R-165 or 3000R-174A Audio/Video Switcher Panel. If a (-) is in place of a number, that output is in pulse mode.

Press: Key under 'MOR'.

The display will show:

```
SW 123456789*0123456        - =MOMENTARY
 9   10  11  12  13  14  15  16      MOR
```

Press: 'ENTER' when internal switches are setup correctly.

The display will show:

```
NONe enabled as 1 of X
NON LO8 UP8 L&U ALL
```

NON = NO OUTPUTS IN A GROUP
LO8 = 1 THROUGH 8 AS 1 OF 8, 9 THROUGH 16 INDEPENDENT.
UP8 = 1 THROUGH 8 AS INDEPENDENT, 9 THROUGH 16 AS 1 OF 8.
L&U = 1 THROUGH 8 AS 1 OF 8, 9 THROUGH 16 AS 1 OF 8.
ALL = 1 THROUGH 16 AS 1 OF 16.

1 of X allows only one output in the group 'ON' at one time. Using groups allows the programmer to only program 'ON' commands, and the timer will automatically turn switches 'OFF' before the next one switches 'ON'.
NON allows the outputs to operate independently of one another.

For this example we will leave the outputs as 'NON' enabled as 1 of X. (This is correct setting for 3000R-165 or 3000R-174A).

Press: 'ENTER'.

The display will show:

```
SW 123456789*0123456        - =ENERGIZED
 1   2   3   4   5   6   7   8       MOR
```

Press: Key under number to energize corresponding output. The front panel status indicators will illuminate for each output energized. A (-) in place of a number shows that the switch is actuated.

Press: 'ENTER' when outputs are set as desired.

SETUP MD1:
With the display shown as below: [if not press 'EXIT' (1 or more times) until display is shown as below]

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under ‘SET’.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under ‘OUT’.

The display will show:

```
SETUP WHICH OUTPUTS?
INT MD1 MD2 EX1 EX2
```

INT = INTERNAL 16 OPEN COLLECTORS
MD1 = INTERNAL MD1 SLOT (for 617B, 618, or 619)
MD2 = INTERNAL MD2 SLOT (for 617B, 618, or 619)
EX1 = SERIAL PORT 1 (for 3000R-150A Switcher Panel)
EX2 = SERIAL PORT 2 (for 3000R-150A Switcher Panel)

Press: Key under ‘MD1’.

The display will show:

```
MD1 has NONe installed
NON 4X1 2X1 16R
```

NON = NO MODULE INSTALLED IN MD1 SLOT
4X1 = MODULE IN MD1 SET FOR 4X1 (617B)
2X1 = MODULE IN MD1 SET FOR DUAL 2X1 (617B or 618)
16R = MODULE IN MD1 IS 16 RELAYS (619)

For this example we will assume that we have installed a 617B module configured for 4X1.

NOTE: The Timer can neither sense nor alter the wiring of a module. Be sure to **correctly select the configuration** of each module or erroneous module operation will result.

Press: Key under ‘4X1’.

The display will show:

```
MD1 has a 4X1 stereo A/V switch
NON 4X1 2X1 16R
```

Press: 'ENTER'.

The display will show:

```
SW 1234                          - =ENERGIZED
 1   2   3   4
```

When 4X1 is selected, the Program Timer's program sets switches 1 through 4 as a group of 1 of 4 only. If you energize switch 2 and then energize switch 3, switch 2 will de-energize before switch 3 energizes. This requires the programmer to enter 'ON' commands and NOT 'OFF' commands. Also the front panel status indicator MD1 will illuminate with the corresponding switch number. Actuate one of the switches before pressing ENTER.

Press: 'ENTER' when correct switch is energized.

SETUP MD2:
With the display shown as below or if not press 'EXIT' (1 or more times) until display is shown as below:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'SET'.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under ‘OUT’.

The display will show:

```
SETUP WHICH OUTPUTS?
INT MD1 MD2 EX1 EX2
```

INT = INTERNAL 16 OPEN COLLECTORS
MD1 = INTERNAL MD1 SLOT (for 617B, 618, or 619)
MD2 = INTERNAL MD2 SLOT (for 617B, 618, or 619)
EX1 = SERIAL PORT 1 (for 3000R-150A Switcher Panel)
EX2 = SERIAL PORT 2 (for 3000R-150A Switcher Panel)

Press: Key under ‘MD2’.

The display will show:

```
MD2 has NONe installed
NON 4X1 2X1 16R
```

For this example we will assume that we have module in MD2 configured for 2X1 (617B or 618).

Press: Key under ‘2X1’.

The display will show:

```
MD2 has dual 2X1 stereo A/V switches
NON 4X1 2X1 16R
```

Press: ‘ENTER’.

