TR3 Connections

Power Supply Connections

The TR3 is powered by a 9 volt A.C. plug pack power supply. The power supply jack is located on the rear of the TR3 together with the RJ45 connectors and the relay connector.
It is extremely important that no other voltage be used to supply the TR3 as this may cause over heating and permanent damage to the TR3.

Mounting Location

The clock should be mounted inside, it is not designed for outdoor use.
Do not place the clock in a location that is exposed to direct sunlight, extremes of temperature or areas that are hosed clean.
The clock is not waterproof.
If the clock is mounted in a dusty environment you may experience excessive wear on the card reader. If you are unable to keep the clock out of such an area we recommend regular cleaning with clock cleaning cards.

Special Considerations for Biometric readers

TR3 clock that are fitted with Biometric Readers have special mounting considerations.
The clock should be mounted with the reader around 1.5 meters above the floor.
If the clock is much lower than this it becomes difficult for employees to place their finger in the correct position.
The employees should be able stand on a flat surface in front of the clock.
If this clock is mounted over an uneven surface employees may have difficulty placing their finger correctly.

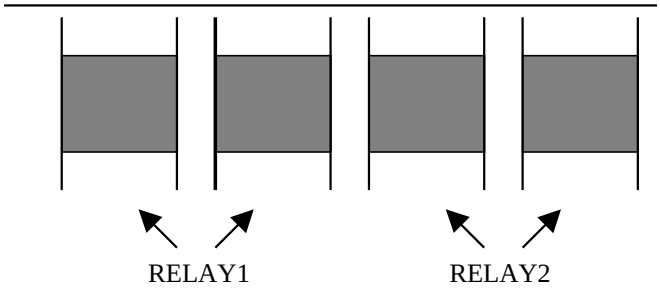
Relay Connections

Two Relay contacts are provided for ringing external bells. They are located on the green connector on the back of the TR3 next to the 2 RJ45 connectors. The connector unplugs from the TR3 so that bell cables can easily be terminated into the connector and then plugged into the TR3.
The contacts are rated at 24 volts D.C. with a maximum current rating of 1 amp.

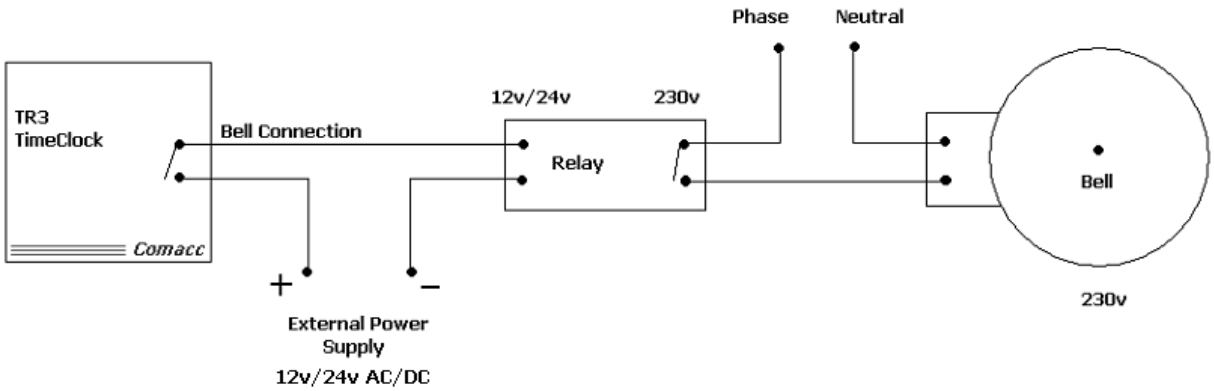
DO NOT CONNECT 230 VOLTS TO THESE CONTACTS.

These contacts **do not provide any voltage** for driving the bells or external relays. If 230 volt relays are required to drive 230 volt bells then a low voltage external supply must be provided so that the TR3 relay contacts can activate the 230 volt relay.

