MULTI-TIME

DIGITAL CONTROL MODULE

INSTALLATION AND OPERATING MANUAL

Beta

PREFACE

This manual describes how to install, set up, operate and maintain the Multi-Time Digital Control Module.

Material in this manual is subject to change without notice. Manual revisions will be made on an as needed basis. Special circumstances involving important design, operation or application information will be released via Technical Service Bulletins.

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CONTENTS

INTRODUCTION

Operating Mode Descriptions 1

SPECIFICATIONS

INSTALLATION, SETUP & OPERATION

Wiring and Controls 3
Programming the Multi-Time Module 4
Operation 7

MAINTENANCE

Ordering 9
Factory Repair 9

INTRODUCTION

The Multi-Time Module is designed as a direct replacement part* for almost all of the original equipment electronic control modules provided in Beta Technology's L-80000, L-3000, and P-4000 series units.

Note that the L-80000 and L-3000 series are discontinued models.

This new module is equipped with various electrical interference protection circuits to minimize false triggering and to stabilize the load drive circuitry.

Numerous function features provide enhanced performance capabilities in every application for which the respective original style modules were individually designed. In addition to being a direct replacement part as a pump motor control, the Multi-Time Module may be used in a variety of standalone timing applications such as solenoid control, relay control, process control signaling, and so on.

** Programming and operation functions are different from the original style modules.*

OPERATING MODE DESCRIPTIONS

Operation of the module is typically initiated upon receipt of a valid electrical trigger signal, which can be either 24-240 VAC or 24-130 VDC. Signals generated from washing machine or dishwasher control circuitry, conductivity controllers, pH controllers, recycle timers, and other process controllers are typical examples. Operation via a manually switched electrical signal is also appropriate. When the trigger signal stops, the run time in process will continue until the programmed time is completed. A trigger signal of one second is required to initiate a run cycle.

The Multi-Time Module features four operating modes

MODE 0 - RELAY MODE

The load output is energized for the duration of a valid trigger signal.

MODE 1 - RECYCLE TIMING MODE

The load output will cycle on and off at the user programmed intervals when a valid trigger signal is present. This feature is typically used to slow down a timing control process such as pulsing a pump motor to add displacement control flexibility when using fixed speed motors.

MODE 2 - TIMED RUN MODE

Upon receipt of a valid signal, the load output is energized for the user programmed run time.

MODE 3 - TIMED RUN MODE WITH DELAY

Upon receipt of a valid signal, the load output is energized for the user programmed run time, but only after the user programmed delay time has passed.

SPECIFICATIONS

SIZE

Height		Width		Depth	
7.6	x	5.9	x	2.9	centimeters
3	x	2 5/16	x	1⅛	inches

Depth includes snap-track mounted.

WEIGHT

80 grams (2.86 oz)

ELECTRICAL POWER REQUIREMENTS (LINE INPUT)

Rated 24 to 240 Volts AC

50/60 Hertz

Load device voltage rating must match supplied line power.

MAXIMUM LOAD CURRENT

1.4 amperes at 35- 130 Volts AC

1.0 amperes at 130 - 240 Volts AC

ELECTRICAL POWER REQUIREMENTS (TRIGGER INPUT)

Rated 24 to 240 Volts AC

24 to 130 Volts DC (observe polarity to trigger input terminals)

Three milliamps maximum required

ENVIRONMENTAL REQUIREMENTS

Ambient Operating Temperature 0-50° Celsius (32° to 122° Fahrenheit)

USER PROGRAMMABLE FEATURES

Run Time - From 1/10 second to 45 minutes

Delay Time - From 1/10 second to 45 minutes

INSTALLATION AND SETUP

WIRING AND CONTROLS

Figure 1 illustrates the Multi-Time Module wiring terminals and external controls.

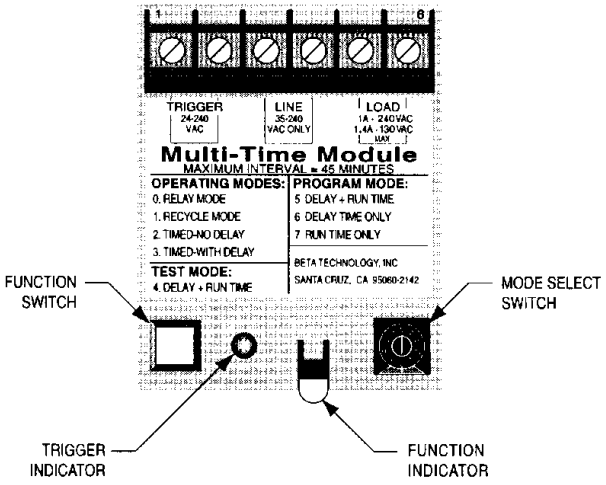

Figure 1. Multi-Time Module

TERMINAL CONNECTIONS

Trigger Terminals

Apply a valid trigger signal to the two leftmost terminals as required by your application. See the **Introduction**.

If a DC signal is used, a valid signal voltage is from 24 Volts to 130 Volts. Terminal 1 (left) must be positive; terminal 2 (right) must be negative.

If the Multi-Time Module is used in conjunction with original style modules (that is, in a laundry unit), the negative trigger terminal should be used as the signal common.

In the Recycle Timing mode, inducing the control signal always starts the cycle by turning on the load output for the programmed run time. When in any of the three programming modes or when a timed operating function is in progress, any incoming trigger signals are ignored.

Unlike most of the original modules, line power and trigger source may be induced simultaneously. No timing circuit charging time is necessary.

Line Terminals

Apply 35 - 240 Volts AC line voltage (50/60 Hertz) across the two middle terminals. See **Specifications**.

