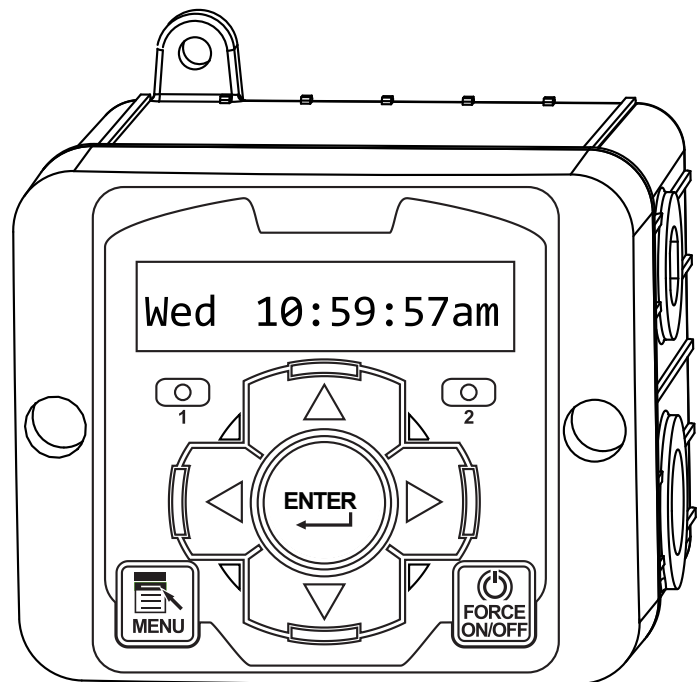


# NanoTron

## Dual Timer

***Installation***  
***Maintenance***  
***Repair***  
***Manual***



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## I. Introduction

NanoTron microprocessor based controllers are designed to provide a wide range of control functions for recirculating water treatment systems. The controller is programmed through a front panel keypad and can be configured to provide a customized control system for your application. Your particular unit's functions can be determined by comparing the units model number to the model numbering table listed below.

### Model Numbering

NanoTron units have several base system control functions and unit optional features. Your unit may be supplied with one or more of the features described in this manual. To determine what features apply to your unit check the model number label located on the controller enclosure.

#### Base Control Function

**F2** - Two Feed Timers

#### Whole Unit Optional Features

**A** - Conduit Connections

**A3** - Conduit with CE

**E** - Flow Switch

**Y** - ETL Listing / Approvals

## II. Description

NanoTron units are designed to automate the addition of various chemicals or activate other devices via a relay output.

### Nano-F2 units include:

- Two totalizing water meter inputs that can be configured for contacting head or hall effect meter inputs.
- Two drum level inputs that can be set to disable the relay outputs.
- Two mechanical relay outputs with normally open and normally closed contacts that can be configured for powered or dry contact relay operation (see page 4).
- A “force on” timer that allows for manual activation of the relays for a user defined amount of time.

Each of the 2 timers in a NanoTron-F2 can be individually programmed as one of the following types:



1. **Pulse Timer** – Accepts dry contact pulses from a water meter (supplied separately). It can accumulate 1-9999 pulses to activate the timer to run from 0-99 minutes, 59 seconds in minutes and seconds. Timer will store up to 5 additional activations during an individual run time.
2. **Recycle Timer** – Provides a user defined “off” cycle in HH:MM and a user defined “on” cycle in MM:SS that is repeated constantly.
3. **28-Day Timer** - 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.
4. **Batch Timer** - Timer activated by the Force On/Off key for a user defined run time.
5. **Utility** - Relay is on as long as it is not a flow or drum alarm.
6. **After Timer 1** - This allows Timer 2 to run after Timer 1.

