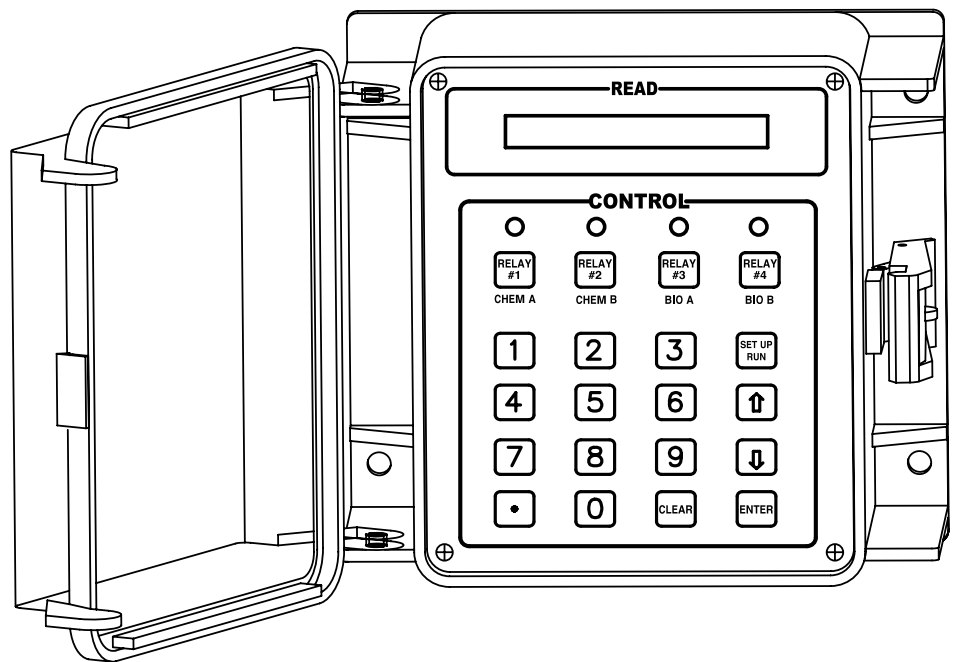


MicroTron Timer Controller

***Installation
Maintenance
Repair
Manual***



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MicroTron Timer Controller

Instruction & Maintenance Manual

Table of Contents

Contents	Page No.
I. Introduction.....	3
Model Numbering	3
II. Description.....	3
III. Installation	
Electrical Wiring.....	4
Conduit Layout for LCD Display	4
Mounting Instructions	5
Typical Installations	5
IV. Front Panel Description	6
V. System Operation Overview	7
A. Description of Set Up Menu Screens	7
1. Chem Feed Set.....	8
2. Biocide Set.....	9
3. Clock Set.....	10
4. System Set Menu	11
5. Diagnostics Menu.....	13
B. Run Menu	14
VI. Troubleshooting.....	14
VII. Warranty & 30 Day Billing Memo Policy	15

Instructions herein apply to all Microtron chemical feed or biocide timers or combinations of the two. Additional options described in this manual may or may not be present on your unit. Refer to Model Numbering on Page 3.

I. Introduction

MicroTron controllers are microprocessor based menu driven units for control of recirculating water applications. All settings are entered into the controller through a simple front panel keypad which includes relay test keys.

Model Numbering

MicroTron timer controllers have several base functions and optional features available. Your unit may be supplied with one or more of the options that are described in this manual. To determine what features apply to your unit, check the model number label located on the controller enclosure.

Base Functions

All model numbers can be broken down as follows and will start with an M or L:

M	MicroTron with a VFD display
L	MicroTron with an LCD display
F	Single programmable feed timer
F-2	Dual feed timers
F-3	Triple feed timers
F-4	Quadruple feed timers
B	Single 28 day timer
B-2	Dual 28 day timers
B-3	Triple 28 day timers

Optional Features

This list represents our most popular options.

A	Conduit connections
A-6	On/Off power switch
A-7	Lower enclosure
D	220 V service (conduit only)
E	Mounted flow switch assembly
M	Alarm relay output
M-1S	Sonic alarm buzzer with silence switch
V	Digital input for bleed-off water meter
W	Power relay 1.5 HP max, 25 amps
X	Tank low level alarms
Z-9	Chem A lockout with biocide

II. Description

Selectable Timers

Selectable timers (base function F) are designed to automate the addition of various chemicals or activation of other devices via a relay output. Multiple timers can be supplied depending upon the model number, and each timer will include a relay output. All timers can be programmed to be one of the following types:

1. **Pulse Timer** – This timer accepts dry contact pulses from a make-up water meter (supplied separately). It can accumulate 1-250 pulses to activate the timer to run from 0-99 minutes, 59 seconds in minutes and seconds.
2. **Percentage** – The relay is on for a percentage of a continuously repeating cycle time. Both the percentage and cycle time are programmable.

28-Day Feed Timers

28-day feed timers, typically used for biocide feed are based on a 28-day cycle with two independent programmable feed cycles allowing for feed on selectable days and weeks. The biocide timers on units with selectable timers also include bleed lockout settings. Multiple timers can be supplied depending upon the model number, and each timer will include a relay output.

III. Installation

Electrical Wiring

The standard MicroTron Timer controller has an internal regulated power supply that will operate in the range of approximately 90 to 240 VAC on the incoming wiring. Output relay(s) are protected with a replaceable fuse. Relay output voltage will equal the incoming line voltage.

Prewired units are supplied with a 16 AWG cable with a 3-wire grounded USA 115 volt plug for incoming power and 18 AWG 3-wire grounded receptacle cords for all control relay outputs.