The display will show:

```
SW 1234                          - =ENERGIZED
 1   2   3   4
```

When 2X1 is selected, the Program Timer's program sets switches 1 and 2 as a group and switches 3 and 4 as a group. If you energize switch 1 and then energize switch 2, switch 1 will de-energize before switch 2 energizes. This requires the programmer to enter 'ON' commands and NOT 'OFF' commands. The front panel status indicator MD2 will illuminate with the corresponding switch number. Energize switch 1 or 2 and 3 or 4 before pressing ENTER.

Press: 'ENTER' when correct switch is energized.

SETUP EX1:
With the display shown as below: [if not press 'EXIT' (1 or more times) until display is shown as below]

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'SET'.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under 'OUT'.

The display will show:

```
SETUP WHICH OUTPUTS?
INT MD1 MD2 EX1 EX2
```

INT = INTERNAL 16 OPEN COLLECTORS
MD1 = INTERNAL MD1 SLOT (for 617B, 618, or 619)
MD2 = INTERNAL MD2 SLOT (for 617B, 618, or 619)
EX1 = SERIAL PORT 1 (for 3000R-150A Switcher Panel)
EX2 = SERIAL PORT 2 (for 3000R-150A Switcher Panel)

Press: Key under 'EX1' for 3000R-150A control.

The display will show:

```
EX1/MD1 has NONe installed
NON 4X1 2X1 16R
```

You should enter the module type you have installed in EX1/MD1 then follow the same procedure as previously described to set up that module. For this example we will assume no module installed in EX1/MD1 of the 3000R-150A.

Press: 'ENTER'.

The display will show:

```
EX1/MD2 has NONe installed
NON 4X1 2X1 16R
```

Follow the same steps as in MD1 and MD2 for setup. For this example we will assume no module installed in EX1/MD2 of the 3000R-150A.

Press: 'ENTER'.

SETUP EX2:
With the display shown as below: [if not press 'EXIT' (1 or more times) until display is shown as below]

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under ‘SET’.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under ‘OUT’.

The display will show:

```
SETUP WHICH OUTPUTS?
INT MD1 MD2 EX1 EX2
```

INT = INTERNAL 16 OPEN COLLECTORS
MD1 = INTERNAL MD1 SLOT (for 617B, 618, or 619)
MD2 = INTERNAL MD2 SLOT (for 617B, 618, or 619)
EX1 = SERIAL PORT 1 (for 3000R-150A Switcher Panel)
EX2 = SERIAL PORT 2 (for 3000R-150A Switcher Panel)

Follow the same steps as in MD1, MD2, and EX1 to complete setup for EX2.

Press: ‘EXIT’ when output setup is complete.

The display will show:

```
SU 06/11/89 13:53:01
CLK OUT CMP PRT
```

Press: ‘EXIT’ once.

The display will show:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

SETUP COMPUTER:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'SET'.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under 'CMP'.

The display will show:

```
NON  7   1  300
PAR BIT STP BAUD
```

PAR = PARITY:
- NON = NONE (use for SYNOPSIS software)
- ODD = ODD
- EVN = EVEN
- STO = STICK 0
- ST1 = STICK 1

BIT =
- 7 = 7 DATA BITS IN EACH BYTE
- 8 = 8 DATA BITS IN EACH BYTE (use for SYNOPSIS software)

STP = STOP BIT:
- 1 = 1 STOP BIT (use for SYNOPSIS software)
- 2 = 2 STOP BITS

BAUD = BAUD RATE:
- 300
- 600
- 1200 (use for SYNOPSIS 2 software)
- 2400
- 4800
- 9600

Pressing key under soft-key prompt advances to the next selection in the field with wrap. When the correct configuration is displayed, press 'ENTER'.

NOTE: The maximum bit length is 11, which means that a setup of even parity, 8 data bits, and 2 stop bits is not valid (length is 12 bits).

Press: 'ENTER' when set correctly for your computer and the display will show:

```
SU 06/11/89 13:53:01
CLK OUT CMP PRT
```

SETUP PRINTER:

With the display shown as below: [if not press 'EXIT' (1 or more times) until display is shown as below]

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under ‘SET’.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: Key under ‘PRT’.

The display will show:

```
NON  7   1   300
PAR BIT STP BAUD
```

PAR = PARITY:
- NON = NONE
- ODD = ODD
- EVN = EVEN
- ST0 = STICK 0
- ST1 = STICK 1

BIT =
- 7 = 7 DATA BITS IN EACH BYTE
- 8 = 8 DATA BITS IN EACH BYTE

STP = STOP BIT:
- 1 = 1 STOP BIT
- 2 = 2 STOP BITS

BAUD = BAUD RATE:
- 300
- 600
- 1200
- 2400
- 4800
- 9600

Pressing key under soft-key prompt advances to the next selection in the field with wrap. When the correct configuration is displayed, press 'ENTER'.