Top View



TR-3 Timeclock Bell Wiring Diagram



PS2 Keyboard and Barcode Scanner Connector

A full PS2 Keyboard and/or a Barcode Scanner can be connected to the TR3 by plugging them into the 5 pin DIN connector located at the bottom of the TR3. To connect both a keyboard and a scanner to this connector a keyboard wedge will have to be used.

This port can only supply approximately 300mA so care must be taken when connecting both a keyboard and a scanner to make sure that the combined current draw from both these devices does not exceed this limit.
If a battery backup module is installed then using both keyboard and scanner will dramatically reduce the battery backup time.

TR3 Time Clock Ethernet Module

Introduction

The Ethernet module fitted to a TR3 uses the Internet Protocol (IP) for network communications and the Transmission Control Protocol (TCP) to assure that no data is lost or duplicated, and that everything sent to the connection arrives correctly at the target.
The module also supports AutoIP and DHCP protocols.
The Network interface is RJ45 Ethernet 10Base-T or 100Base-TX (Auto-sensing) and is compatible with Ethernet: Version 2.0/IEEE 802.3.

The Ethernet module replaces the serial communication module on the TR3 and plugs into the same slot.

The following software version are required for Network connectivity:

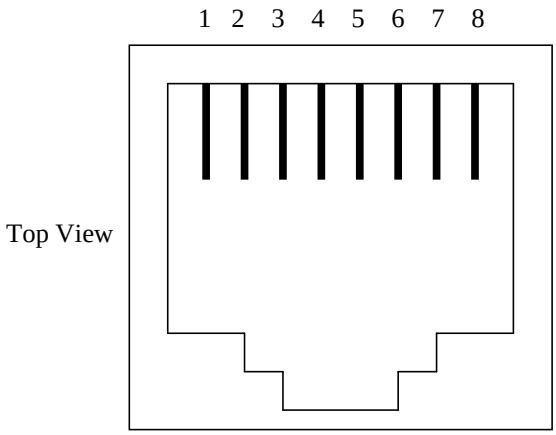
Required TR3 Polling software version: 5.00

Required TR3 software versions required:

- **Display Version 2.00**
- **CPU Version 2.00**

Ethernet Connections

Two 8 pin RJ45 connectors are provided on the back of the TR3. A standard UTP patch cable with a straight through connection will plug into these connectors to communicate with the TR3 over the Network.
Both connectors are connected in parrallel so it does not matter which connector is used, however, only one connector can be used at a time.



Signal Name	DIR	Contact	Primary Function
TX+	Out	1	Differential Ethernet Transmit Data +
TX-	Out	2	Differential Ethernet Transmit Data -
RX+	In	3	Differential Ethernet Receive Data +
RX-	In	6	Differential Ethernet Receive Data -
Not Used		4	(open)
Not Used		5	(open)
Not Used		7	(open)
Not Used		8	(open)

Getting Started

The Module IP address must be configured before a network connection is available.
· Only one person at a time may be logged into the network port.

Note: *In most installations, a fixed IP address is desirable. The systems administrator generally provides the IP address.*

Addresses and Port Number

The Ethernet address is also referred to as the hardware address or the MAC address. The first three bytes of the Ethernet Address are fixed and read 00-20-4A. The fourth, fifth, and sixth bytes are unique numbers assigned to each unit.
00-20-4A-14-01-18 or 00:20:4A:14:01:18
Every device connected to an IP network must have a unique IP address. This address is used to reference the specific unit.

Every TCP connection and every UDP datagram is defined by a destination IP address and a port number. For example, a Telnet application commonly uses port number 23. A port number is similar to an extension on a PBX system. The Ethernet Module uses port number 14001.

DHCP

The unit ships with a default IP address of 0.0.0.0, which automatically enables DHCP.
Provided a DHCP server exists on the network, it will provide the unit with an IP address, gateway address, and subnet mask when the unit boots up.
You can use the TR3 Polling software (version 5.00) to search the network for the IP address your unit has been assigned by the DHCP server and record it for future reference.