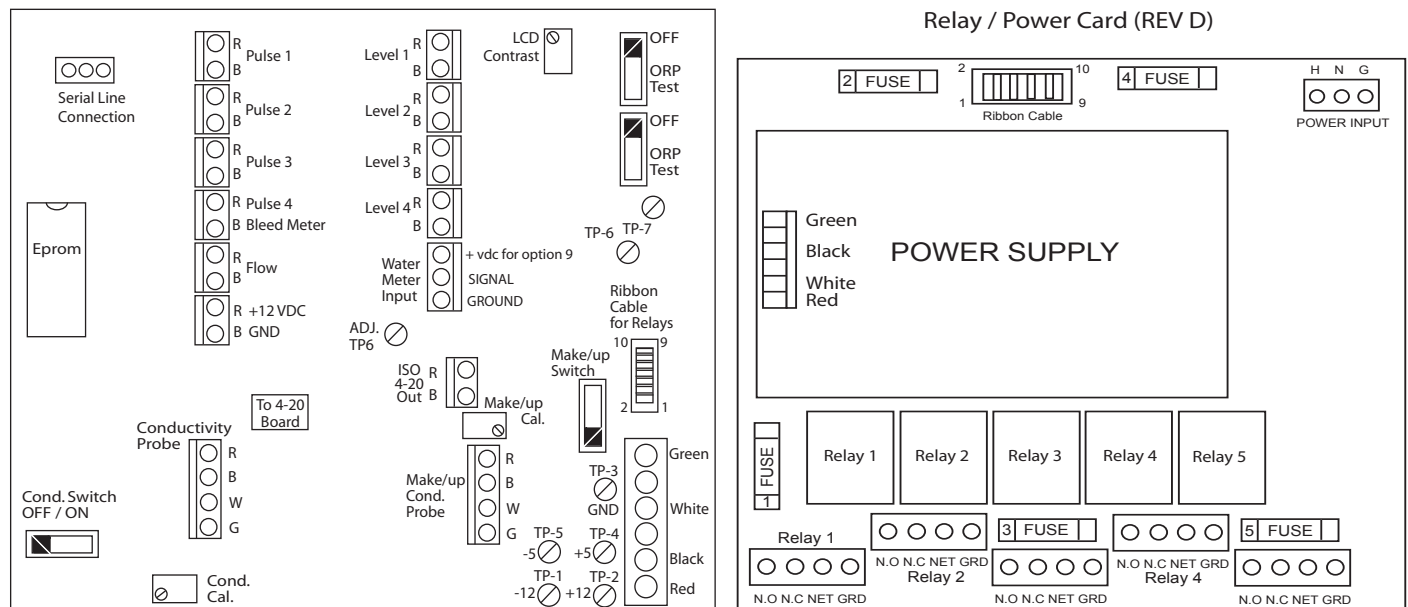
Conduit units are predrilled at the factory and supplied with conduit knockouts for easy hard wiring to supplied connectors.

NOTE: Liquid tight fittings and some labeled signal leads are provided for all signal (low voltage) connections, such as water meter, low drum level, flow switch and 4-20mA outputs.

! WARNINGS:

1. The controller should be connected to its own isolated circuit breaker, and for best results, the ground should be a true earth ground, not shared. Wiring must be done according to all applicable local codes.
2. Power (line voltage) must be disconnected while making any connections. If power is supplied to the unit, line voltage will be present on the relay cards.
3. Low voltage signal wires (probes, flow switch, water meter, etc.) should never be run in conduit with high voltage wires.

Conduit Connections for LCD Units



Logic Board

Relay / Power Board

Actual connection present depend on options ordered. Drawing is for referce only.

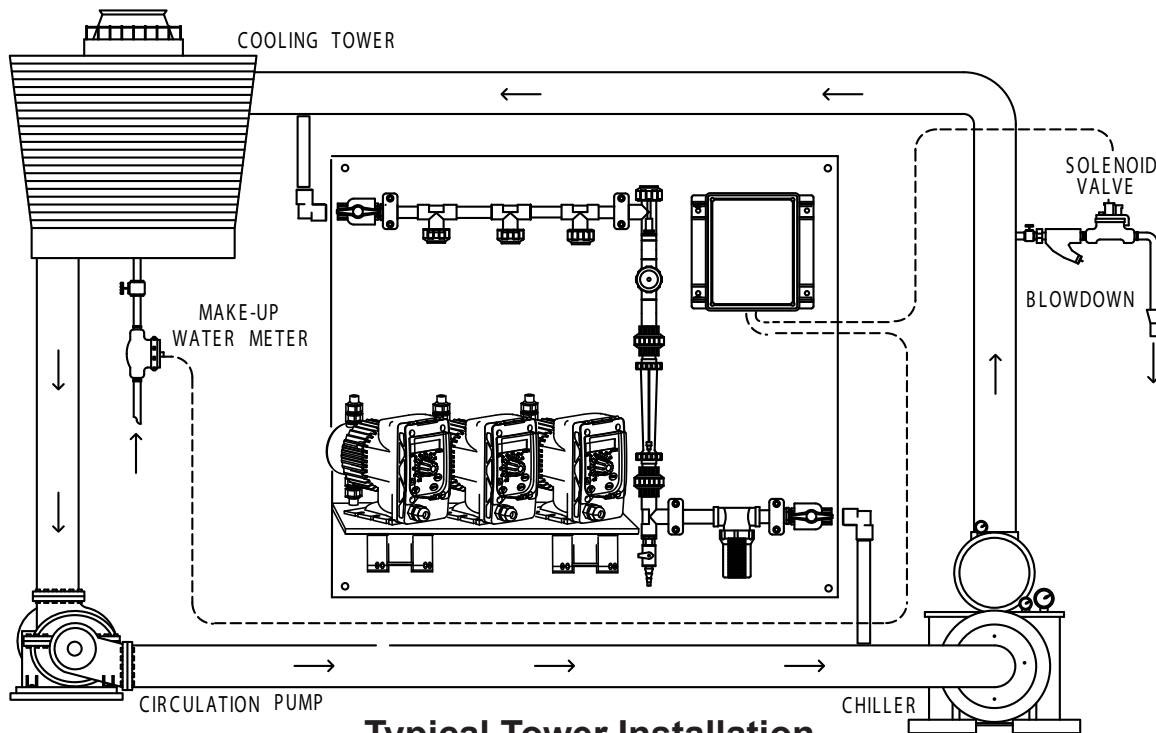
Mounting Instructions

Select a mounting location that provides the operator easy access to the unit and a clear view of the controls through the cover of the controller. The unit should be located convenient to grounded electrical connections, the required sample line plumbing, and installed on a stable vertical surface.