NOTE: The maximum bit length is 11, which means that a setup of even parity, 8 data bits, and 2 stop bits is not valid (length is 12 bits).

Press: 'ENTER' when set correctly for your printer.

The display will show:

```
SU 06/11/89 13:53:05
CLK OUT CMP PRT
```

Press: 'EXIT' twice.

The display will show:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

EDIT

The 'EDT' (edit) prompt allows; 'ADD' (enter) timed events into memory, 'DEL' (delete) all events stored in memory, or 'PAC' (pack) the memory to remove events marked for deletion.

With the display shown below or with the bottom line on the display showing the next event:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'EDT'.

The display will show:

```
SU 06/11/89 13:53:05
ADD DEL PAC
```

ADD = ADD EVENT INTO MEMORY
DEL = DELETE ALL EVENT IN MEMORY
PAC = PACK EVENTS. REMOVES ALL EVENTS IN MEMORY MARKED FOR DELETION.

ADD EVENTS:
With the display shown below or with the bottom line on the display showing the next event:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

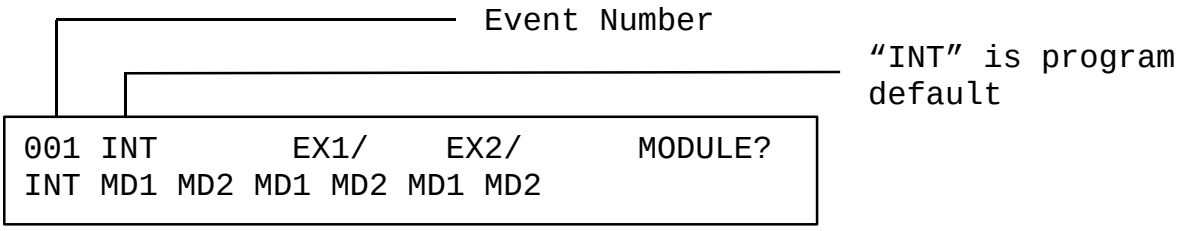
Press: Key under 'EDT'.

The display will show:

```
SU 06/11/89 13:53:05
ADD DEL PAC
```

Press: Key under 'ADD'.

The display will show:



The event number, determined by the program timer's software, will increase in numerical order for each event added.

The display is prompting you for the module type for the event to be added, the timer's program default is 'INT' (internal 16 open collector outputs).

Press: Module type or 'ENTER' if field information (INT is displayed above) is correct in last field displayed on the top line.

The display will show:

```
001 INT SWO1                    SWITCH?
 1   2   3   4   5   6   7   8      MOR
```

The display is prompting you for the switch number of this event. If ‘SW01’ was the correct switch number you could just press ‘ENTER’ or if switch number is larger than ‘8’ press ‘MOR’.

Press: Key under ‘MOR’.

The display will show:

```
001 INT SW01                    SWITCH?
 9   10  11  12  13  14  15  16     MOR
```

Press: Key under correct switch number or ‘ENTER’ for same as displayed.

The display will show:

```
001 INT SW01/OFF                COMMAND?
OFF  ON
```

The display is prompting you for the command of this event number. For internal switch numbers or Module 619 ‘ON’ will cause the corresponding output to short to ground. The ‘OFF’ command will cause the corresponding output to open to ground. When entering event commands for 617B, or 618 module use only ‘ON’ commands. ‘OFF’ commands will cause the 3000R-149 to perform erratic operation.

Press: Key under ‘ON’ or ‘OFF’ or ‘ENTER’ if field displayed correctly.

The display will show:

```
001 INT SW01/ON  SU            WEEKDAY?
 SU  MO  TU  WE  TH  FR  SA  ED  **
```

SU = SUNDAY
MO = MONDAY
TU = TUESDAY
WE = WEDNESDAY
TH = THURSDAY
FR = FRIDAY
SA = SATURDAY
ED = EVERY DAY
** = I DON'T CARE. (VALID ONLY IF ENTERING DATE ENTRY, don't use for anything else).

The display is prompting you for a weekday entry for this event number. If you will be entering a **date** use '**'.

Press: Key under weekday required or 'ENTER' if field is displayed correctly.

The display will show:

```
001 INT SW01/ON  SU 06          MONTH?
```

The display is prompting you for the month in which you want the event to occur. This requires a two-digit entry. If you want the event to occur every Sunday until told otherwise, press 'CLEAR' for '**'. You may also program the timer to have events occur for a specific month (Example: every Sunday for the month of June). Enter the two-digit number of the month and for date of month press 'CLEAR' (for '**' I don't care).

