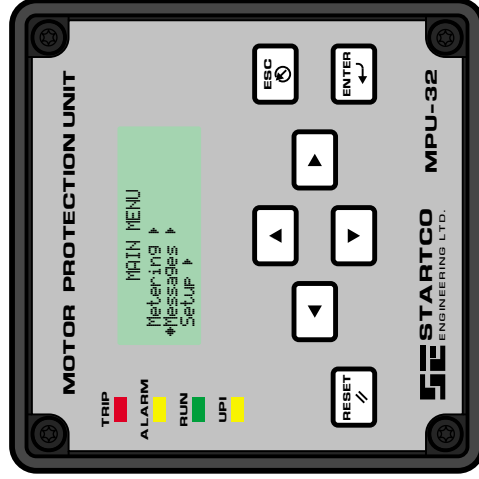


# MPU-32

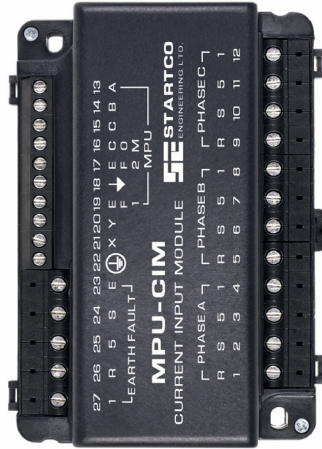
MOTOR PROTECTION UNIT  
Current-Input-Module (CIM)  
Configuration

QUICK REFERENCE  
December 19, 2006  
Revision 0



See MPU-32 manual  
for Detailed information

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FUNCTION & SET POINT	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
RTD-Sensor-Error Trip Action <sup>(3)</sup>		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
RTD-Sensor-Error Alarm Action <sup>(3)</sup>		Alarm1			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Hot-Motor Compensation (HMC) <sup>(3)</sup>		Disabled			<input type="checkbox"/> Enabled <input type="checkbox"/> Disabled
HMC High <sup>(3)</sup>	40	150.00	200	°C	
HMC Low <sup>(3)</sup>	40	40.00	200	°C	

(1) Locked when the motor is running.  
 (2) MPS-RTD Module temperature actions are fixed as Trip 1 and Alarm1.  
 (3) Applies to both local and module RTD's.

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**GENERAL INFORMATION**

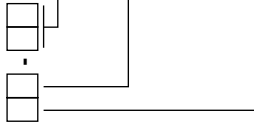
The Startco MPU-32 is a motor-protection relay that provides integrated protection, metering, and data-logging functions for fixed- and variable-frequency applications. The MPU-32 can be programmed using the front-panel operator interface, the TIA-232 port, or an optional communications network.

A basic system consists of an MPU-32, an MPU-CIM, and three line-current transformers. Earth-fault current measurement can be provided by a 1-A, 5-A, or EFACT-series core-balance CT, or it can be calculated from the line-current inputs. In addition to the single PTC/RTD input on the MPU-32, up to three eight-input MPS-RTD modules can be connected to an MPU-32.

The MPU-32 switch-mode power supply is rated 65 to 265 Vac and 80 to 275 Vdc.

Outline and mounting details for the MPU-32 are shown in Figs. 1 and 2. Outline and mounting details for the MPU-CIM and MPS-RTD are shown in Fig. 3.

**MODEL NUMBERS**

**MPU-32 -** 

- Options:
  - 00 CIM Input <sup>(1)</sup>
  - 01 1-A CT Input
- Network Communications:
  - 0 None, TIA-232 only
  - 1 TIA-485 c/w A-B DF1 & Modbus<sup>®</sup> RTU Protocols
  - 2 DeviceNet<sup>™</sup>
  - 4 IEEE 802.3 (Ethernet)<sup>®</sup>
- Power Supply:
  - 0 Universal ac/dc (65 to 265 Vac and 80 to 275 Vdc)

<sup>(1)</sup> Requires input from MPU-CIM or MPU-16A ICT-x

MPU-CIM-00-00 Current Input Module

MPS-RTD-01-00 RTD Module

FUNCTION & SET POINT	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
<b>RTD M1 #5:</b>					
Name	RTD Module 1 #5				
Type	Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100				
Function	Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient <input type="checkbox"/>				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	
<b>RTD M1 #6:</b>					
Name	RTD Module 1 #6				
Type	Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100				
Function	Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient <input type="checkbox"/>				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	
<b>RTD M1 #7:</b>					
Name	RTD Module 1 #7				
Type	Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100				
Function	Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient <input type="checkbox"/>				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	
<b>RTD M1 #8:</b>					
Name	RTD Module 1 #8				
Type	Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100				
Function	Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient <input type="checkbox"/>				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	

FUNCTION & SET POINT	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
Name	RTD Module 1 #1				
Type	Disabled				
Function	<input type="checkbox"/> Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100 <input type="checkbox"/> Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	
Name	RTD Module 1 #2				
Type	Disabled				
Function	<input type="checkbox"/> Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100 <input type="checkbox"/> Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	
Name	RTD Module 1 #3				
Type	Disabled				
Function	<input type="checkbox"/> Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100 <input type="checkbox"/> Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	
Name	RTD Module 1 #4				
Type	Disabled				
Function	<input type="checkbox"/> Disabled <input type="checkbox"/> Ni120 <input type="checkbox"/> Pt100 <input type="checkbox"/> Cu10 <input type="checkbox"/> Ni100 <input type="checkbox"/> Stator <input type="checkbox"/> Load <input type="checkbox"/> Bearing <input type="checkbox"/> Ambient				
Trip	40	130.00	200	°C	
Alarm	40	110.00	200	°C	