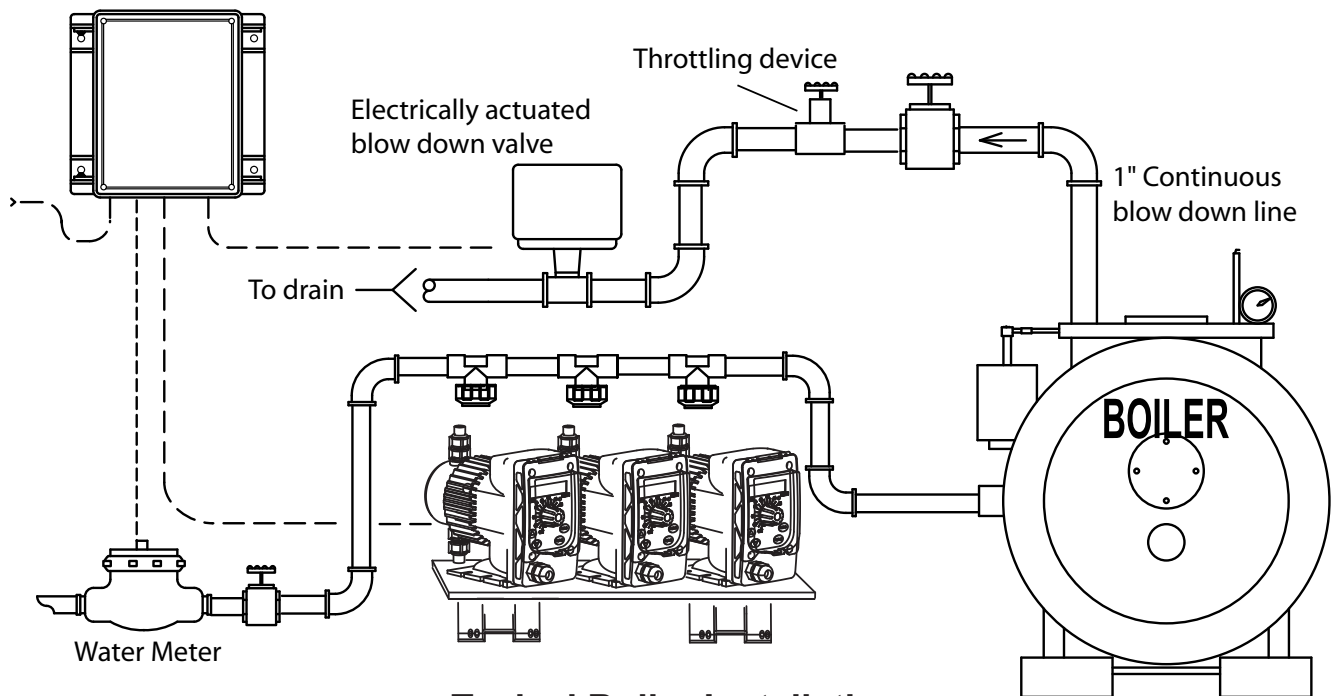


WARNING:

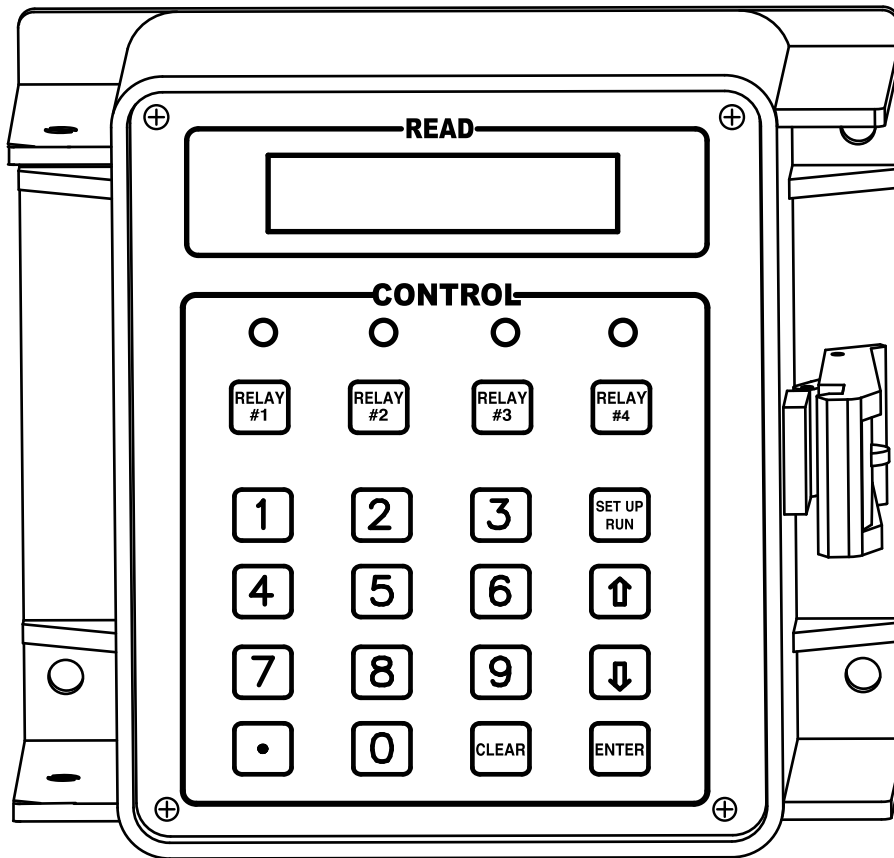
Avoid locations that expose the controller to direct sunlight, vapors, vibration, liquid spills or extreme temperatures; less than 0°F (-17.8°C) or greater than 120°F (50°C). EMI electromagnetic interference from radio transmissions and electric motors can also cause damage or interference and should be avoided.



