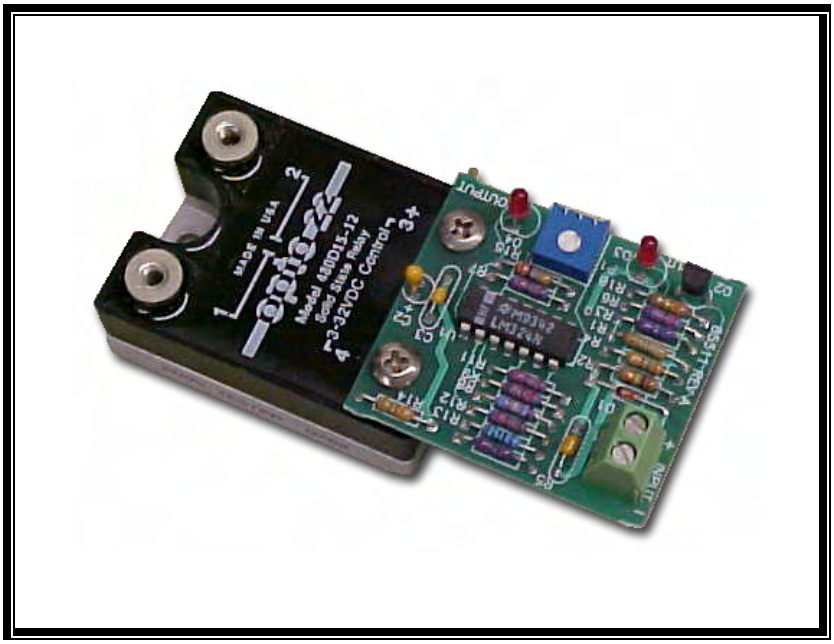
Model 60804
Time-Proportioning
Controller



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Model 60804
Time-Proportioning Controller

Introduction

This document provides the information required to install, operate and maintain the Model 60804 current to time-proportioning converter (I/TP), Solid State Relay (SSR) driver. If further information is needed, call TMC Services at 763-241-1456.

Description

The Model 60804 is a current to time-proportioned zero-cross SSR driver. The SSR control signal output is directly proportional to a 4-20 mA control signal. This is accomplished by proportioning the SSR control signal on-time to off-time within an adjustable (1-10 second) cycle time period. Figure 1 presents three different On/off time ratios given a particular time period. The Model 60804 is typically used to control SSR'S connected to resistive loads.

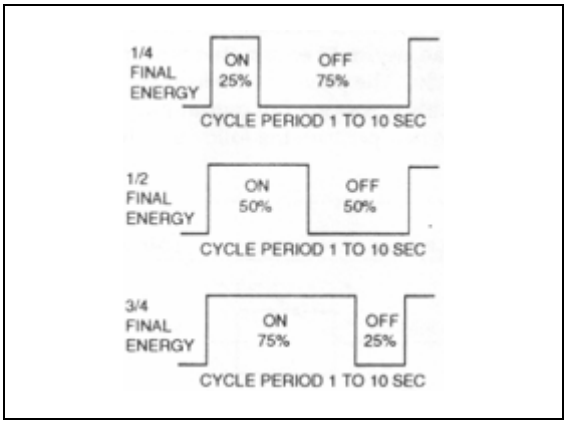

Figure 1. On/Off cycle times for a given period.

Installing the I/TP Time-Proportioning Module

Install the I/TP Time- Proportioning module to the SSR control signal terminals using the screws provided with the SSR. Ensure the I/TP module and SSR + (positive) terminals are matched (see Figure 2).

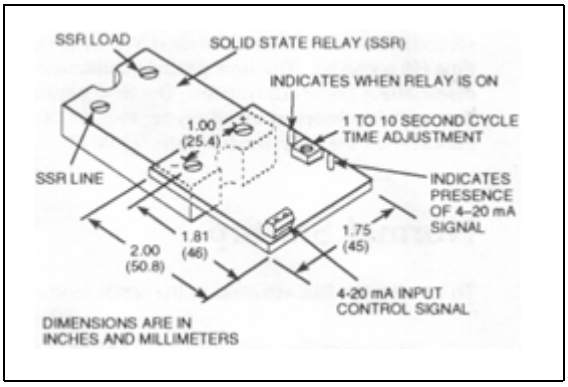

Figure 2. Model 60804 Time-Proportion Module Components.