If **weekday** is '******', you must enter a **date**. If weekday is <u>not</u> '**', you must press 'CLEAR' to enter '******' as the **date**.

Press: Two numbers, or 'CLEAR' for I don't care '**', or 'ENTER' for same as field displayed.

The display will show:

```
001 INT SW01/ON SU 06/** 13       HOUR?
```

The display is prompting you for the hour, in military time, which you want the event to occur. This entry is a two-digit entry.

Press: Two digits or 'ENTER' if displayed correctly.

The display will show:

```
001 INT SW01/ON SU 06/** 15:53      MN?
```

The display is prompting you for a two digit minute entry that the event is to occur.

Press: Two digits or 'ENTER' if displayed correctly.

The display will show:

```
SU 06/11/89 13:53:05
ADD DEL PAC
```

Press: 'ADD' to add another event to memory or 'EXIT' once to return back to normal operating display.

DELETE EVENTS:

'DEL' (delete) all events in memory will erase all events stored in the timer's memory.

With the display shown below or with the bottom line on the display showing the next event:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'EDT'.

The display will show:

```
SU 06/11/89 13:53:05
ADD DEL PAC
```

Press: Key under ‘DEL’.

The display will show:

```
Delete ALL events in memory?
YES  NO
```

To show the steps in ‘DEL’.

Press: Key under ‘YES’.

The display will show:

```
Are you SURE?
YES  NO
```

Press: Key under ‘NO’ or ‘YES’.

The display will show:

```
SU 06/11/89 13:53:05
ADD DEL PAC
```

PACK EVENTS:

'PAC' (pack) events removes all events marked for deletion. Events can be marked or unmarked for deletion in the 'VUE' (view) mode. 'PAC' removes all marked events and re-assigns event numbers to the remaining events.

An example would be if there were events 001 through 003 in memory and event 002 is marked for deletion and we packed memory. Event 001 would be the same event, but event 003 after pack would become event 002.

With the display shown below or with the bottom line on the display showing the next event:

```
SU 06/11/89 13:53:01
No later events are stored in memory
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'EDT'.

The display will show:

```
SU 06/11/89 13:53:05
ADD DEL PAC
```

Press: Key under 'PAC'.

The display will show:

```
Erase ALL DELete marked events?
YES  NO
```

Press: Key under 'YES'.

The display will show:

```
Are you SURE?
YES  NO
```

Press: Key under 'YES'.

The display will show:

```
SU 06/11/89 13:53:05
ADD DEL PAC
```

Press: 'EXIT' once.

The display will show the next event in memory to occur if there is one.

```
SU 06/11/89 13:53:05
001 INT SW01/ON  SU 06/** 15:53 next
```

VIEW

'VUE' (view) allows you to view events in memory and mark or unmark them for deletion using 'EVT'. 'OUT' is used to view the status of all outputs.

VIEW EVENTS:
With the display showing an event that is to occur next as shown below:

```
SU 06/11/89 13:53:01
001 INT SW01/ON  SU 06/** 15:53 next
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'VUE'.

The display will show:

```
SU 06/11/89 13:53:05
EVT OUT
```

EVT = EVENT (VIEW EVENTS IN MEMORY)
OUT = OUTPUT (VIEW OUTPUT STATUS)

Press: Key under 'EVT'.

The display will show:

```
001 INT SW14/ON  ED **/** 15:00
 ¯    -  BEG END DEL                EDT
```

- = INCREASE EVENT NUMBER DISPLAYED EACH TIME PRESSED

¯ = DECREASE EVENT NUMBER DISPLAYED EACH TIME PRESSED.

BEG = DISPLAYS FIRST EVENT NUMBER IN MEMORY.
END = DISPLAYS LAST EVENT NUMBER IN MEMORY.
DEL = MARKS EVENT DISPLAYED FOR DELETION.
EDT = EDIT EVENT DISPLAYED.

Pressing the key under 'DEL' will toggle 'DEL' ON and OFF on the first line of the display and mark that event for deletion. Marking an event for deletion will disable execution , but will not remove it from memory. The 'EXIT' key, when pressed twice, will return you back to the main prompts. Use the 'PAC' function in 'EDT' to remove events marked for deletion.

Pressing the key under 'EDT' will take you to the edit function (same as 'ADD' in 'EDT' level).

VIEW OUTPUTS:

The status of any output is displayed on the front panel of the timer by using the 'VUE' and 'OUT' function. It also will allow you to energize or de-energize any output.