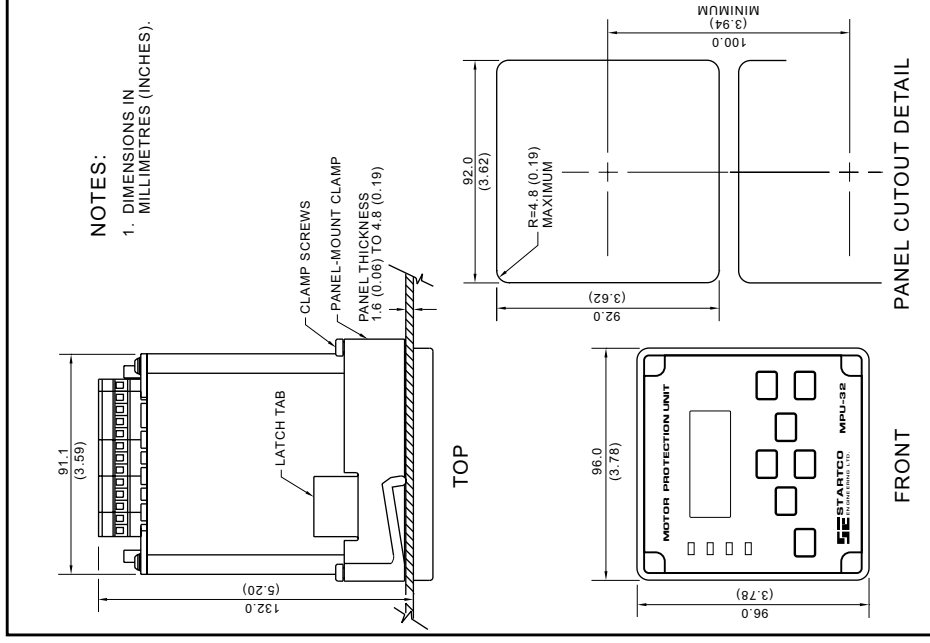


FIGURE 1. MPU-32 Outline and Panel-Mounting Details.

FUNCTION & SET POINT	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
<b>Phase Reverse</b>					
Trip Action		Disabled			<input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Delay	1	5.00	100	s	
Alarm Action		Disabled			<input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Alarm Delay	1	2.00	100	s	
<b>Undercurrent</b>					
Trip Action		Disabled			<input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Level	0.1	0.50	1	x FLA	
Trip Delay	1	10.00	100	s	
Alarm Action		Disabled			<input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Alarm Level	0.1	0.80	1	x FLA	
Alarm Delay	1	20.00	100	s	
<b>Starts/Hour</b>					
Trip Action		Disabled			<input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Alarm Action		Disabled			<input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Number of Starts/Hour	1	5	10	min	
Time Between Starts	0	0.00	500	min	
<b>PTC Temperature</b>					
Trip Action		Disabled			<input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Alarm Action		Disabled			<input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
<b>RTD Temperature (Local)</b>					
Trip Action		Disabled			<input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Level	40	130.00	200	°C	
Alarm Action		Disabled			<input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Alarm Level	40	130.00	200	°C	

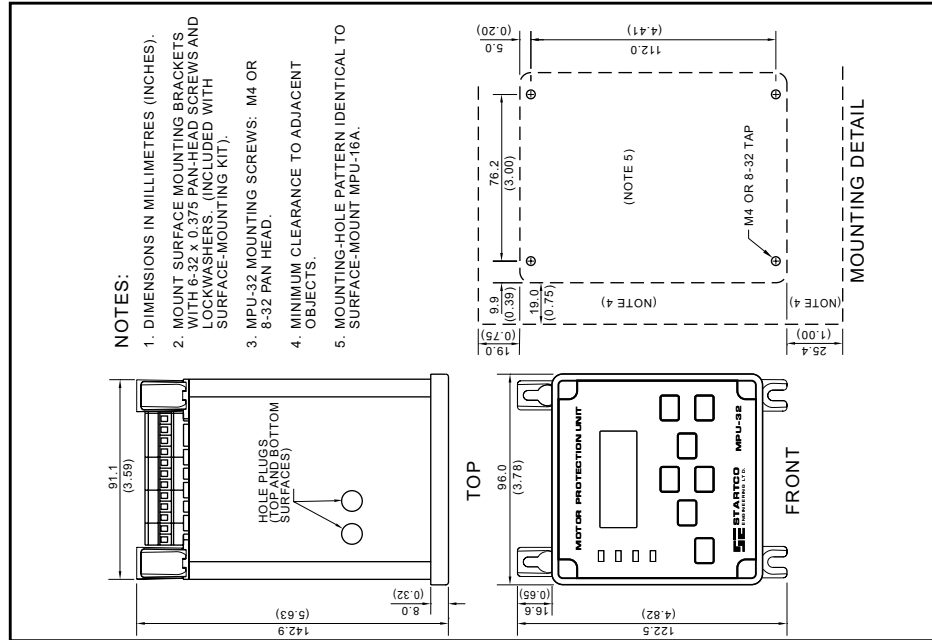


FIGURE 2. MPU-32 Outline and Surface-Mounting Details.

FUNCTION & SET POINT	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
<b>Earth Fault</b>					
Trip Action		Trip1			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Level (le is EF-CT-primary rating)	0.01	0.40	1	x le	
Trip Delay	0	0.25	100	s	
Alarm Action		Alarm1			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Alarm Level	0.01	0.20	1	x le	
Alarm Delay	0	1.00	100	s	
<b>Jam</b>					
Trip Action		Trip1			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Level	1	6.00	10	x FLA	
Trip Delay	1	5.00	100	s	
Alarm Action		Alarm1			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Alarm Level	1	3.00	10	x FLA	
Alarm Delay	1	5.00	100	s	
<b>Unbalance</b>					
Trip Action		Trip1			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Level (Per unit based on $I_{FLA}$ )	0.05	0.25	1	pu	
Trip Delay	1	15.00	100	s	
Alarm Action		Alarm1			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Alarm Level (Per unit based on $I_{FLA}$ )	0.05	0.10	1	pu	
Alarm Delay	1	10.00	100	s	
<b>Phase Loss</b>					
Trip Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Delay	1	5.00	100	s	
Alarm Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Alarm Delay	1	2.00	100	s	