Typical Tower Installation



Typical Boiler Installation



Front Panel Drawing

IV. Front Panel Description

READ: 1x16 character display.

CONTROL: Relay 1, Relay 2, Relay 3, Relay 4 - HOA switches for control relays.

KEY PAD



SET UP/RUN KEY - System initializes into RUN mode. Press this button key to toggle the controller from SET UP mode to RUN mode.



UP/DOWN Arrows - Used to change the display from one line to the next. All menus are circular, so when all items in a menu have been displayed, the display will return to the originally displayed item.



ENTER Key - Used to access a menu and to log a changed value into the program.



CLEAR Key - Used to clear numerical values from items being changed in the SET UP mode.



DECIMAL Key - Used at certain places to change a function or displayed items.



NUMERICAL Keys - Used to enter new values in the SET UP mode.

V. System Operation Overview

MicroTron controllers have two modes of operation, RUN and SET-UP. Both the RUN and SET UP menus are circular. Pressing the DOWN key in either menu will display the next line of information on the display. After the last item in a menu has been displayed, pressing the DOWN key will return the display to the top line of that menu.

RUN MODE - This mode is for normal operation. The control relays will only be automatically active in this mode. In the RUN mode, the display will read system values. If an alarm is present, the display flashes with the alarm status.

The RUN menu will display values such as day, time, date and other values depending upon the features present on the unit. The unit will automatically return to the RUN mode if no keys are pressed for three minutes.

SET UP MODE - This mode is used to make adjustments to settings and readings on the controller. To access the SET UP mode from the RUN screen, press the SETUP/RUN key. Use the up or down arrow to scroll through the various SET UP menus. When you want to access a specific SET UP menu, press the ENTER key. Once you have entered a SET UP sub-menu you will be able to step through that menu's options with the down arrow key.

Relays may be forced on while in the SET UP mode. Press the desired relay test key to force it on. Press it a second time to turn it off. Once the unit returns to the RUN mode, relays will activate automatically.

A. Description of SET UP Menu Screens

The SET UP menu is the main menu circle of set up sub-menus used to customize your unit to the particular parameters needed for your installation. Listed on the following pages is a description and menu map of each SET UP menu.

NOTES:

1. Your unit may not have all of the SET UP menus listed depending upon your model number.
2. After you press ENTER or CLEAR to change a numerical value in the SET UP menu, use the number keys to define the new value. Press ENTER again to enter the new value.
3. When entering new numeric values, all available digits (characters) must be entered. The number of available digits depends upon the scale of operation. Position of cursor indicates number of digits to be entered.

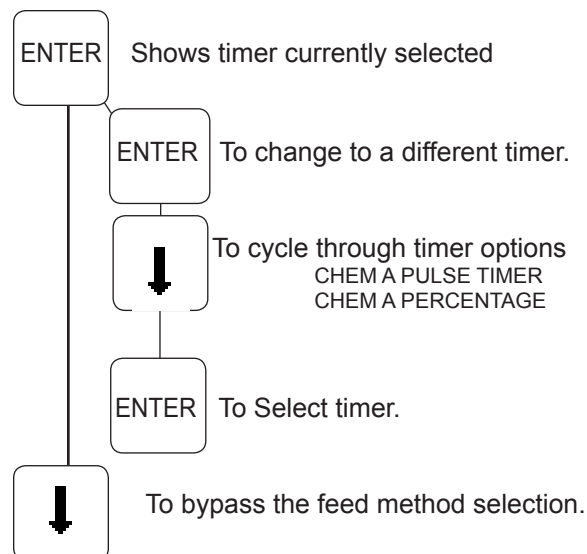
For example, when entering a run time value for a timer in the minute and seconds scale (10:30 would equal 10 minutes and thirty seconds). You would need to key in a number of 00.30 to make it 0 (zero) minutes and 30 seconds.

1. CHEM FEED SET

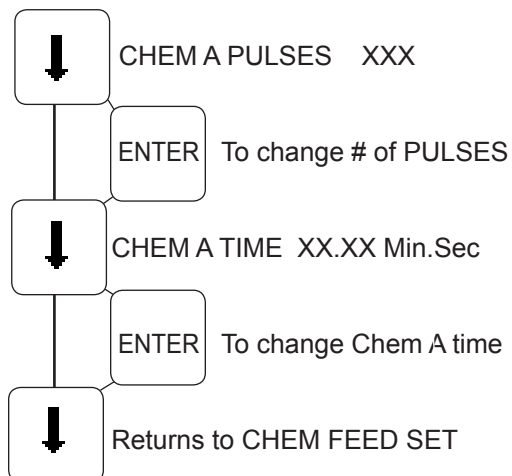
Units with selectable feed timer(s) will have this SET UP menu for selecting the chemical feed method and setting the feed time. A selectable feed timer can be programmed as one of the following:

1. **PULSE TIMER** - A timer activated by dry contacts from a contacting head water meter and includes an accumulator for counting the number of pulse (contacts) before starting the timer.
2. **PERCENTAGE** - A continuously repeating timer where the cycle timer can be programmed along with the percentage of ON time for the cycle.

