KNIGHT   MT-300 ONE-PUMP BOARD INSTRUCTION MANUAL

INTRODUCTION

The MT-300 is a microprocessor controlled timer which can be programmed to operate at any time during the day or night. It can be powered by 12 VDC from batteries, or 24 VAC from a step-down transformer, for operation. Options are available to control one or two pumps. A few examples of typical applications are; grease traps, drains, odor control, cooling towers, chain lube systems, and water treatment.

The MT-300 can be programmed for up to 20 separate "pump events". The pump can run for a maximum of 16 minutes on each pump event. Some of the key features of the MT-300 are:

- An on-board battery keeps the current time setting if main power is turned off.
- Non-volatile memory saves all programmed event information if main power is turned off.
- A security feature is built-in to prevent accidental, or unauthorized programming.

This manual is laid out to cover all operations and features of the MT-300 board. As a result, some information may not pertain to your particular use of the MT-300. If this manual was included as part of a built dispensing system, all wiring connections from the pump to the MT-300 will already be complete.

INSTALLATION

(1) a: If this manual was included as part of a complete dispensing system, mount the unit on a wall using the supplied mounting bracket (customer must supply hardware to install). Mount the unit in a convenient location near both injection point and chemical supply. CAUTION: Do not mount the unit in the direct path of steam. This can short circuit and permanently damage your system.

   b: If this manual was not included as part of a complete pumping system, mount the MT-300 into the dispenser using the 3 mounting holes in the board.

(2) Connect batteries or power wires and all electrical wiring as shown in the attached wiring diagram and per local electrical codes. Failure to do so will void warranty.

(3) Install poly tubing between the discharge (right) tube side of the peristaltic pump and the injection point. Use tie wraps to secure flow tubing to squeeze tube. Be sure to draw the tubing through the end of the pickup tube.

(4) To fill the suction and discharge tubing connected to the pump, press the PRIME 1 button and the pump will run as long as the button is pressed.

CONVERTING POWER SOURCES

See the wiring diagram in this manual for correct wiring connection when converting from AC to DC power (or vice versa). Be sure to locate the fuse in the correct position.

OPERATION NOTES

- During normal operation, the clock will display briefly when an event run time starts, or while either PRIME button is pressed. This greatly increases battery life for battery-operated (12 VDC) applications.

- During programming, if a button is not pushed within 2 minutes, the display will disappear and the control will return to normal operation.

⚠ **CAUTION: Wear protective clothing and eyewear when dispensing chemicals or other materials. Observe safety handling instructions (MSDS) of chemical manufacturers.**

⚠ **CAUTION: To avoid severe or fatal shock, always disconnect main power when servicing the unit.**

BUTTON FUNCTIONS

PRGM: Steps you through the setup program.

PRIME 1 (⇩): Manually activates the pump and shows clock when not programming.
Advances numbers downward when programming.

PRIME 2 (⇧): Advances numbers upward when programming.

SET: Not used.

SECURITY FEATURE — REMOVE JUMPER JP1 TO PROGRAM

To prevent unauthorized tampering, the events and time/day setting can be "secured" by placing a jumper on the JP1 pins on the back of the MT-300 circuit board. The jumper acts like a lock and key...when the MT-300 is secured (jumper on) the display will show "SECU" if the PRGM button is pressed. The PRIME buttons are not affected and will still function in their normal manner. Removing the jumper allows the MT-300 to be programmed or to change the time of day clock. Replace jumper when done programming if you wish to secure the system.

HOW TO SET THE SYSTEM

(1) Press the **PRGM** button — set the clock to the current time of day. Use ⇧/⇩ to set the clock (note AM/PM).

(2) Press **PRGM** button again — PE 1 will be displayed. PE = Pump Events ("on times") needed per day. Use ⇧/⇩ to set the number of pump events per day that are required.
NOTE: The system will activate only the number of pump events indicated by the PE #.

(3) Press **PRGM** button again — E 1 will be displayed indicating that you are going to program the first event.

(4) Press **PRGM** button again — pump start time will be displayed. Use ⇧/⇩ to set the pump start time (note AM/PM).

(5) Press **PRGM** button again — pump run time will be displayed. Use ⇧/⇩ to set the pump run time (min:sec).

(6) a: Press **PRGM** button again — E 2 will be displayed if you selected more than 1 pump events (PE) per day. Program all pump events the same as the instruction in steps 4 & 5.
b: After all pump events are programmed, pressing the **PRGM** button will return you to the blank display.

(7) To review your pump programming, press the **PRGM** button and slowly step through the program. Make changes as necessary referring to the above instructions.

Tip: If you hold down any of the buttons while programming, the numbers will scroll much faster.