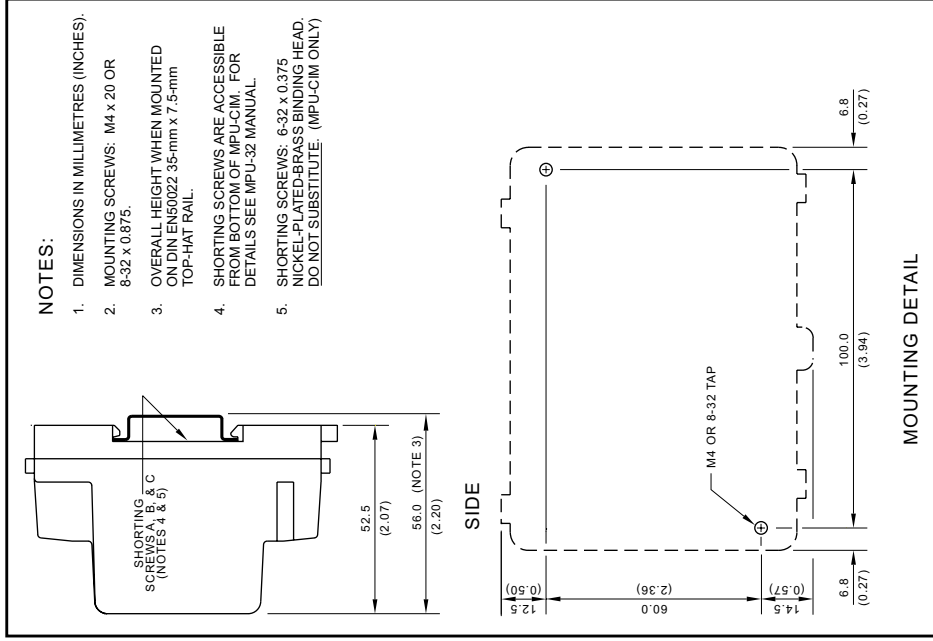


FIGURE 3. MPU-CIM and MPS-RTD Outline and Mounting Details.

## MPU-32 CONNECTIONS

The MPU-32 wire-clamping terminal blocks accept 24 to 12 AWG (0.2 to 2.5 mm<sup>2</sup>) conductors. These terminal blocks unplug to allow the MPU-32 to be easily replaced.

## SUPPLY VOLTAGE

Derive supply voltage from the line side of the motor controller or from an independent source. Connect supply voltage to terminals 2 and 3 (L1 and L2/N). In 120-Vac systems, L2/N is designated as the neutral conductor. For direct-current power supplies, use L1 for the positive terminal and L2/N as the negative terminal. Ground terminal 8 (Ⓢ).

## PTC OR RTD INPUT (LOCAL)

APTC or RTD temperature sensor can be connected to terminals 17, 18, and 19 as shown in Fig. 4. Select the sensor type in the SETUP/HARDWARE menu (see page 22).

## DIGITAL INPUT

A 24-Vdc digital input is provided on terminals 25 and 26. This input is polarity sensitive. For a logical 1, terminal 26 must be positive with respect to terminal 25.

The current limited 24-Vdc source (terminals 27 & 31) can be used for the digital input.

## ANALOG OUTPUT

With the rear-panel switch in the self-powered "S" position, terminal 24 is the "+" terminal and terminal 23 is the common and is referenced to I/O module supply terminal 27. In the loop-powered "L" position, the analog output is isolated from all other MPU-32 terminals and terminal 23 is the loop-powered "+" terminal.

## TIA-232 COMMUNICATIONS

An MPU-32 can communicate with a PC running SE-Comm-RIS Relay Interface Software using a CA-945 adapter cable.

## PART II: PROTECTION SET POINTS

FUNCTION & SET POINT	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
<b>Overload</b>					
It Trip Action		Trip1			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
It Model Type		NEMA			<input type="checkbox"/> NEMA <input type="checkbox"/> K-Factor
K-Factor	1	6.00	10		
Locked-Rotor Current	1.5	6.00	10	x FLA	
Locked-Rotor Time Cold	0.10	10.00	100	s	
Locked-Rotor Time Hot	0.10	5.00	100	s	
Service Factor	1	1.00	1.25		
Cooling Factor	0.10	2.00	10		
It Inhibit Trip		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
It Inhibit Alarm		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
It Inhibit Level (Per unit based on 100% It)	0.10	0.30	0.90	pu	
It Alarm Action		Alarm1			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
It Alarm Level (Per unit based on 100% It)	0.50	1.00	1	pu	
It Reset Type		Normal			<input type="checkbox"/> Normal <input type="checkbox"/> Auto <input type="checkbox"/> Multiple Motor Sequence
<b>Overcurrent</b>					
Trip Action		Trip1			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Level (Ip is Phase-CT-Primary rating)	1	10.00	15	x Ip	
Trip Delay	0	0.05	10	s	
<b>Auxiliary Overcurrent</b>					
Trip Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Trip Level (Ip is Phase-CT-primary rating)	1	10.00	15	x Ip	
Trip Delay	0	0.05	10	s	



PARAMETER AND SETTINGS	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
User Register 0	0	0	1399		
User Register 1	0	0	1399		
User Register 2	0	0	1399		
User Register 3	0	0	1399		
User Register 4	0	0	1399		
User Register 5	0	0	1399		
User Register 6	0	0	1399		
User Register 7	0	0	1399		
User Register 8	0	0	1399		
User Register 9	0	0	1399		
User Register 10	0	0	1399		
User Register 11	0	0	1399		
User Register 12	0	0	1399		
User Register 13	0	0	1399		
User Register 14	0	0	1399		
User Register 15	0	0	1399		
User Register 16	0	0	1399		
User Register 17	0	0	1399		
User Register 18	0	0	1399		
User Register 19	0	0	1399		
User Register 20	0	0	1399		
User Register 21	0	0	1399		
User Register 22	0	0	1399		
User Register 23	0	0	1399		
User Register 24	0	0	1399		
User Register 25	0	0	1399		
User Register 26	0	0	1399		
User Register 27	0	0	1399		
User Register 28	0	0	1399		
User Register 29	0	0	1399		
User Register 30	0	0	1399		
User Register 31	0	0	1399		
<b>SYSTEM CONFIG</b>					
System Name	Startco MPU-32				
Password	1111				
Run-Mode Delay	5	10.00	60	s	
Password Timeout	1	10.00	60	min	
UPI LED	None				

