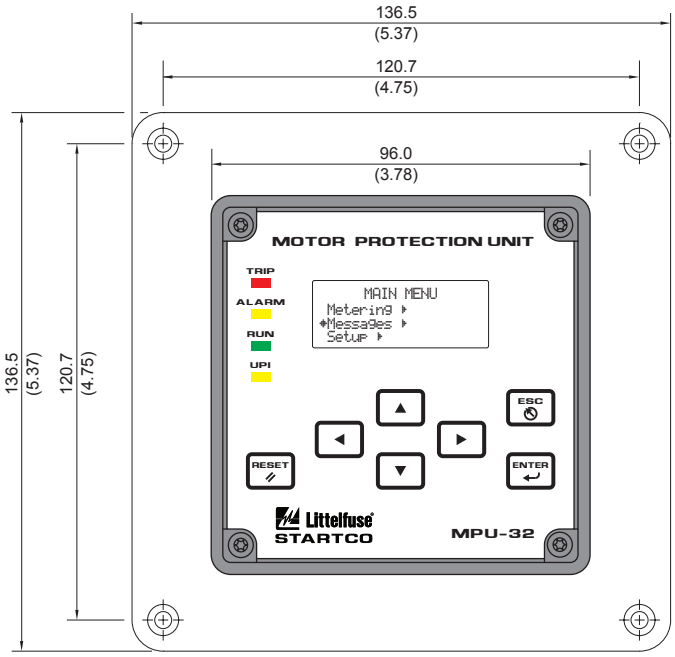
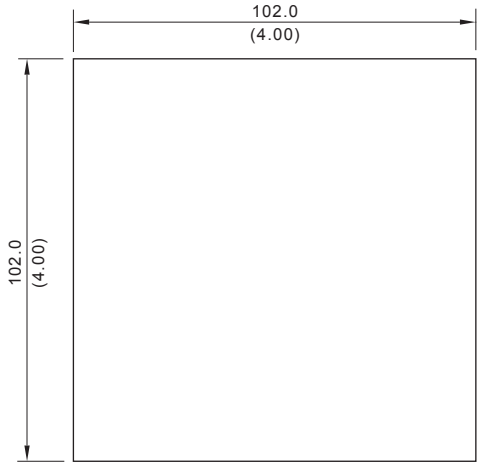
MULTILIN P4A TO MPU-32 MOTOR PROTECTION UNIT UPGRADE

The MPU-32 Motor Protection Unit is an excellent choice as a replacement upgrade for the obsolete Multilin Protect 4A due to similarities in physical size. While an MPU-32 can be programmed to simulate a P4A, it can also be programmed with additional protective functions, and includes metering, data logging, and communications capabilities.



MPU-32 WITH PMA



MAXIMUM DEPTHS
MULTILIN P4A.....178 mm (7.00")
MPU-32.....132 mm (5.2")
MPU-CIM..... 56 mm (2.20")

NOTES:
1. DIMENSIONS IN MILLIMETRES (INCHES).
2. MOUNTING SCREWS: M4 x 12 OR 8-32 x 0.50.
3. MPU-32 AND MPU-CIM MUST BE ORDERED SEPARATELY WITH FULL PART NUMBER.

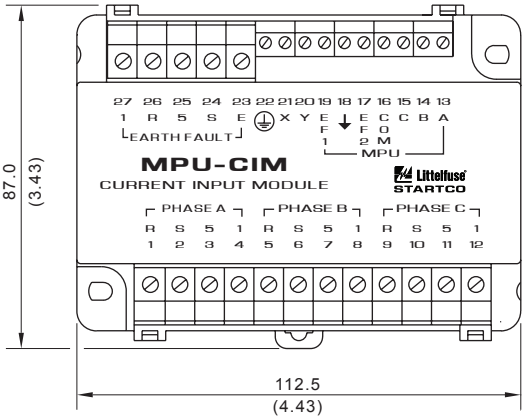


Figure 1: Physical Dimensions

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As illustrated, the MPU-32 and the P4A are similar in size. Startco can supply a PMA Panel-Mount Adapter to facilitate the retrofit process. An MPU-CIM Current Input Module must be installed; either in the relay cubicle or adjacent to the CTs.