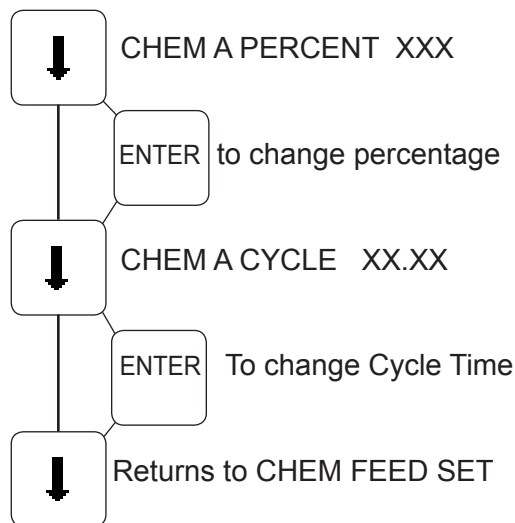
-- CHEM FEED SET--



CHEM A PULSE TIMER



CHEM A PERCENTAGE



2.

BIOCIDE SET

Units with a biocide timer will have this SET UP menu for setting biocide feed times. The Biocide Set Menu consists of two weekdays, week and start times and one feed length time and lockout setting for each biocide.

BIO __ (A1,A2,B1,B2...) WEEKDAY - Select from Sunday through Saturday, TuesThrSat, MonWedFri, Every Other Day, Every Day or No Day. A setting of No Day disables timer.

BIO__(A1,A2,B1,B2 ...) WEEK - Select week (1-4), Even Weeks, Odd Weeks, or Every Week. A setting of No Week disables timer.

BIO__(A1,A2,B1,B2 ...) MONTH - Select month (1-12), Even Month, Odd Month, or Every Month. A setting of No Month disables timer.

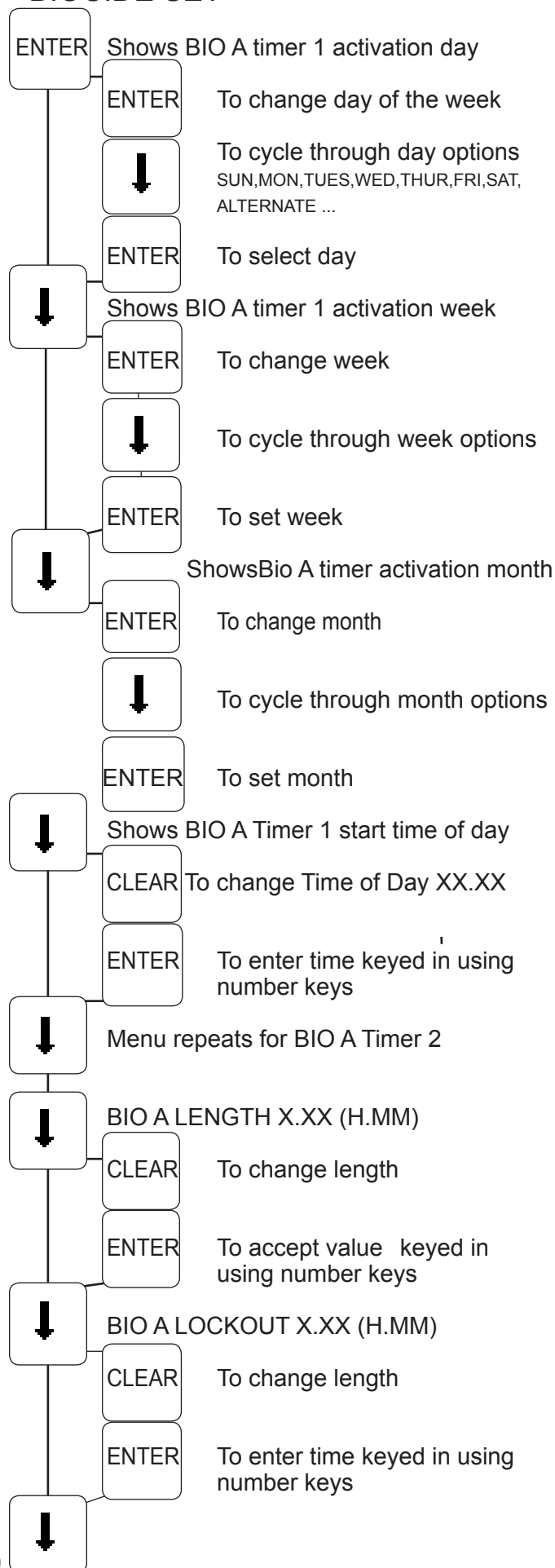
BIO_(A,B,C...)TIME HH.MM - Start time based on 24 hour clock, in hours and minutes.

BIO_(A,B,C...) LENGTH H.MM - Feed time in hours and minutes can be set up to 9 hours and 59 minutes, 0 (zero) disables both start times for that biocide.

BIO_(A,B,C...) LOCKOUT H.MM - The lockout timer is a timer that starts after a biocide feed time is finished. The timer can be set for a time up to 9 hours and 59 minutes to lock out the bleed.

NOTE:

On units with option Z-9 this lockout timer prevents Chem A selectable timer from activating. On all other units the lockout timer operates a normally closed pigtail output.