With the display showing an event that is to occur next, as shown below:

```
SU 06/11/89 13:53:01
001 INT SW01/ON  SU 06/** 15:53 next
```

Press: Any key on the front panel.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'VUE'.

The display will show:

```
SU 06/11/89 13:53:05
EVT OUT
```

EVT = EVENT (VIEW EVENTS IN MEMORY)
OUT = OUTPUT (VIEW OUTPUT STATUS)

Press: Key under 'OUT'.

The display will show:

```
INT           EX1/    EX2/     MODULE ?
INT MD1 MD2 MD1 MD2 MD1 MD2         EDT
```

The LED display will show the status of 'INT'.

Press: Key under 'MD2'.

The display will show:

```
MD2           EX1/    EX2/     MODULE ?
INT MD1 MD2 MD1 MD2 MD1 MD2          EDT
```

The LED display will be showing the status of ‘MD2’.

Press: Key under ‘INT’.
Press: Key under ‘EDT’.

The display will show:

```
SW 123456789*0123456         - =ENERGIZED
 1   2   3   4   5   6   7   8       MOR
```

Pressing the key under the corresponding number will energize the output and display it on the timer’s LED display.

When outputs are set correctly.

Press: ‘EXIT’ twice.

The display will show:

```
SU 06/11/89 13:53:05
001 INT SW14/ON  ED **/** 15:00 next
```

LOG

The ‘LOG’ function logs events to an external printer each time an event is executed.

With the display showing the next event that is to occur or no later events in memory.

```
SU 06/11/89 13:53:05
001 INT SW01/ON  SU 06/** 15:53 next
```

Press: One of the front panel keys.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under ‘LOG’.

With a printer connected to the timer and on line the display will show:

```
SU 06/11/89 13:53:05                LOG
001 INT SW01/ON  SU 06/** 15:53 next
```

If there is no printer connected, or it’s off line, the display will show ‘NO printer’ instead of ‘LOG’. To turn the logging function OFF press the log function key again.

LIST

The ‘LST’ (list) function allows you to list stored memory information to the external printer. Each output (for example; MD1) may be listed in order by event, switch number, day of week, date, or time.

With the display showing an event that is to occur next:

```
SU 06/11/89 13:53:05                LOG
001 INT SW01/ON  SU 06/** 15:53 next
```

Press: Any front panel key.

The display will show:

```
SU 06/11/89 13:53:05
SET EDT VUE LOG LST
```

Press: Key under 'LST'.

The display will show:

```
                EX1/    EX2/      MODULE?
INT MD1 MD2 MD1 MD2 MD1 MD2          ALL
```

The display is prompting you for the module type to list by. When you select 'ALL' it will list all events in the memory by the next sort below.

Press: Key under 'ALL' or one of the module selections.

The display will show:

```
List to printer in what order?
EVT SW# DOW DAT TIM
```

EVT = PRINT IN ORDER OF EVENT NUMBER
SW# = PRINT IN ORDER OF SWITCH NUMBER
DOW = PRINT IN ORDER OF DAY OF WEEK
DAT = PRINT IN ORDER OF MONTH
TIM = PRINT IN ORDER OF HOUR

LIST IN EVENT ORDER:
The key under 'EVT' is pressed to send serial information to the printer in event number order, starting with 001 and ending with the last event stored in memory.

LIST IN SWITCH NUMBER ORDER:
When the key under 'SW#' is pressed, a new screen asks you which switch number you wish to print. After pressing the key under the number displayed, information is sent to the printer in event number order for the switch number you selected.

LIST IN DAY OF WEEK ORDER:
When the key under 'DOW' is pressed, a new screen asks you which day of the week you wish to print. After pressing the key under the number displayed, information is sent to the printer in event number order for the day of the week you selected.

LIST IN DATE ORDER:
When the key under 'DAT' is pressed, a new screen asks you which month you wish to print. After entering a two digit entry, (for example: 01) information is sent to the printer in event number order for the month you selected.

LIST IN TIME ORDER:
When the key under 'TIM' is pressed, a new screen asks you which hour you wish to print. After entering a two digit entry, (for example: 14) information is sent to the printer in event number order for the hour you selected.

When list is completed, your display will show:

```
SU 06/11/89 13:53:05                LOG
001 INT SW01/ON  SU 06/** 15:53 next
```

If there is no printer connected or if it's off line, the display will show:

```
NO PRINTER. PRESS ANY KEY

```

This gives you the opportunity to put a printer on line or abort.