Before removing the Multilin P4A from service, record the information required in Table 1. Use this information when programming the MPU-32.

MULTILIN P4A	DESCRIPTION	MPU-32 MENU LOCATION, UNITS
Phase C.T. Ratio C.T. Ratio = _____	Phase CT primary rating (A)	Setup/System Ratings/CT Primary (A)
G/F C.T. Ratio GF C.T. = 2000:1	Ground-fault CT primary rating (A)	Setup/System Ratings/EF-CT Primary (A) (enter 100 A for this value - refer to TN CT-07 for details)
Motor Full Load Current FLC = _____CT%	Full load current FLA (A) Amps = FLC(%) x CT Primary	Setup/System Ratings/FLA Rating (A)
Stall Time (sec.) Stall = _____s	Cold Locked-Rotor Time (s)	Setup/Protection/Overload/LR Time Cold (s)
Ground Fault Pick Up (A) G/F Trip = _____A	Ground-fault trip level (A) % = Amps/100 A *also refer to rear switch #304	zSetup/Protection/Earth Fault/Trip Level (%) (if switch #304 is OFF, enter this value as an Alarm Level)
G/F Trip Time Delay G/F Delay = _____s	Ground-fault trip delay (s) *also refer to rear switch #304	Setup/Protection/Earth Fault/Trip Delay (s) (if switch #304 is OFF, enter this value as an Alarm Delay)
Rear Switch #301 Rear Switch #302	Switches for calibration and watchdog defeat.	Not applicable
Rear Switch #303 ON / OFF	ON = No Jam Protection OFF = Jam Protection @ 300%	Setup/Protection/Jam/Trip Action ON = Disabled, OFF = Trip 1 Setup/Protection/Jam/Trip Level OFF = 3 x FLA Setup/Protection/Jam/Trip Delay OFF = 1 s
Rear Switch #304 ON / OFF	ON = Ground-Fault Trip OFF = Ground-Fault Alarm	*see G/F Pick Up and Time Delay for settings
Rear Switch #305 ON / OFF	ON = Single Phase Enable OFF = Single Phase Defeat	Setup/Protection/Phase Loss/Trip Action ON = Trip 1, OFF = Disable
Rear Switch #306	ON = Auto Reset OFF = Manual Reset	Not applicable
Rear Switch #307 Rear Switch #308	Not Used	Not applicable

Table 1: Programming Information

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MULTILIN P4A TO MPU-32 MOTOR PROTECTION UNIT UPGRADE

The MPU-32 can use the existing phase CTs, ground-fault CT, thermistor, control power, and control wiring as shown in Figure 2. All connections and settings in this document assume a Multilin 2000:1 CT is used for ground-fault-current sensing. When the Multilin 2000:1 CT is connected to the sensitive input terminals 23 and 26 on the MPU-CIM, it will appear as a 100 A primary CT. Refer to TI. 11.7 GE Multilin 2000:1 CT Compatibility with Startco Relays for more information.

The output contacts on the P4A operate in non-failsafe mode. On the MPU-32, assign the Trip 1 function to Relay 1 (Setup/Relay Outputs/Relay 1/Function) and set the mode to non-failsafe (Setup/ Relay Outputs/Relay 1/Mode).

If a thermistor is used, program the MPU-32 local temperature sensor type to be a PTC Sensor (Setup/Hardware/ MPU Temp Sensor)