--BIOCIDE SET--

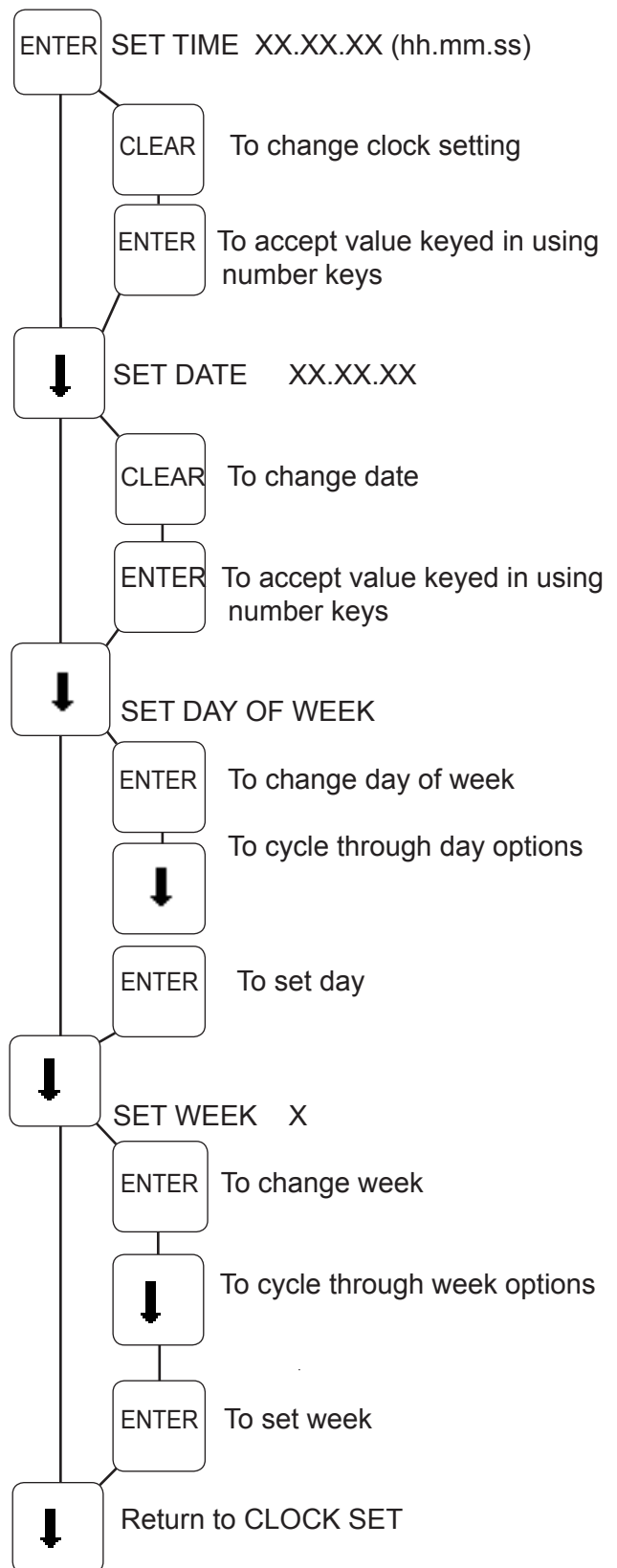
3. CLOCK SET

The CLOCK SET menu is for adjusting the time, date and day of the week.

After entering a new value, hit the ENTER key to accept the value.

The clock time is based on a 24 hour clock. So, a time of 1 pm would be shown as 13.00.00.

--CLOCK SET--




4. SYSTEM SET MENU

This menu is used to configure the controller to specific operational needs. Some of the items in this menu may not apply depending on the controller model but will always be present.

PASSWORD - If a value of 0000 is entered, a password is not required. If a password is entered, it must be used to operate the controller. If the first digit is 0, relays may be activated without a password.

RESET WATER METER COUNT - Does not apply unless the unit has selectable feed timer.

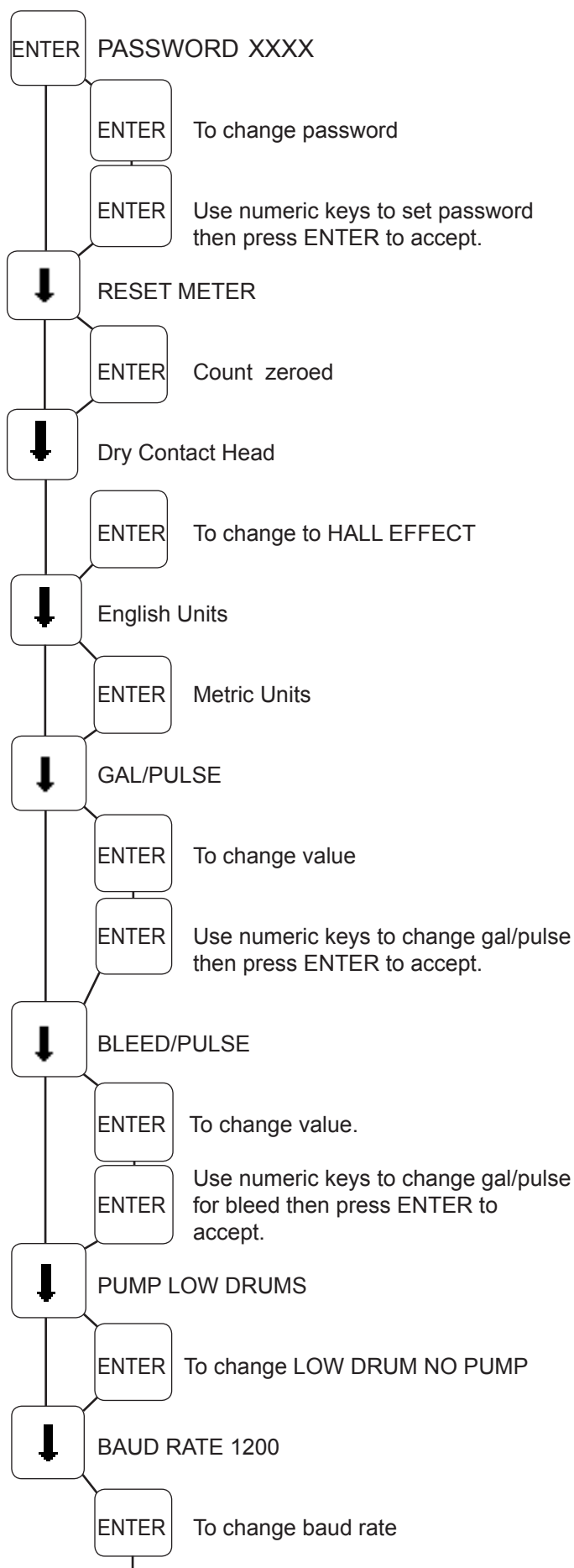
WATER METER IN - Select a contacting head water meter or a paddle wheel flow meter.