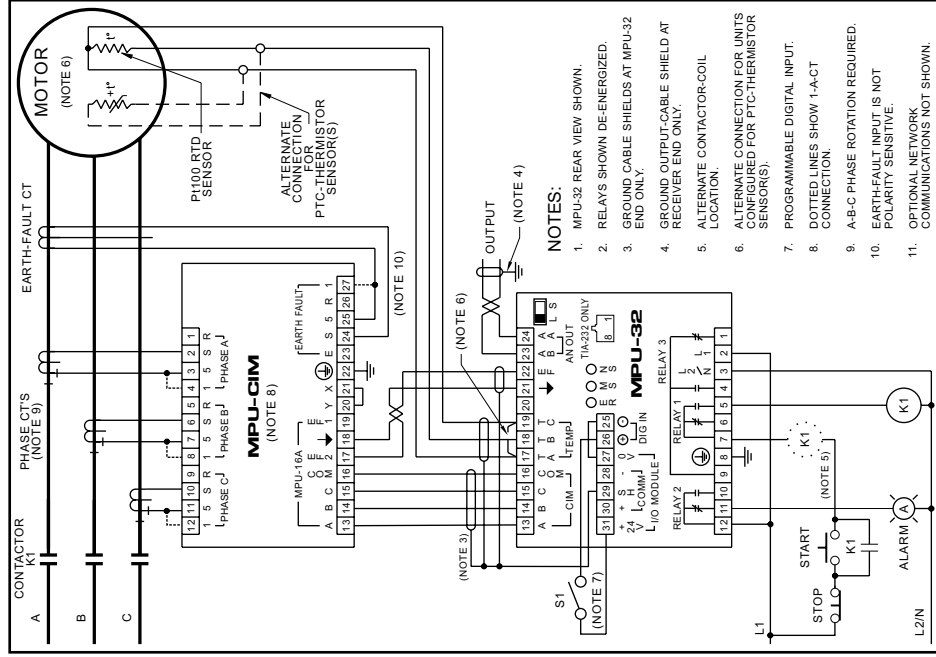


FIGURE 4. Typical MPU-32 Connection Diagram.

### MPU-CIM CONNECTIONS

The MPU-CIM contains four signal-conditioning interface transformers. These transformers isolate the MPU-32 from the phase and earth-fault CT's. The MPU-CIM eliminates the need for CT shorting contacts when the MPU-32 is disconnected. Phase-CT and earth-fault CT secondaries can be simultaneously grounded through terminal 22 and a jumper to terminal 20. For applications where the CT secondaries must be grounded in another location, the CT secondaries can be isolated by removing shorting screws through holes in the bottom of the MPU-CIM.

**NOTE:**  
A-B-C phase sequence and polarity must be observed when connecting phase CT's.

Connect the MPU-CIM to the MPU-32 using the cable provided with the MPU-CIM. Standard connections with earth-fault CT's are shown in Fig. 5. Dotted lines indicate 1-A-CT connections. Use shielded cable for EFCT-1 or EFCT-2 connections. Ensure only current-carrying phase conductors pass through the earth-fault CT window and that ground conductors do not.

Residual earth-fault and two-CT connections are shown in the MPU-32 manual.

PARAMETER AND SETTINGS	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
<b>HARDWARE</b>					
<b>OPI Display</b>					
OPI-Loss Trip		Trip1			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
<b>RTD Modules</b>					
Total Modules		0			<input type="checkbox"/> 0 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 3
RTD-Module-Error Trip Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
RTD-Module-Error Alarm Action		Alarm1			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
<b>MPU Temperature Sensor</b>		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> PTC Sensor <input type="checkbox"/> RTD Sensor
<b>TIA-232 Communications</b>					
TIA-232 Comm ID	0	254	255		
TIA-232 Comm Baud		9,600		bit/s	<input type="checkbox"/> 9,600 <input type="checkbox"/> 38,400 <input type="checkbox"/> 19,200
<b>Network Communications</b>					
Network Type		None			<input type="checkbox"/> None <input type="checkbox"/> Modbus TCP <input type="checkbox"/> A-B DF1 <input type="checkbox"/> DeviceNet <input type="checkbox"/> Modbus RTU
Network ID	0	254	255		
Baud Rate		TIA 9600		kbps	<input type="checkbox"/> TIA 9600 <input type="checkbox"/> DN125 <input type="checkbox"/> TIA 19K2 <input type="checkbox"/> DN250 <input type="checkbox"/> TIA 38K4 <input type="checkbox"/> DN500
Error Checking (A-B DF1 only)		Not Selected			<input type="checkbox"/> Not Selected <input type="checkbox"/> CRC <input type="checkbox"/> BCC
Ethernet IP		192.168.000.001			
Ethernet Mask		255.255.255.000			
Network-Error Trip Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Network-Error Alarm Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3
Remote Trip Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Trip1 <input type="checkbox"/> Trip2 <input type="checkbox"/> Trip3
Remote Alarm Action		Disabled			<input type="checkbox"/> Disabled <input type="checkbox"/> Alarm1 <input type="checkbox"/> Alarm2 <input type="checkbox"/> Alarm3

## MPU-32 SETUP RECORD

Motor: \_\_\_\_\_ MPU-32 S/N: \_\_\_\_\_  
 Firmware Revision: \_\_\_\_\_ Ethernet MAC ID: \_\_\_\_\_  
 Date: \_\_\_\_\_