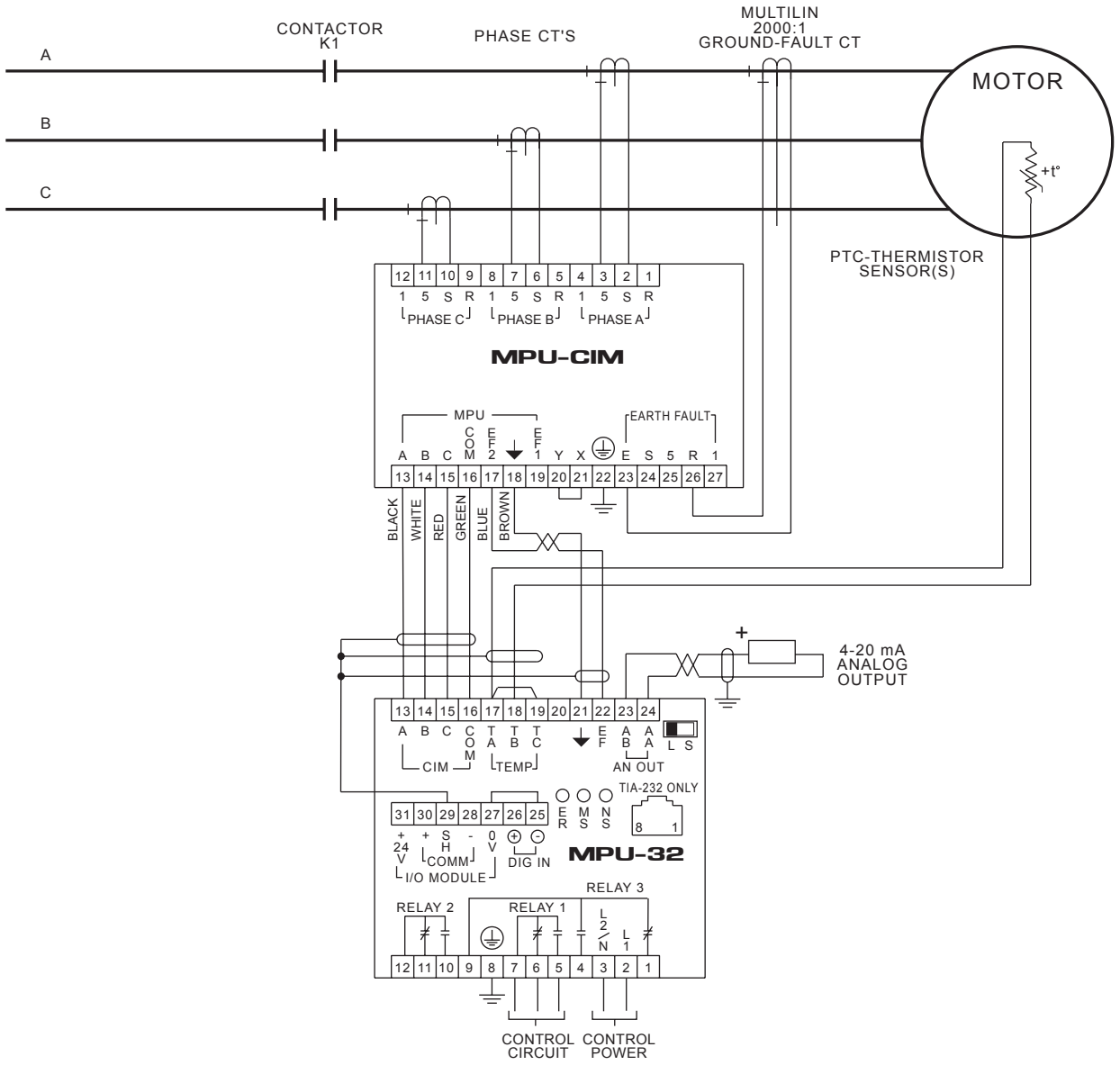

Figure 2: Wiring Installation

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P4A	MPU-32	MPU-CIM
1	5	
2	7	
3	6	
4	23	
*5	18 or 24	
6	17	
7	3	
8	2	
9		23
10		26
11		2
12		3
13		6
14		7
15		10
16		11

Table 2: Equivalent Terminals between P4A, MPU-32, and MPU-CIM

** Terminal 5 on the P4A is a common between the thermistor and the 4-20 mA analog output. The MPU-32 requires these to be separately connected as shown in Figure 2.*

In addition to the terminals mentioned in Table 1, the MPU-32 requires terminal 8 to be grounded, terminals 17 and 19 to be jumpered, and terminals 13, 14, 15, 16, 21 and 22 are connected to the equivalent terminals on the MPU-CIM. The MPU-CIM requires terminals 20 and 21 to be jumpered, and terminal 22 to be grounded.

This document is used as a guideline to install and program the MPU-32 only to mimic a P4A. It may be beneficial to use the MPU-32's advanced thermal-modeling capability and additional protective functions. For complete details, refer to the MPU-32 manual.

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