AutoIP

The unit ships with a default IP address of 0.0.0.0, which automatically enables Auto IP within the unit. AutoIP is an alternative to DHCP that allows hosts to automatically obtain an IP address in smaller networks that may not have a DHCP server. A range of IP addresses (from 169.254.0.1 to 169.254.255.1) has been explicitly reserved for AutoIP-enabled devices.

If your unit cannot find a DHCP server, and you have not manually assigned an IP address to it, the unit automatically selects an address from the AutoIP reserved range. Then, your unit sends out a (ARP) request to other nodes on the same network to see whether the selected address is being used.
If the selected address is not in use, then the unit uses it for local subnet communication.

If another device is using the selected IP address, the unit selects another address from the AutoIP range and reboots itself. After reboot, the unit sends out another ARP request to see if the selected address is in use, and so on.
AutoIP is not intended to replace DHCP. The unit will continue to look for a DHCP server on the network. If a DHCP server is found, the unit will switch to the DHCP server-provided address and reboot.
Note: If a DHCP server is found, but it denies the request for an IP address, the unit does not attach to the network, but waits and retries.
AutoIP can be disabled by setting the unit's IP address to 0.0.1.0. This setting enables DHCP but disables AutoIP.

Assigning IP Address

To manually assign an IP address to the ethernet module the address must be entered from the menu mode on the TR3. This address is stored permanently in the TR3 Clock and is also programmed into the Ethernet module. This process needs only to be done once or repeated if an IP address change is required.
To set the IP address follow the procedure below:

1. Enter TR3 Menu Mode by pressing the left and right side buttons at the same time.
   The default access code is 1234.
2. Press UP or DWN buttons until menu item "**13. Network Settings**" is highlighted.
3. Press Enter key to select Network Settings.
4. Select sub-menu item "**1. Enter IP Address**" and press the Enter key. This will cause the last stored IP address to be displayed. If this is the first time you have set an address then the address should read 000.000.000.000.
5. To change the IP address use the UP and DWN buttons to increment/decrement each number in turn until all digits have been modified. To change to another digit use the NEXT key.
6. If an error has been made then us the NEXT key to cycle back around to the digit in error. To abort the process without making any permanent changes press the QUIT key.

7. Once all digits have been correctly modified press the Enter key. This will cause the TR3 Clock to program the Ethernet module with the new IP address. This could take up to 60 seconds.
8. Once the new IP address has been entered record the address for use in the TR3 Polling software.

Note:
The second sub-menu item **2. Reset Network Connection** should generally not be needed. This option will reset the Ethernet module and program it with the factory setup defaults plus reprogram the IP address with the one stored in the TR3. This option is here as a last resort if the interface suddenly stops working for no reason and powering the clock down and back up again does not get it going.
This option will take much longer to complete than just resetting the IP address.

Important Note:
It is extremely important that the IP address assigned to the Ethernet module is a unique network address. A duplicate address may cause other devices on the network to not work.

TR3 Polling Software

TR3 Polling software version 5.00 and higher have the capability to communicate with a TR3 Time Clock over the Network.
To select Network communications do the following:
1. From the menu bar select **Options** then **Comm Port** and then select the **Network** option at the bottom of the list.
2. Next select **Options** then **IP Address**. This will open an edit box that will allow you to type in the IP address of the TR3 Clock on the network.
3. Type in the TR3 Time Clock IP Address and press the **OK** button.

The Polling software is now ready to communicate to the specified Time Clock over the Network.
If more than 1 TR3 Time Clock is present on the Network each clock, apart from a unique IP address, can also have a unique station address. The station address is used to identify each clock in the data file. When using the Polling software the TR3 Station address must also be specified.

The **Find Clocks** function will also function over the network. Make sure that the **Network** option is selected in the **Comm Port** menu. If it is not selected then **Find Clocks** will scan the serial ports.
The **Find Clocks** function only scans for TR3 Ethernet modules attached to the network – it does not scan for Station addresses.

Note:
Use **Find Clocks** to find out the IP Address of the TR3 attached to the network if an IP Address has not been pre-assigned.

If a Firewall is in use then make sure that the port 14001 is open for the clock and any Computers that will be polling the clock.