### PART I: SYSTEM AND MOTOR PARAMETERS

PARAMETER AND SETTINGS	MIN	DEFAULT	MAX	UNIT	PROGRAM SELECTION
<b>System Ratings</b>					
CT Primary (Ip) (1)	1	100.00	5000	A	
EF Source		Measured (lct)			<input type="checkbox"/> Calculated (3I) <input type="checkbox"/> Measured (lct)
EF-CT Primary (Ie)(1)	1	5.00	5000	A	
Full-Load Current(1)	1	100.00	5000	A	
Service Factor	1	1.00	1.25		
Frequency		60		Hz	<input type="checkbox"/> 50 <input type="checkbox"/> Variable <input type="checkbox"/> 60
<b>Digital Input</b>					
Function		None			<input type="checkbox"/> None <input type="checkbox"/> Reset <input type="checkbox"/> Trip1 <input type="checkbox"/> Prog. Enable
Start Bypass		Disabled			<input type="checkbox"/> Enabled <input type="checkbox"/> Disabled
Bypass Delay	0.5	5.00	100	s	
Trip Delay	0.01	0.10	100	s	
<b>Relay Outputs</b>					
Relay 1: Function(1)		Trip1			
Mode (1)		Fail Safe			<input type="checkbox"/> Fail Safe <input type="checkbox"/> Non-Fail Safe
Relay 2: Function(1)		Alarm1			
Mode (1)		Fail Safe			<input type="checkbox"/> Fail Safe <input type="checkbox"/> Non-Fail Safe
Relay 3: Function(1)		None			
Mode (1)		Fail Safe			<input type="checkbox"/> Fail Safe <input type="checkbox"/> Non-Fail Safe
RY Pulse Time	0.05	0.25	10	s	
<b>Analog Output</b>					
Output Parameter		Phase Current			
Zero Calibrate		Factory Calibrated			
Full-Scale Calibrate		Factory Calibrated			

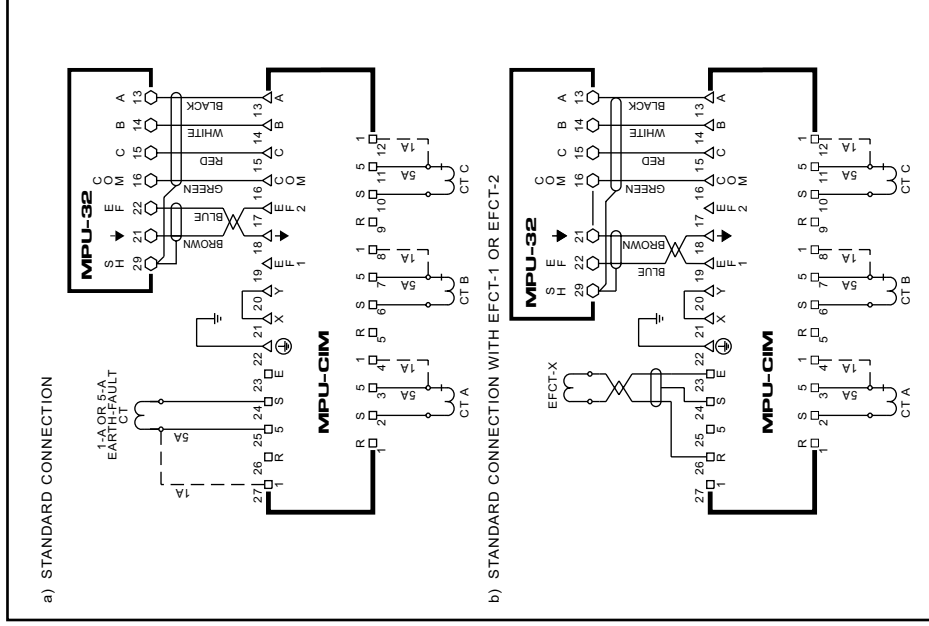


FIGURE 5. MPU-CIM Standard Connections.

**MPS-RTD CONNECTIONS**

Connect the MPS-RTD to the MPU-32 using the four-conductor shielded cable supplied with the MPS-RTD as shown in Fig. 6.

Connect RTD's to the MPS-RTD as shown in Fig. 6.

Connect the surge-protection (SPG) terminal 20 to terminal 19 ⊕ and ground terminal 19.

Up to three MPS-RTD modules can be connected to an MPU-32 and module addresses must be as shown in Table 1.

TABLE 1 MPS-RTD ADDRESS SELECTION

ADDRESS	SWITCH 1	SWITCH 2
0 (Off line)	Open	Open
1 (First RTD module)	Closed	Open
2 (Second RTD module)	Open	Closed
3 (Third RTD module)	Closed	Closed

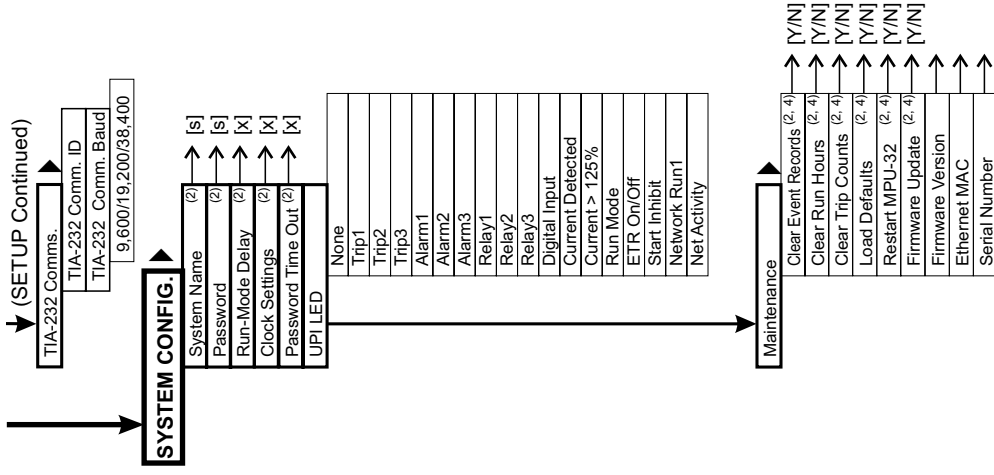
**NOTE:** MPS-RTD communication is shared with the display. Incorrect wiring can cause the display and keypad to freeze.

**CABLE RESTRAINT**

All conductors should be restrained within 100 mm (4") of the terminal blocks. 6-32 cabling restraint points are provided as shown in Fig. 6. Secure cables to the MPU-CIM and MPS-RTD using the cable-tie eyelets and the cable ties provided.

**DIELECTRIC-STRENGTH TESTING**

Dielectric-strength testing can be performed only on CT inputs, supply voltage input, and output relays. Unplug all other I/O and remove the MPU-CIM ⊕ connection (terminal 22) during dielectric-strength testing.