GAL/PULSE - If a feed timer is using a contacting head water meter this tracks make-up volume by entering the number of gallons a contact equals. Use  key to change to pulse/gal for flowmeter.

LOW DRUM NO PUMP/PUMP LOW DRUMS - If unit has low level alarms, allows the associated feed timer to be forced off when drum is low.

BAUD RATE - For units ordered with the serial line or modem option.

--SYSTEM SET--



System Set continued on next page.

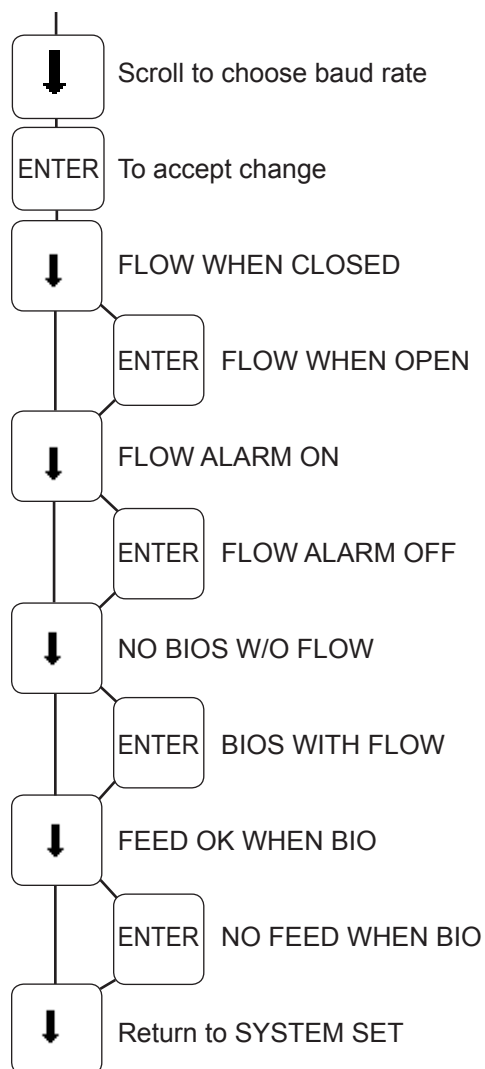
SYSTEM SET MENU (Continued)

FLOW WHEN CLOSED - For flow switches.

FLOW ALARM - With FLOW ALARM ON, when the system loses flow, an alarm signal can be sent. FLOW ALARM OFF means that no alarm signal is sent in the event of loss of system flow.

NO BIOS WITHOUT FLOW - Allows the biocide timer(s) to run only with a flow condition or to ignore the flow and always run even without flow.

FEED OK WHEN BIO - The chemical feed timer can be prevented from activating during a biocide



5. DIAGNOSTICS MENU

--DIAGNOSTICS--

This menu is used to select, enter and test the following items.

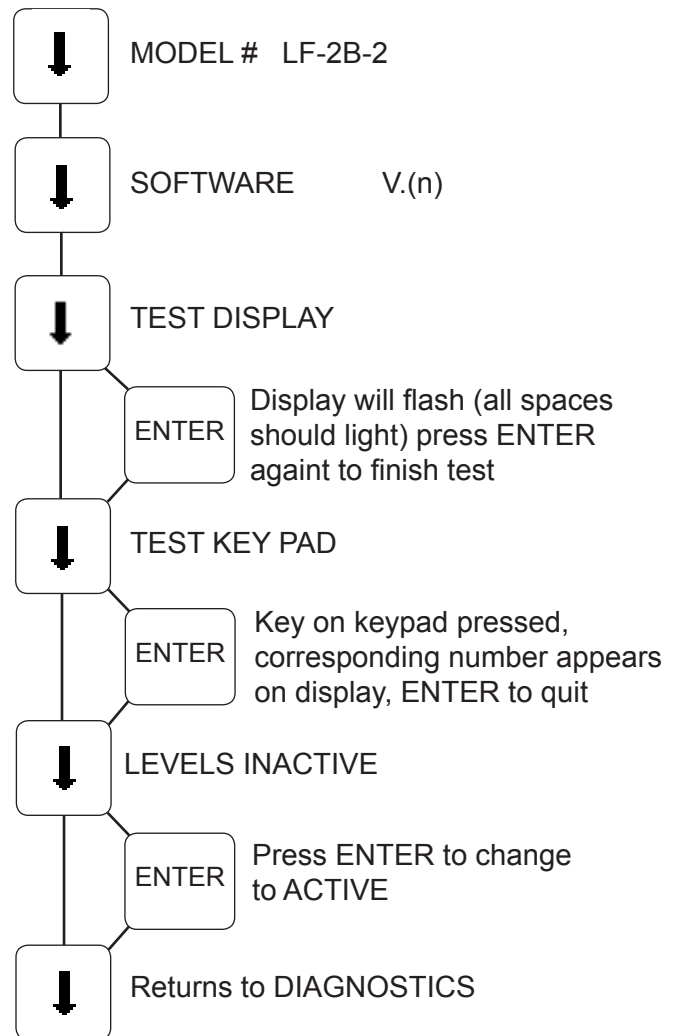
MODEL NUMBER - Read only screen.

SOFTWARE VERSION NUMBER - Read only screen. Please have this number if calling for support.

TEST DISPLAY - Press ENTER and all pixels will flash. Make a visual check to see that all pixels are lit.

TEST KEYPAD - Press ENTER, then press each individual key to test its function. NOTE: Pressing the SET UP/RUN key returns display to the main menu. Pressing ENTER again returns to TEST KEYPAD.

LEVELS INACTIVE - Press ENTER to select between having level alarms active or inactive. If level wand are present select inactive.