## III. Installation

### Electrical Wiring

The controller has an internal regulated power supply that will operate in the range of approximately 100 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 120 volt plug for incoming power and 18 AWG 3-wire grounded receptacle cords for all control relay outputs. Conduit units are supplied with liquid tights and adaptors for easy hard wiring to supplied connector.

|  <b>CAUTION</b>   |
|---|
| 1. There are live circuits inside the controller even when the power switch on the front panel is in the OFF position. Never open the front panel without first disconnecting power from the outlet. Prewired controllers are supplied with an 8 foot, 18 AWG power cord with USA style plug. A #1 Phillips driver is required to open the front panel. |
| 2. Low voltage signal wires (probes, flow switch, water meter, etc.) should never be run in conduit with high voltage (like 115VAC) wires.  |
| 3. Never attempt to land connections to the controller without first disconnecting power from the outlet.   |
| 4. Do not block access to disconnect power during mounting and installation.  |
| 5. 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. Any attempt to bypass the grounding will compromise the safety of users and property.  |
| 6. The electrical installation of the controller must be performed by trained personnel only and conform to all applicable National, State and Local codes.   |
| 7. Operation of this product in a manner not specified by Advantage Controls may result in damage to equipment or persons.  |
| 8. Avoid mounting in 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.               |

### NOTES:

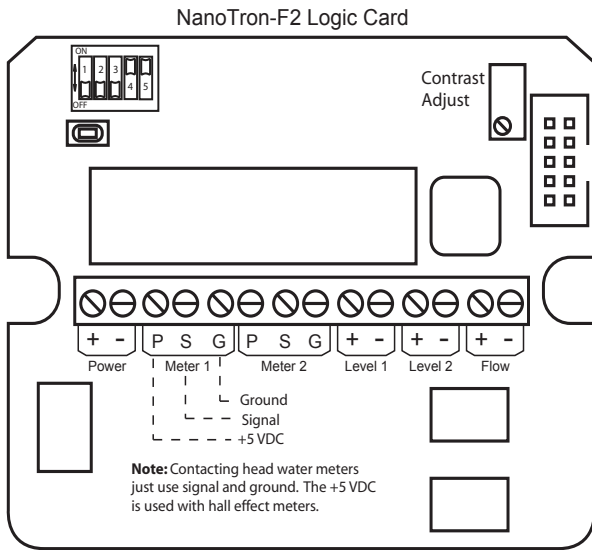
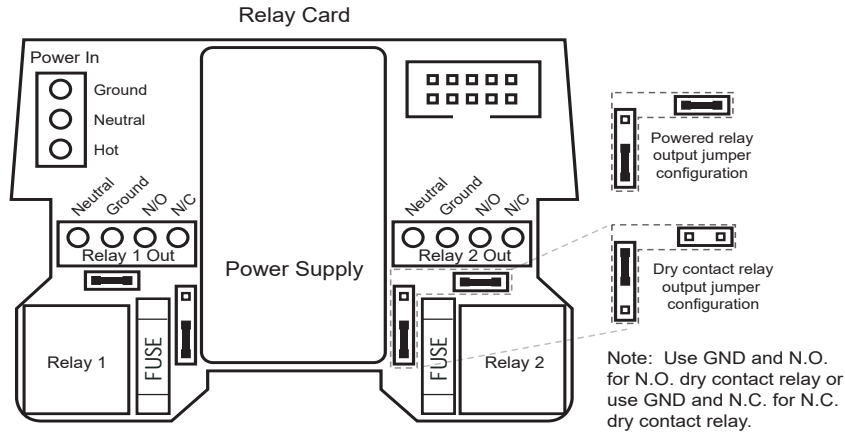
**1. Liquid tight fittings and some labeled signal leads are provided for signal (low voltage) connections, such as water meter inputs.**