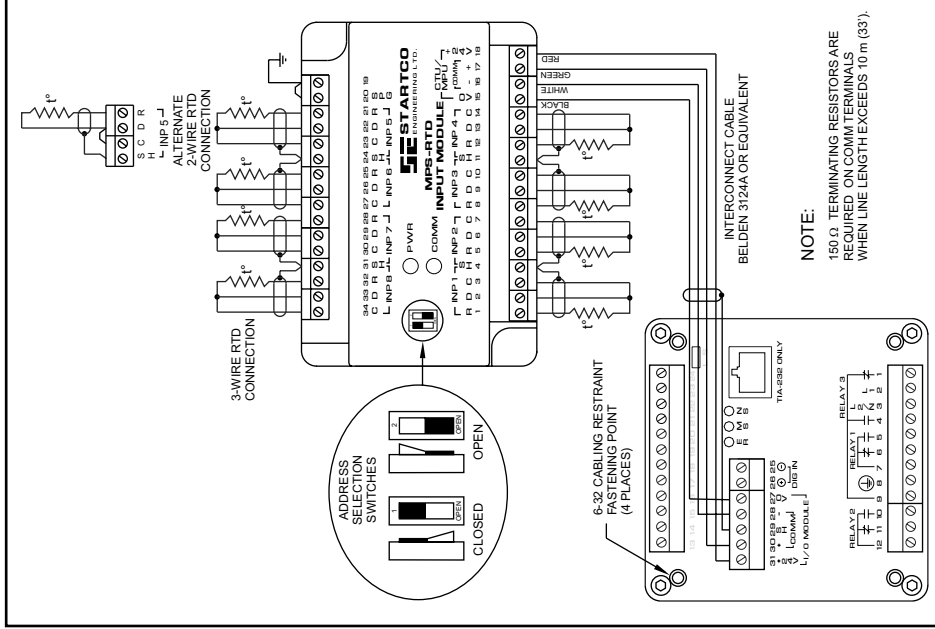
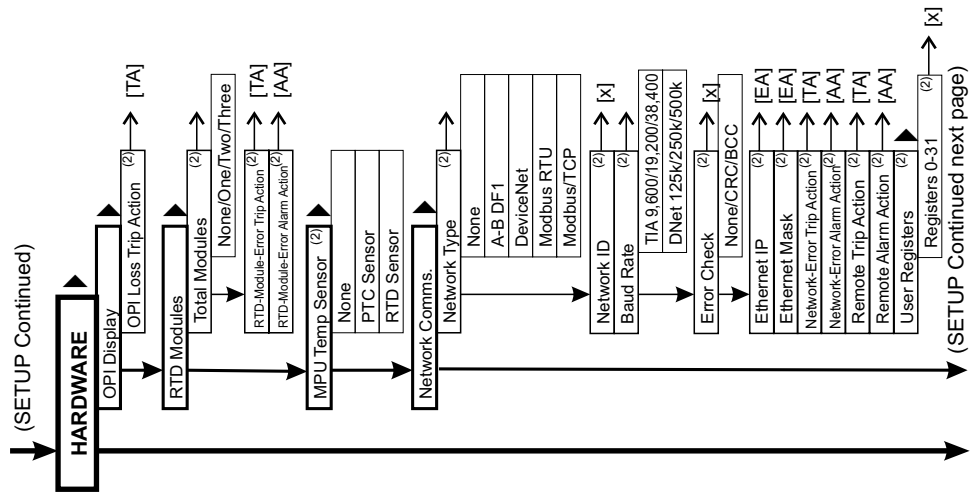


FIGURE 6. MPS-RTD Connection Diagram.

**MENU SYSTEM**

All MPU-32 information displays and settings can be accessed using the MPU-32 menu system, the TIA-232 interface, or a network-communications interface.

Fig. 7 shows the symbols that assist in navigating the menu system and how these symbols relate to the arrow keys on the MPU-32. An MPU-32 menu map is provided starting on page 15.

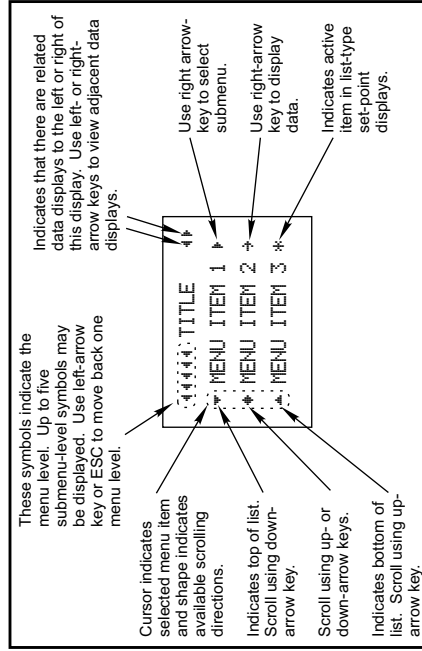


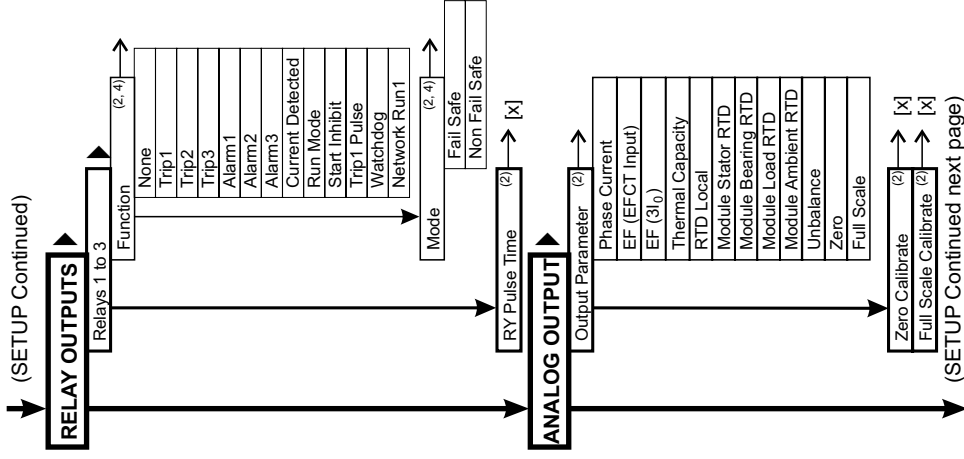
FIGURE 7. Menu Symbols.