B. RUN MENU

During normal operations the controller will be in the RUN mode where current values are displayed. If left in the SET UP mode the display will revert to the RUN mode screen if no keys are touched for 3 minutes. If an alarm is present, it will flash on the screen in the RUN mode.

While in the RUN mode, hit the down arrow to show the following items:

DAY-TIME	Current day or the week and time.
DATE	Current date.
CHEM (A-E)	If a chemical feed relay is on, how long it has been on.
GALLONS	If a water meter is being used, total number of gallons made up.
WATER METER	If a water meter is being used, number of contacts

VI. Troubleshooting

The Advantage Microtron controller is designed for many years of trouble free operation. Should a problem occur, refer to the following chart to help identify the problem.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
No system power	Power source Cable from power supply board to relay board	Check power source Secure cable
No output power	Check relay fuse Check ribbon cable from logicboard to relays	Replace as needed Secure ribbon cable & orientation
Not receiving water meter contacts	Connection between unit and water meter Meter input set incorrectly	Check cable between water meter and unit Check meter input in System Set

If problem persists, contact our customer service department with the model number and serial number and software version (found under diagnostics) of unit for free factory technical assistance at 800-743-7431.

VII. Advantage Controls' Product Warranty

Manufacturer's Product Warranty

Advantage Controls warrants control systems of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 24 months from date of installation. Liability is limited to repair or replacement of any failed equipment or part proven defective in material or workmanship upon manufacturer's examination. Removal and installation costs are not included under this warranty. Manufacturer's liability shall never exceed the selling price of equipment or part in question.

Advantage disclaims all liability for damage caused by its products by improper installation, maintenance, use or attempts to operate products beyond their intended functionality, intentionally or otherwise, or any unauthorized repair. Advantage is not responsible for damages, injuries or expense incurred through the use of its products.

The above warranty is in lieu of other warranties, either expressed or implied. No agent of ours is authorized to provide any warranty other than the above.

30 Day Billing Memo Policy

Advantage Controls maintains a unique factory exchange program to ensure uninterrupted service with minimum downtime. If your controller malfunctions, call 1-800-743-7431, and provide our technician with Model and Serial Number information. If he is unable to diagnose and solve your problem over the phone, a fully warranted replacement unit will be shipped, usually within 48 hours, on a 30 Day Billing Memo.

This service requires a purchase order and the replacement unit will be billed at current list price for that model less any applicable resale discount. Upon return of your old unit, credit will be issued to your account if the unit is in warranty. If the unit is out of warranty or the damage not covered, a partial credit will be applied based upon a prorated replacement price schedule dependent on the age of the unit. Any exchange covers only the controller or pump. **Electrodes, liquid ends and other external accessories are not included.**

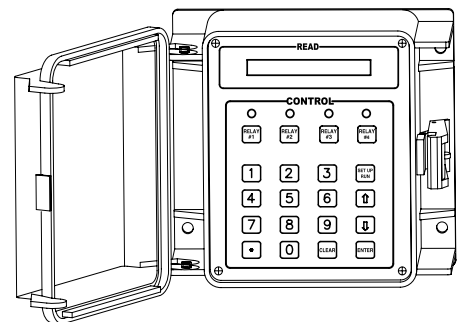
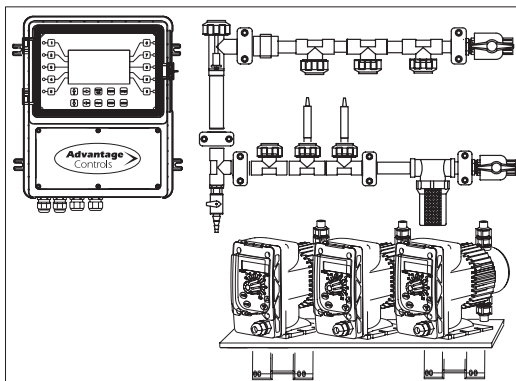
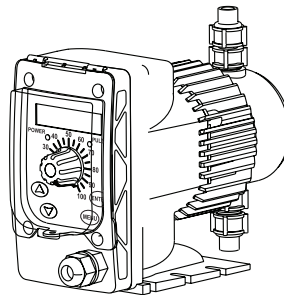
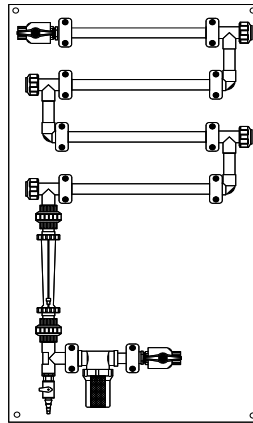
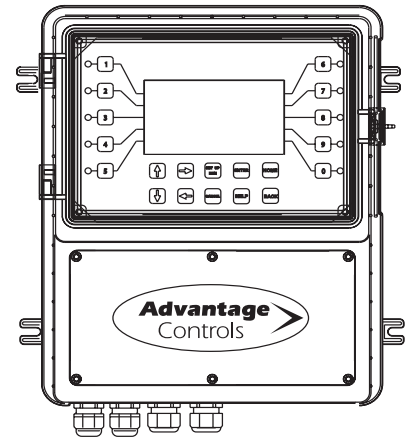
FCC Warning

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instruction, may cause interference to radio communications. It has been type tested and found to comply with the limits for a class A computing device pursuant to subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial or industrial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures necessary to correct the interference.

Get the Advantage in Water Treatment Equipment

Advantage Controls can give you the *Advantage* in products, knowledge and support on all of your water treatment equipment needs.

- Cooling Tower Controllers
- Boiler Blow Down Controllers
- Blow Down Valve Packages
- Solenoid Valves
- Water Meters
- Chemical Metering Pumps
- Corrosion Coupon Racks
- Chemical Solution Tanks
- Solid Feed Systems
- Feed Timers
- Liquid Level Controllers
- Glycol Feed Systems
- Pre Fabricated Systems



Get the Advantage