The applied line voltage and frequency and the voltage rating and frequency of the load device must match in all cases.

Load Terminals

Connect the device to be driven (motor, solenoid, relay, etc.) to the two rightmost terminals. The current draw must not exceed the specifications.

Devices with thermal circuit breakers may not be capable of operating for extended time periods. Beta Technology AC motors will shut down at 230 degrees Fahrenheit and are designed to typically be operated for no more than approximately 10 minutes of continuous duty.

FUNCTION SWITCH

Used for all programming functions, manually activating the load output, and testing as noted in the Mode 4 function description. See pages 5 and 6 for specific switch function information.

TRIGGER INDICATOR

Illuminates whenever a valid electrical signal is present across the two trigger input terminals.

FUNCTION INDICATOR

Illuminates whenever the load output is activated. Flashes slowly whenever a delay time is being programmed or whenever a programmed delay time is counting down after a valid signal is received. Note that in the Recycle Mode, the indicator does not flash during the programmed delay time.

MODE SELECT SWITCH

Use 1/8" (or smaller) standard screwdriver.

Switch positions eight and nine are not used at this time.

The number pointed to by the switch position pointer indicates the run mode or program step.

PROGRAMMING THE MULTI-TIME MODULE

MODE 0 - RELAY

1. Turn the Mode Select switch to position 0.
2. Setup is complete since the load module is always on during the trigger signal.

MODE 1 - RECYCLE TIMING

1. Turn the Mode Select switch to position 7 to set the run time.
2. Press the Function switch. Release the button when the load output activates and the Function indicator light illuminates.
3. Press the Function switch again after the desired run time elapses. The load output and the function indicator light will turn off.
4. Turn the Mode Select switch to position 6 to set delay time.
5. Press the Function switch. Release the button when the Function indicator light begins to flash. Note that the indicator light will flash continuously during the delay time programming.
6. Press the Function switch again after the desired delay time elapses. The Function indicator light will turn off.
7. Turn the Mode Select switch to position 1.

MODE 1 - RECYCLE TIMING ALTERNATE SETUP

Use this alternate procedure to do delay and run time setup simultaneously.

1. Turn the Mode Select switch to position 5.
2. Press the Function switch until the Function indicator light begins to flash.
3. Press the Function switch again when the desired delay time elapses. The load output will activate and the Function indicator light will stop flashing and fully illuminate.
4. Press the Function switch again after the desired run time elapses. Both the delay time and run time are now programmed.
5. Turn the Mode Select switch to position 1.

MODE 2- TIMED RUN

1. Turn the Mode Select switch to position 7.
2. Press the Function switch. Release the button when the load output activates and the Function indicator light illuminates.
3. Press the Function switch again after the desired run time elapses. The load output and the function indicator light will turn off.
4. Turn the Mode Select switch to Mode 2.

MODE 3 - TIMED RUN WITH DELAY

1. Turn the Mode Select switch to position 7 to set run time.
2. Press the Function switch. Release the button when the load output activates and the Function indicator light illuminates.

3. Press the Function switch again after the desired run time lapses. The load output and the function indicator light will turn off.
4. Turn the Mode Select switch to position 6 to set delay time.
5. Press the Function switch. Release the button when the Function indicator light begins to flash. Note that the indicator light will flash continuously during the delay time programming.
6. Press the Function switch again after the desired delay time elapses. The Function indicator light will turn off.
7. Turn the Mode Select switch to position 3.

MODE 3 - TIMED RUN WITH DELAY ALTERNATE SETUP

Use this alternate procedure to set delay and run time simultaneously.

1. Turn the Mode Select switch to position 5.
2. Press the Function switch until the Function indicator light begins to flash.
3. Press the Function switch again when the desired delay time elapses. The load output will activate and the Function indicator light will stop flashing and fully illuminate.
4. Press the Function switch again after the desired run time elapses. Both the delay time and run time are now programmed.
5. Turn the Mode Select switch to position 3.

MODE 4 - TEST

1. Turn the Mode Select switch to position 4.
2. Press the Function switch until the Function indicator light begins to flash. The programmed delay time will count down, then the load output will turn on for the programmed run time. This allows you to verify that the correct times are programmed.

PROGRAMMING NOTES

1. When in Mode 0 or 1, pressing the Function switch causes the load output to be activated until the button is released.
2. When in Modes 2 or 3, pressing the Function switch causes the load output to be activated only for the programmed run time.
3. Programming a run or delay time erases the previous data and enters the new time into memory.
4. Programmed times are retained indefinitely (approximately 10 years with power off).

5. If the Mode Select switch is turned to one of the three programming modes and the Function switch is not pressed, the previously programmed time will remain in memory.
6. If you attempt to program run times or delay times in excess of the maximum allowable time (45 minutes), the counters will roll over to zero time and continue counting from that point.
7. In Mode 4 (Test), an incoming trigger signal will cause the module to operate as if it were in Mode 3 (run with delay).

OPERATION

Since all equipment used with the Multi-Time Module is controlled by the triggers to the Multi-Time Modules, there are no manual switching requirements during normal operation.

MAINTENANCE

ORDERING

Use item number 035891 to order the new Multi-Time Module.

If the module is to be used in other applications besides as a replacement part for original equipment, it will be necessary to insulate or isolate the bottom of the module from any conductive contact. In this event, order a snap-track for each Multi-Time Module. Use item number 017839 to order the snap-track(s).

Beta Technology, Inc. reserves the right to substitute this new module for any of the applicable original style modules that may be ordered by any customer at any time subsequent to the publishing of this document.

FACTORY REPAIR

Multi-Time Modules cannot be repaired. Out of warranty modules should not be returned to the factory.

Design and specifications are subject to change without notice.