Signal Wire Connections

CAUTION!

The signal required for the control of the 60804 controller is low level DC. To eliminate any potential for AC pickup on the control signal wires, ensure the control wires are routed separately from the AC Line/Load wires.

Model 60804 Wiring Requirements

The Model 60804 I/TP controller requires a 4-20 mA control signal. The I/TP output is directly proportional to the control signal. The 4-20 mA control signal must have a minimum compliance voltage of 12 VDC.

Connect the + (positive) signal lead of the process controller (4-20 mA source) to the + (positive) terminal of the I/TP module (reference Figure 2). Connect the - (negative) signal lead of the process controller to the - (negative) terminal of the I/TP.

Cycle Time Adjustment Procedure

To adjust the I/TP time period, adjust the cycle time potentiometer (see Figure 2). Adjust the potentiometer fully counterclockwise (CCW) for minimum (1 second) time and fully clockwise (CW) for maximum time (10 seconds). The time period adjustment is essentially a linear adjustment. The time period cycle time may be observed by observing the SSR on LED indicator on the I/TP module (see Figure 2).

Normal Startup

To turn on the SSR attached to the 60804 module:

1. Make sure line voltage is not applied to the SSR's **LINE** terminals.
2. Set the 4-20 mA control signal to 4 mA.
3. Apply AC line voltage to the controller's **LINE** terminals.

CAUTION!

As long as line voltage is applied to the SSR LINE terminals, hazardous voltage remains at the LOAD terminals even when the control signal is set to minimum or the firing circuit is disabled.

4. Gradually increase the level of the control signal from 4 mA to the level desired. Increasing the control signal level increases the SSR controller's output level.

Shutdown

There are two ways to shut down the Model 60804 controller:

1. Remove the line voltage from the SSR **LINE** terminals.
2. Decrease the control signal to 4mA.

Routine Maintenance

The Model 60804 I/TP requires very little routine maintenance. Remove dirt or dust accumulations frequently. Check for damaged wiring and loose connections periodically and whenever any connections are changed. No other routine maintenance is required.

Check for proper Control of Output to the Load

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Connect a load device across the SSR LOAD terminals, as shown in Figure 3. Vary the level of the control signal while monitoring the controller's output to the load. Measure the voltage across the LOAD terminals with an AC voltmeter. Also observe the load device to ensure that power is being received properly. The power to the load should vary smoothly across the full output range being used. If it does not, perform the following checks.

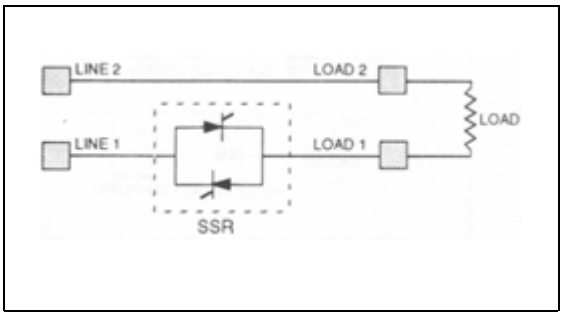

Figure 3. Load connections for SSR power controller.

Check AC Line Source

Measure the voltage across the LINE terminals with an AC voltmeter. If the correct voltage is not present, check the AC line source for a tripped circuit breaker or other fault.

Check the Control Signal

1. Verify a control signal of the correct polarity and level is reaching the firing circuit **INPUT +** and - terminals.
2. Check for open or intermittent connections caused by loose or damaged wiring. The Model 60804 includes an LED indicator that is on when the 4-20 my control signal is present.
3. Repair or replace the control signal source or wiring as needed.

Check the 60804 I/TP Control Output

1. Using a DC voltmeter verify that a 3-4.5 VDC control signal is present at the SSR control input terminals.

Note: The control signal to the 60804 I/TP should be turned completely on for this test.

2. The Model 60804 includes an LED indicator that is on when the control signal to the SSR is on.