**2. Hall effect meters that require +12 VDC must use an external power supply (TFS-PWR).**

# Mounting Instructions

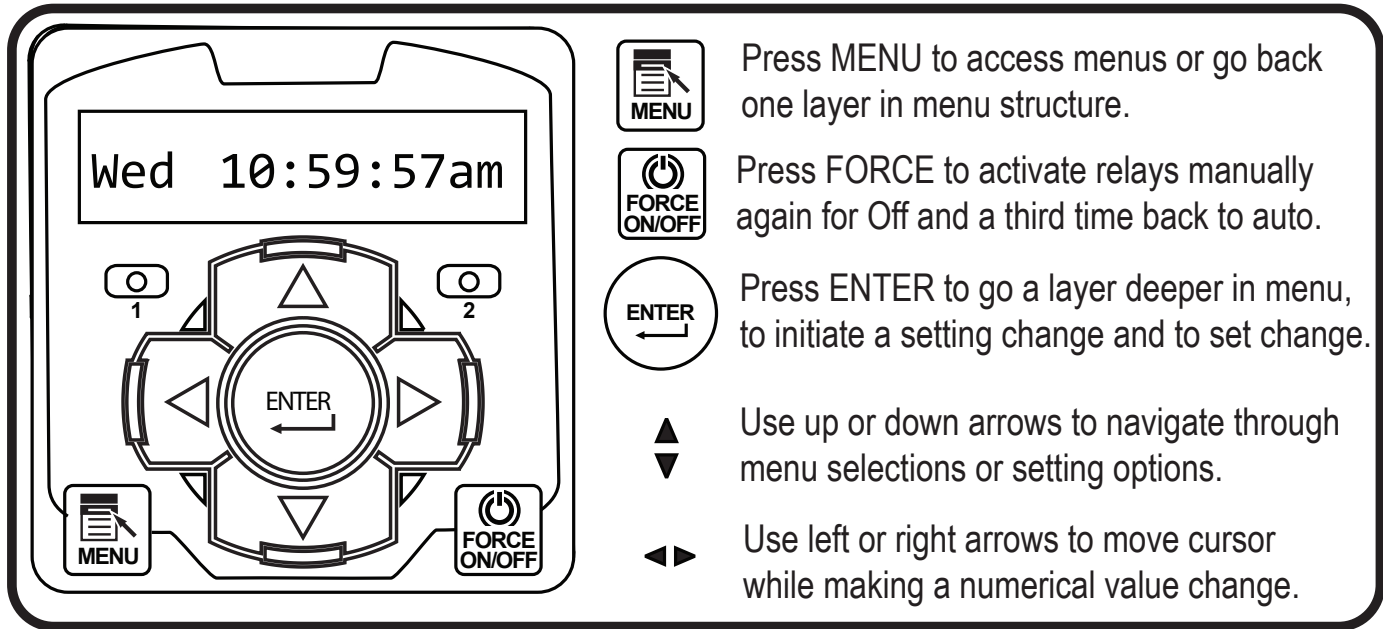
Select a mounting location that provides the operator easy access to the unit and a clear view of the controls through the cover of the controller. The location should be convenient to grounded electrical connections, the needed sample line plumbing and is on a stable vertical surface.

## Logic and Relay Cards



| Switch # | Position | Function                                    |
|----------|----------|---|
| 1        | OFF      | Backlight normally off; flashes on w/ alarm |
| 1        | ON       | Backlight normally on; flashes off w/ alarm |
| 2        | OFF      | Normal Operation                            |
| 2        | ON       | "Burn-in" Mode                              |
| 3        | OFF      | Normal Operation                            |
| 3        | ON       | Clear Memory (Resets to factory defaults)   |
| 4        | OFF      | N/A   |
| 4        | ON       | N/A   |
| 5        | OFF      | Set for 1x6 LCD (Normal)                    |
| 5        | ON       | Set for 4x20 LCD (Debug @ Factory)          |

## IV. Front Panel Description



## V. System Operation Overview

### Description of Menus

NanoTron controllers have three modes of operation, Run, Menu and Force. All menus are circular. Pressing the DOWN key will display the next line of information on the display.