**DISPLAY CONTRAST**

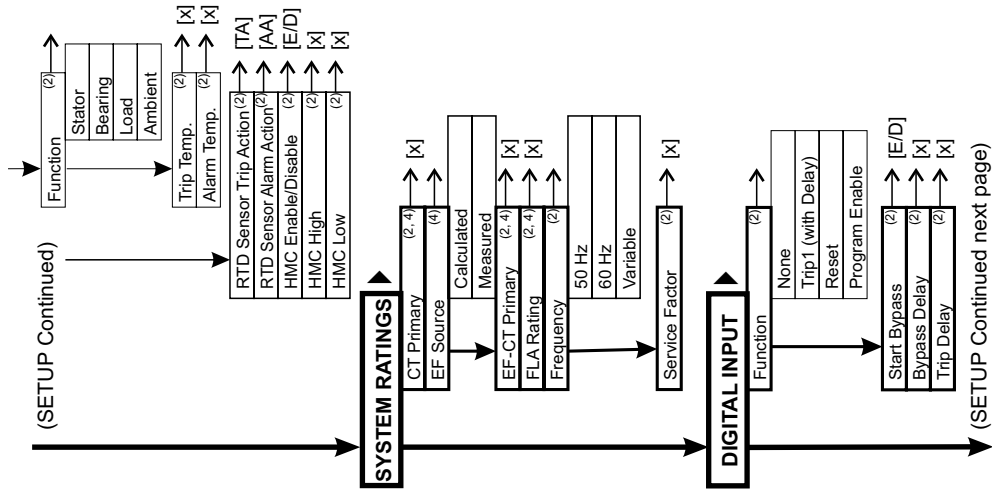
Contrast control is available by pressing the up-arrow, right-arrow, and Enter keys simultaneously to enter the Local mode. Use the up- and down-arrow keys to select 'Contrast' and use the left- and right- arrow keys to adjust the display contrast. Press ESC to return to the MPU-32 menu.

**FRONT-PANEL LED INDICATION**

The red TRIP and yellow ALARM LED's indicate a trip or alarm condition. The green RUN LED is OFF when current is not detected, flashes when the motor is starting, and is ON when the motor is running. The yellow UPI LED is a user-programmable



(SETUP Continued next page)



indicator and its function is defined by a menu selection.

**REAR-PANEL LED INDICATION**

The three LED's on the rear panel are labeled ER, MS, and NS. The red ER (Error) LED is OFF during normal operation and is ON when there is a processor error and during the firmware-update operation. Output relays are de-energized when this LED is ON. The MS (Module Status) and NS (Network Status) LED's are used for network-communications and firmware-update annunciation. The specific colour and function of these LED's is defined by the network-communications option installed in the MPU-32.

**PASSWORD ENTRY AND PROGRAMMING**

The default password is 1111. When the digital input is programmed for Program Enable, set-point access via the menu system is controlled by the digital input state and not by the password. Set points can always be changed using communications and the password.

When password access is active, all set points are locked from changes until the four-character password is entered. If set-point access is locked, the user is prompted to enter the password. Once entered, set-point access is allowed and remains enabled until a key has not been pressed for the time defined by the *Password Timeout* set point.

Use the left- and right-arrow keys to select the position of the flashing cursor. Use the up- and down-arrow keys to select password characters. Press ENTER.

When the correct password is entered, a flashing cursor is displayed and the set point can be changed.

Use the up- and down-arrow keys to change a set-point update-field character, and use the left- and right-arrow keys to move between characters. Press Enter to update the set point, or press Esc to exit the display.

**TRIP RESET**

RESET is a "hot key" to the Trips and Alarms display, except during set-point entry. Trip messages must be individually selected and reset. All trips are simultaneously reset by a digital-input reset, or with a communications-network command.

**EMERGENCY THERMAL RESET**

Emergency Thermal Reset (ETR) is available in the *Messages/Emerg 1't Reset* menu. ETR sets *Used /t* to 0%, resets starts-per-hour variables, and disables PTC and RTD trips. Program access is required.

**CAUTION:**  
Temperature protection is not automatically re-enabled after an ETR.

**MPU-32/MPU-16A COMPATIBILITY**

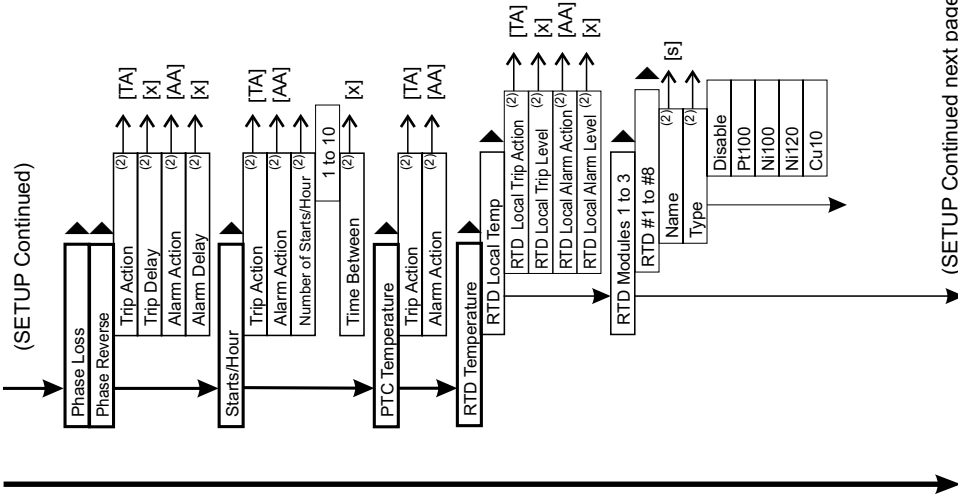
An MPU-32 can directly replace an MPU-16A with minimal or no wiring changes. The MPU-16A upper terminal block can be plugged directly into an MPU-32. If a switch was connected to the MPU-16A program enable terminal, the switch will not function with the MPU-32. This is usually not a problem since the MPU-32 set points are password protected. If the MPU-16A analog output was used, ensure that the MPU-32 analog output switch is set to the 'S' (Self Powered) position.