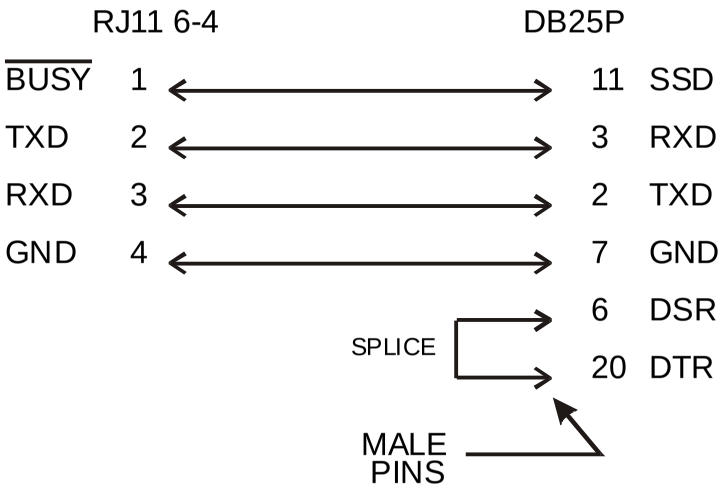
Press: Any front panel key.

The display will show:

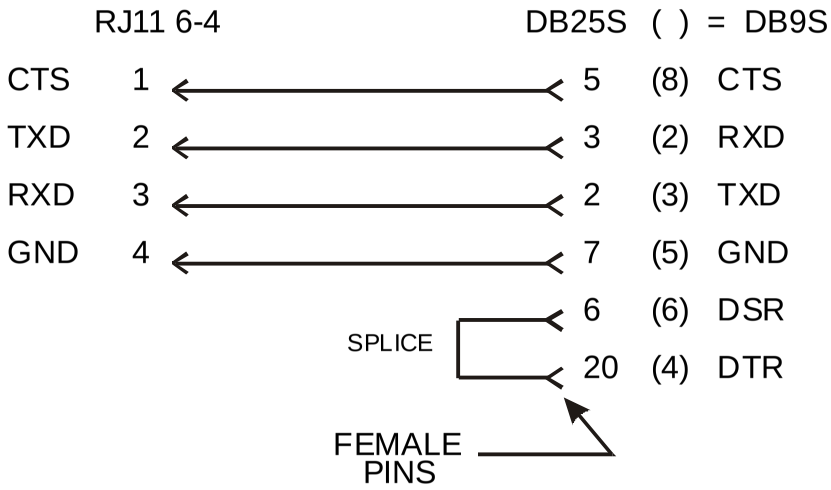
```
SU 06/11/89 13:53:05                LOG
001 INT SW01/ON  SU 06/** 15:53 next
```

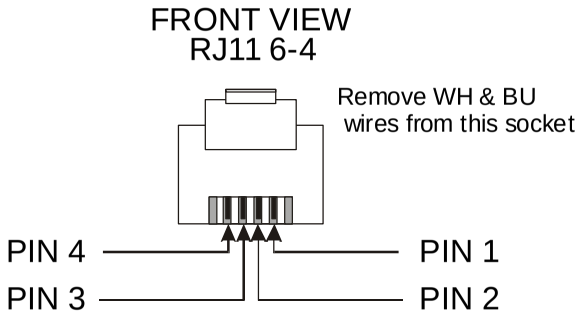
MODEL 3000R-149
PERIPHERAL DEVICE CABLES

3000R-149 TO PRINTER

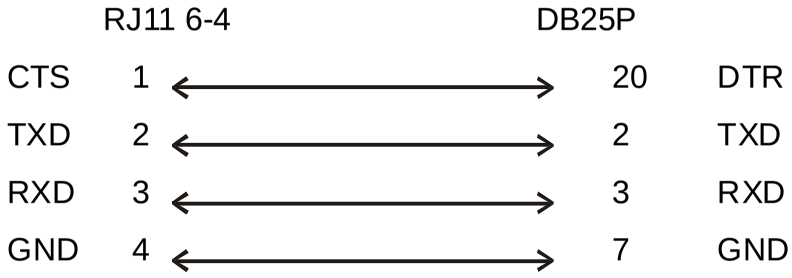


3000R-149 TO COMPUTER





3000R-149 TO MODEM



RETURN POLICIES AND PROCEDURES

FACTORY REPAIR:
Return authorizations is required for factory repair work.

Material being returned to the factory for repair must have a return material authorization number. To obtain a RMA number, call 585-765-2254 and ask for the service department.

Material returned to the factory for warranty repair must also be accompanied by a copy of a dated invoice or bill of sale which serves as a proof of purchase for the material.

Repairs will be returned promptly. Repairs are normally returned to the customer by UPS as soon as possible after they are received by Monroe Electronics, Inc. Return (to the customer) UPS charges will be paid by Monroe Electronics on warranty work. Return (to the customer) UPS charges will be prepaid and added to invoice for out-of-warranty repair work.