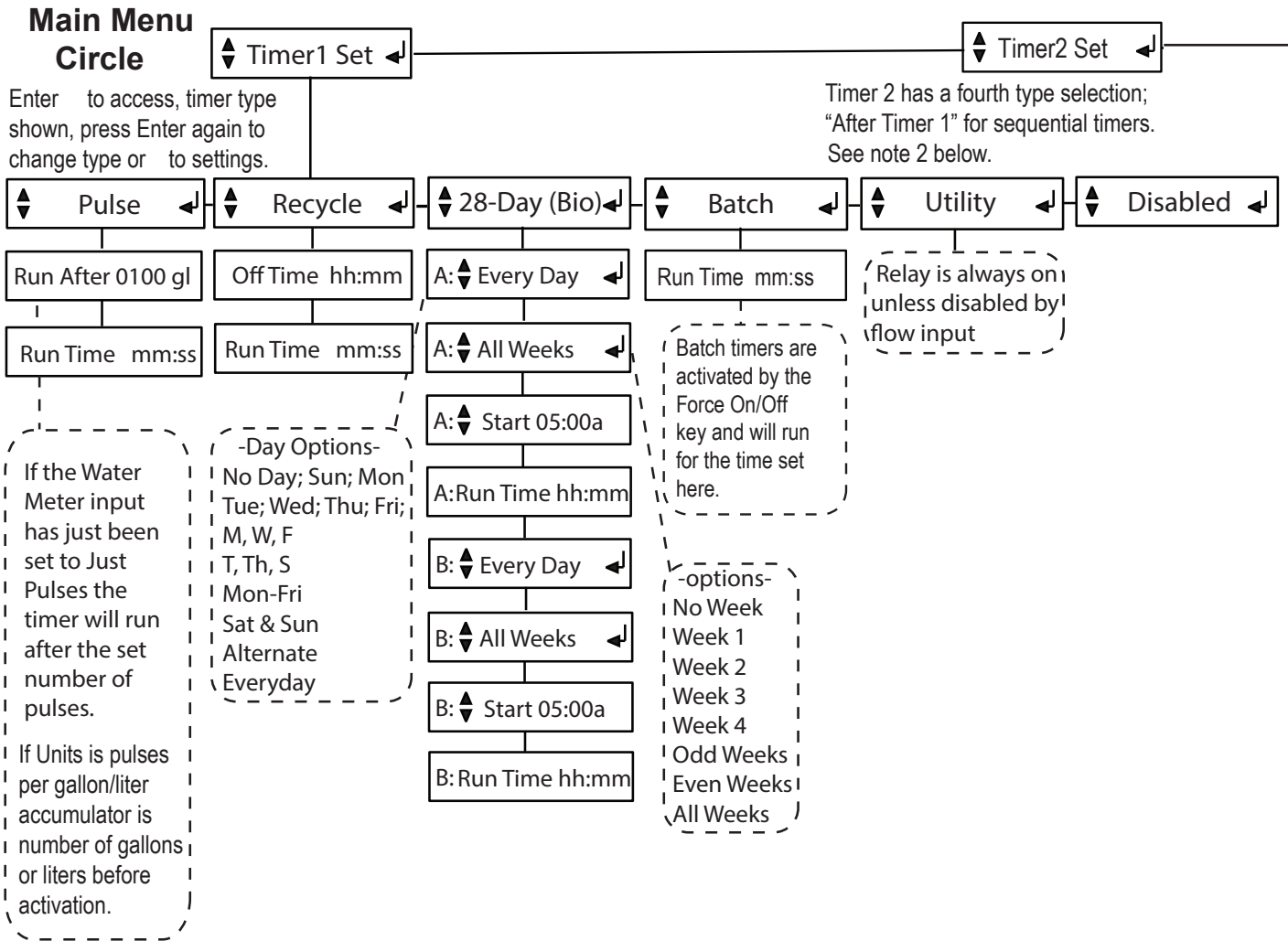
**Run -** This mode is for normal operation. The control relays will only be automatically active in this mode. In the Run mode, the display will read system values. If an alarm is present, the display flashes with the alarm status.

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.