Tip: If you get lost in the program, press PRGM until you return to blank display. Then repeat instructions above.
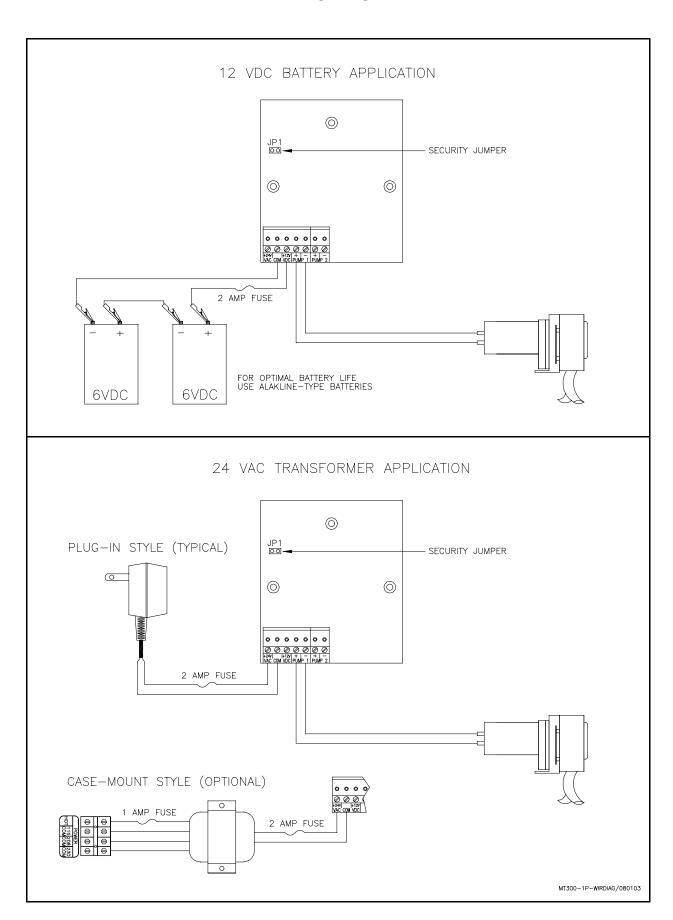
HOW TO EASILY CALCULATE PUMP RUN TIMES

The pump dispenses about 8 ounces per minute under normal operation (about 3.4 oz/min for battery-operation). The *actual* flow rate of the pump will vary depending on product viscosity, tubing distance, and other factors. The steps below will help you in determining the run time required to dispense the volume needed for your application.

(1) Make sure the chemical lines (both the pickup side and output side of the pump) are fully primed.

(2) Place a beaker or measuring cup under the end of the output line, then hold down the PRIME 1 button for 30 seconds.

(3) Check the volume dispensed into your container and multiply by 2 — this will determine the actual flow rate of the pump in oz/minute.

(4) Use this flow rate to determine how long you will need the pump to run to delivery the dosage required for your application.

WIRING DIAGRAM

12 VDC BATTERY APPLICATION

JP1 — SECURITY JUMPER

+24V | +12V | + | − | + | −
VAC COM VDC | PUMP 1 | PUMP 2

2 AMP FUSE

− + 6VDC

− + 6VDC

FOR OPTIMAL BATTERY LIFE
USE ALAKLINE−TYPE BATTERIES

24 VAC TRANSFORMER APPLICATION

PLUG−IN STYLE (TYPICAL)

JP1 — SECURITY JUMPER

+24V | +12V | + | − | + | −
VAC COM VDC | PUMP 1 | PUMP 2

2 AMP FUSE

CASE−MOUNT STYLE (OPTIONAL)

POWER
HOT 115/208
COM 208/230
COM
COM 230

1 AMP FUSE

2 AMP FUSE

+24V | +12V
VAC COM VDC

MT300−1P−WIRDIAG/080103

DISCLAIMER

Knight LLC does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult label, MSDS, or Knight LLC. Knight products are not for use in potentially explosive environments. Any use of our equipment in such an environment is at the risk of the user, Knight does not accept any liability in such circumstances.

WARRANTY

All Knight controls and pump systems are warranted against defects in material and workmanship for a period of ONE year. All electronic control boards have a TWO year warranty. Warranty applies only to the replacement or repair of such parts when returned to factory with a Knight Return Authorization (KRA) number, freight prepaid, and found to be defective upon factory authorized inspection. Bearings and pump seals or rubber and synthetic rubber parts such as "O" rings, diaphragms, squeeze tubing, and gaskets are considered expendable and are not covered under warranty. Warranty does not cover liability resulting from performance of this equipment nor the labor to replace this equipment. Product abuse or misuse voids warranty.