EXPEDITED FACTORY REPAIR:
All material returned to the factory by air or by an overnight service will be expedited.

Expedited factory repairs will be returned to the customer by the same mode of transportation by which the material was received at the factory for repair (i.e. material returned to the factory by an overnight service will be returned to the customer by an overnight service).

NOTE: Return (to the customer) transportation expenses for expedited factory repairs will always be at the expense of the customer regardless of the warranty status of the equipment.

FACTORY REPAIRS TO MODIFIED EQUIPMENT:
Material returned to the factory for repair which has been modified will not be repaired unless the modification had been authorized by us.

We will reserve the right to deny service to any modified equipment that is returned to the factory for repair regardless of the warranty status of the equipment.

WARRANTY

Monroe Electronics, Inc. warrants to the Owners, each instrument and sub-assembly manufactured by them to be free from defects in material and workmanship for a period of one year after shipment from factory. This warranty is applicable to the original purchaser only.

Liability under this warranty is limited to service, adjustment or replacement of defective parts (other than tubes, fuses, or batteries) on any instrument or sub-assembly returned to the factory for this purpose, transportation charges prepaid.

This warranty does not apply to instruments or sub-assemblies subjected to abuse, abnormal operating conditions, or unauthorized repair or modification.

Since Monroe Electronics, Inc. has no control over conditions of use, no warranty is made or implied as to the suitability of our product for the customer's intended use.

THE WARRANTY SET FORTH IN THIS ARTICLE IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESS, IMPLIED OR STATUTORY INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. Except for obligations expressly undertaken by Monroe Electronics, in this Warranty, Owner hereby waives and releases all rights, claims and remedies with respect to any and all warranties, express, implied or statutory (including without limitation, the implied warranties of merchantability and fitness), and including but without being limited to any obligation of Monroe Electronics with respect to incidental or consequential damages, or damages for loss of use. No agreement or understanding varying or extending the warranty will be binding upon Monroe Electronics unless in writing signed by a duly authorized representative of Monroe Electronics.

In the event of a breach of the foregoing warranty, the liability of Monroe Electronics shall be limited to repairing or replacing the non-conforming goods and/or defective work, and in accordance with the foregoing, Monroe Electronics shall not be liable for any other damages, either direct or consequential.

Application Note APNT-0001
Adapting the Zoom Fax/Modem V.34X Plus

(Model 2836) for use with Monroe's R-149 and R-153 Timers

We believe the Zoom Model 2836 modem will meet current and future requirements for these Series 3000 timers. This external modem is readily available at a reasonable price.

Timer Preparation:

Two preliminary steps are necessary with the R-149 timer. These steps are not necessary with the R-153 timer:

1) Check the firmware version. It should be either version GERS80134-3.04 or PSI V1.15 or higher. If not, contact Monroe Electronics. To check the firmware version:
   a) ENTER or EXIT to the "SET EDT VUE LOG LST" menu
   b) Press VUE
   c) Press VER
   d) Note firmware version and exit back.
2) Check the communication protocol:
   a) At the opening menu, select SET
   b) Press CMP
   c) Proper protocol is "NON, 8, 1, 1200" (1200 BAUD)

Modem Preparation:

Connect the Zoom Model 2836 to your computer's communication (COM) port and invoke your data communication program (examples: COMit™, PROCOMM, BitCom, etc.). At the prompt (usually a "blink-block" cursor), type the following six lines of AT commands. Use all upper case letters and ENTER (¿) at the end of each line. An "OK" should return following each line:

AT&F%C0&C1&D2

AT&Q6 +MS=1,0,1200,1200

AT S95=0

AT S0=1

AT&W0

AT&Y0

AT&V (optional)

Disconnect the modem from the computer. It is now programmed with a new set of values to allow it to be transported to and used with your timer.

Software Change:

In the on-screen **L**ocation, **E**dit menu, change the Modem String to:

AT&F&C1&D2E0Q0V1X1 S0=0 S7=60 S8=2 H1

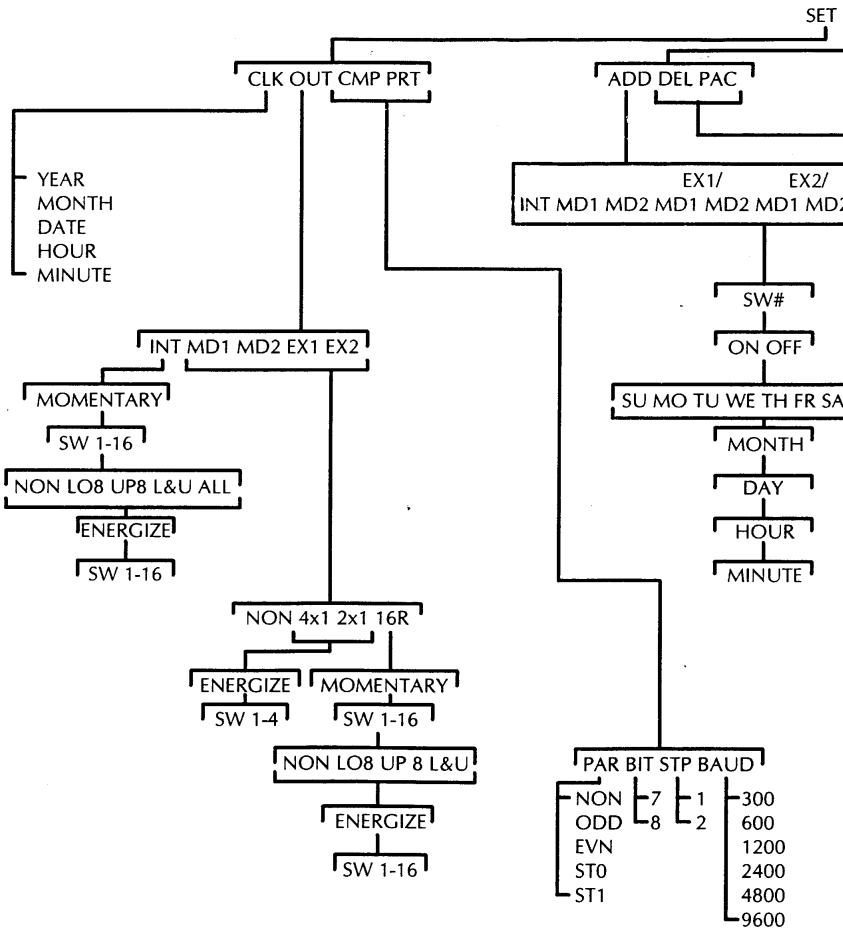
This string should work with high-speed modems that conform to Hayes 1200 bps simple protocol. If there are problems consult your modem manual or contact the modem manufacturer for technical support.

What the AT Commands Mean to Your External Modem

&F	Restore factory default configuration.
%C0	Disable data compression.
&C1	The RLSD (Received Line Signal Detect) output follows the state of the carrier: ON when the remote modem's carrier is detected. OFF when the remote modem's carrier is not detected.
&D2	If the DTR (Data Terminal Ready) signal goes inactive, the modem disconnects. Autoanswer is inhibited when the DTR signal is inactive.
&Q6	Connect in the Normal Mode. Error correction and data compression are disabled.
+MS=1,0,1200,1200	Disables automode and forces connection rate to only 1200 bps.
S95=0	Result code control.
S0=1	Number of rings to autoanswer (1). A value of 0 would prevent modem from autoanswering.
&W0	Store the current configuration into User Profile 0.
&Y0	Set User Profile 0 to default for the Z command.

NOTE: Commands can be verified by issuing AT&V.

3000R-149 SOFT KEY OUTLINE



DIRECTORY

ADD	Add events to memory	L&U	Lower and upper group 1 of 8	STP	Stop bit
ALL	Includes every one	LO8	Lower group 1 of 8 (SW 1-8)	ST0	Stick 0
BEG	First event in memory	LOG	Log events to external printer	ST1	Stick 1
CLK	Clock setup	LST	List memory to external printer	SU	Sunday
CMP	Computer setup	MD1	Module slot 1	SW#	Switch number (1-16 or 1-4)
DAT	Date of month	MD2	Module slot 2	TIM	Time in hours
DEL	Delete unexecutable event or disable execution	MO	Monday	TH	Thursday
DOW	Day of week	MOD	Modem setup	TU	Tuesday
ED	Every day	MOMENTARY	Energize output for 250 mSec	UP8	Upper group 1 of 8 (SW 9-16)
EDT	Edit memory or event	NON	None installed	VER	Software version in timer
END	Last event in memory	ODD	Odd parity	WE	Wednesday
ENERGIZE	Turn output ON without timed event	OFF	De-energize output	**	I don't care
EVN	Even parity	ON	Energize output	↓	Decrease event displayed by one
EVT	Event in memory	OUT	Output selection	↑	Increase event displayed by one
EX1	Serial port 1 for 3000R-150 connection	PAC	Pack memory (remove deleted events)	2x1	Model 617B or 618 configured as dual 2x1
EX2	Serial port 2 for 3000R-150 connection	PRT	External printer setup	4x1	Model 617B configured as 4x1
FR	Friday	SA	Saturday	16R	Model 619 (16 outputs)
INT	Internal 16 open collector outputs	SET	Setup timer configuration		