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

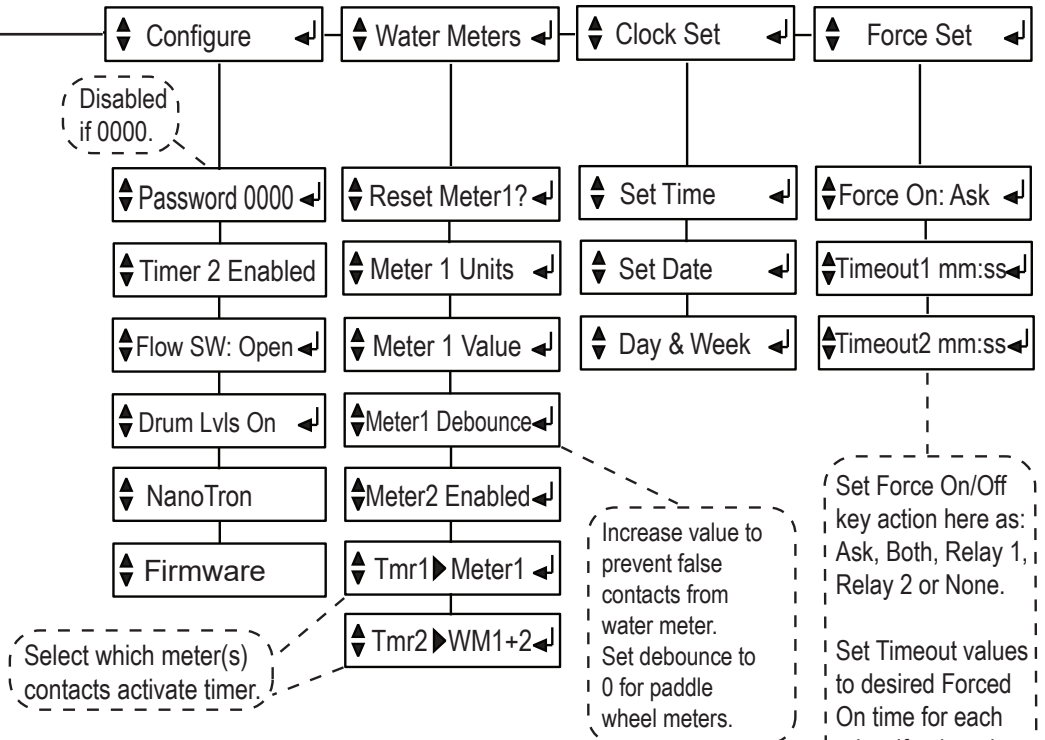
**Force -** Relays may be forced on or off for a user defined amount of time. Press the Force key to force relays on for the time configured in the Menu's force sub-menu. Press it a second time to force them off for the same amount of time. Press a third time to go back to automatic Run mode. Unit returns to the Run mode automatically when the force time has elapsed.






# V. NanoTron-F2 Menu Map



**Notes:**

1. If Menu is pressed while changing a value the value on screen will be the new value.
2. If Timer 2 is "After Timer 1" it will activate it's Run each time Timer 1 completes a Run cycle.
3. Meter units and values must be set in the Water Meter menu for Pulse timers to work.



-  Press MENU to access menus or go back one layer in menu structure.
-  Press FORCE to activate relays manually again for Off and a third time back to auto.
-  Press ENTER to go a layer deeper in menu, to initiate a setting change and to set change.
-  Use up or down arrows to navigate through menu selections or setting options.
-  Use left or right arrows to move cursor while making a numerical value change.

Set Force On/Off key action here as: Ask, Both, Relay 1, Relay 2 or None.

Set Timeout values to desired Forced On time for each relay. If a timer is a Batch it will run for the Batch timer's run time when the Force On/Off is pressed.

Timers go back to auto mode after Force On/Off time has expired.

## **VI. Manufacturer's Product Warranty**

Advantage Controls warrants units 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 unit malfunctions, call 1-800-743-7431, and provide our technician with Model and Serial Number information. If we are 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 is billed to your regular account for payment.

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 end components 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.