Although MPU-32 terminals 1 to 12 have been rearranged to provide a third relay output (terminals 1, 4, and 9), the MPU-16A lower terminal block can be safely plugged into the equivalent MPU-32 terminal locations.

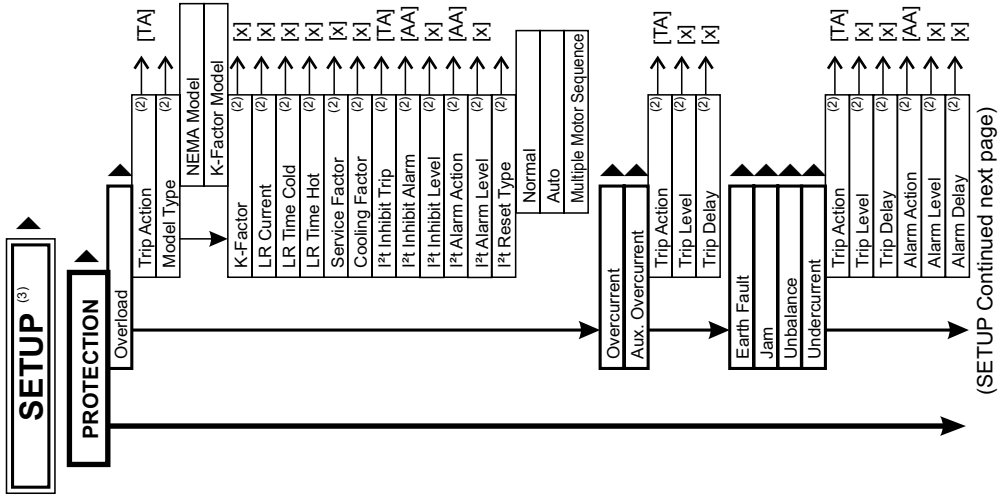
**CAUTION:**  
The keying plug installed in position 9 of the MPU-16A lower terminal block must be removed before the terminal block can be plugged into the MPU-32. Use a dental pick, awl or similar pointed tool to remove the keying plug. If the keying plug is difficult to remove, use the terminal blocks supplied with the MPU-32.

**A TERMINAL BLOCK WITH A KEYING PLUG WILL DAMAGE THE MPU-32.**

If the MPU-32 does not power up, ensure that L1 is connected to terminal 2 (not terminal 1) and L2/N is connected to terminal 3 (not terminal 4). If the duplicate L1 and L2 terminals on the MPU-16A are used to power another device, disconnect the outgoing L1 and L2 leads and power the next device directly from the power source.

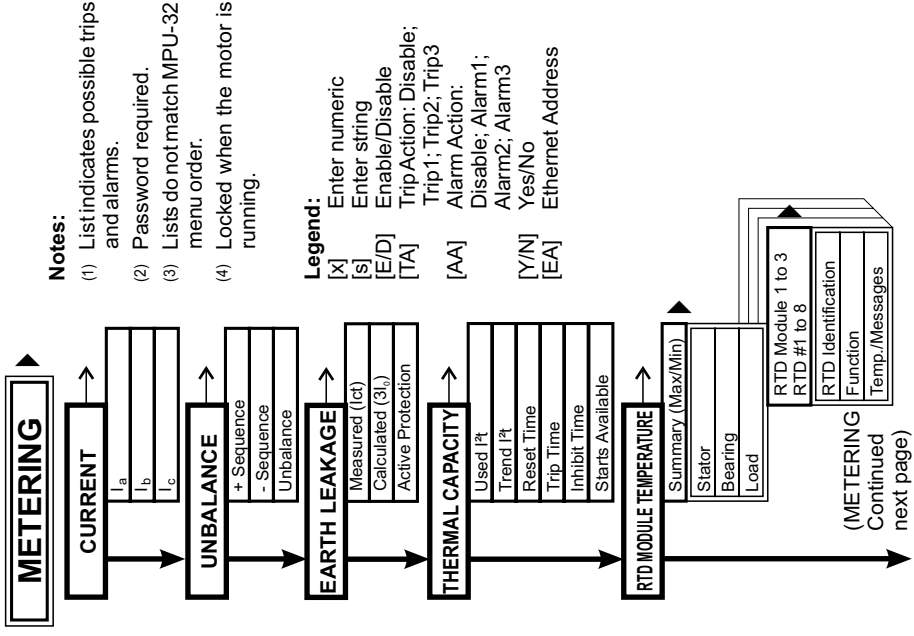






## MPU-32 MENU MAP

### MAIN MENU

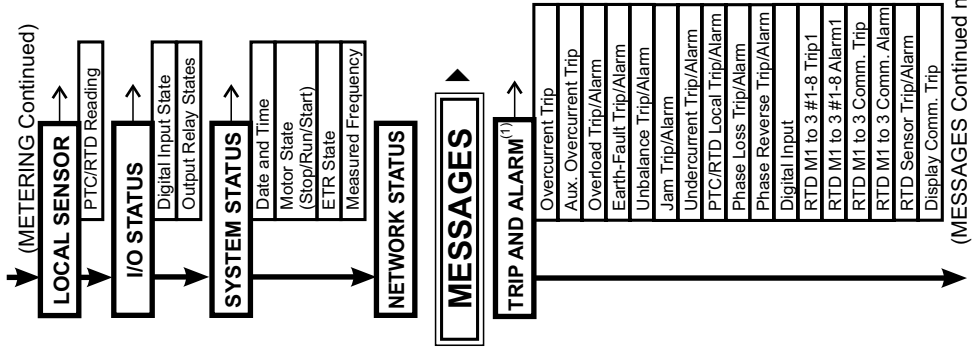


**Notes:**

- (1) List indicates possible trips and alarms.
- (2) Password required.
- (3) Lists do not match MPU-32 menu order.
- (4) Locked when the motor is running.

**Legend:**

- [X] Enter numeric
- [S] Enter string
- [E/D] Enable/Disable
- [TA] TripAction: Disable; Trip1; Trip2; Trip3
- [AA] Alarm Action: Alarm1; Alarm2; Alarm3
- [Y/N] Yes/No
- [EA] Ethernet Address



(MESSAGES Continued next page)

