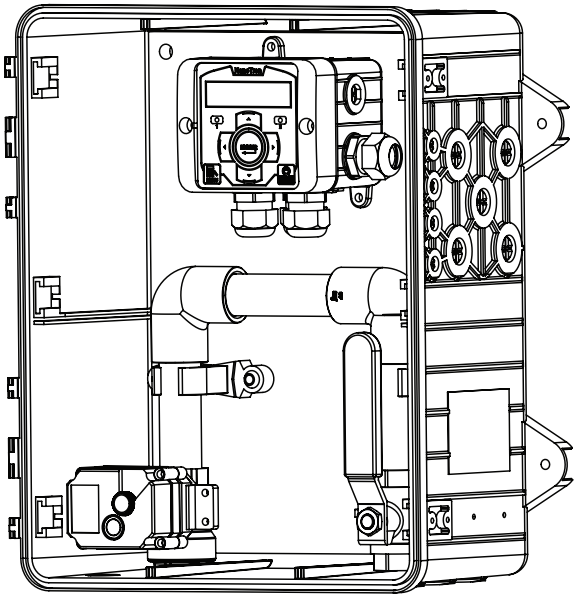
Advantage Controls — Manual

# AFS Systems



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

Intertek

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## I. Introduction

NanoTron microprocessor-based controllers are designed to provide a wide range of control functions for 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.

## II. Description

AFS units are designed to automate flushing of waterlines to improve water quality.

**AFS units include:**

- One conductivity-based drain overflow sensor programmed to disable relay 2 (flush).
- One totalizing water meter input that can be configured for contacting head or hall effect meter inputs.
- A “force on” timer that allows for manual activation of the relays for a user defined amount of time.
- One flush valve pre-wired to relay 2 / feed timer.

**Flush Timer**:

1. **Recycle Timer** – Provides a user defined “off” cycle in HH:MM and a user defined “on” cycle in MM:SS that is repeated constantly.
2. **28-Day Timer -** 28-day timer based on a 28-day cycle with two independent programmable flush cycles allowing for flush on selectable days and weeks.
3. **Batch Timer -** Timer activated by the Force On/Off key for a user defined run time.
4. Other timer types are selectable but should not be used for AFS systems.

# 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 2 is 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.

**NOTES:**

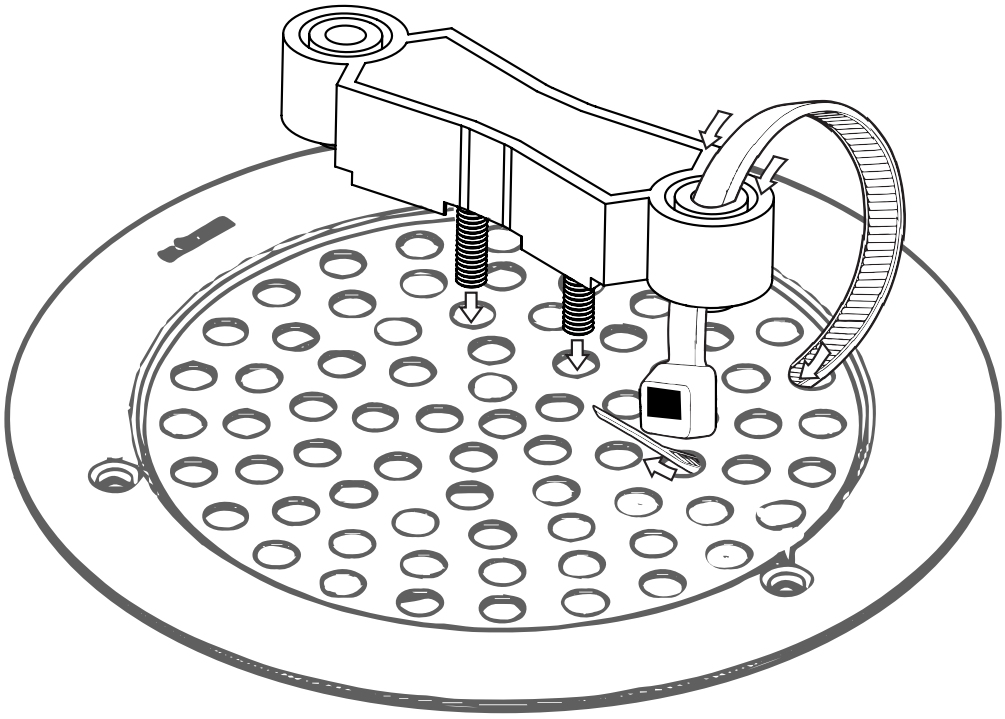
1. **Liquid tight fittings and some labeled signal leads are provided for signal (low voltage) connections, such as water meter inputs.**

## Mounting Instructions

Select a mounting location that provides the operator easy access to the unit and plumbing in and out. The location should be convenient to grounded electrical connections, with a convienient drain location for the flush outlet.

## Drain

The AFS-E-25 sensor has been designed to mount on non-metallic floor drain grids. The probe tips should be pointed down through the grating. Mounting holes in the sensor body can be used to secure it to the grid.



| ⚠ CAUTION ⚠ |
|---|
| 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. |

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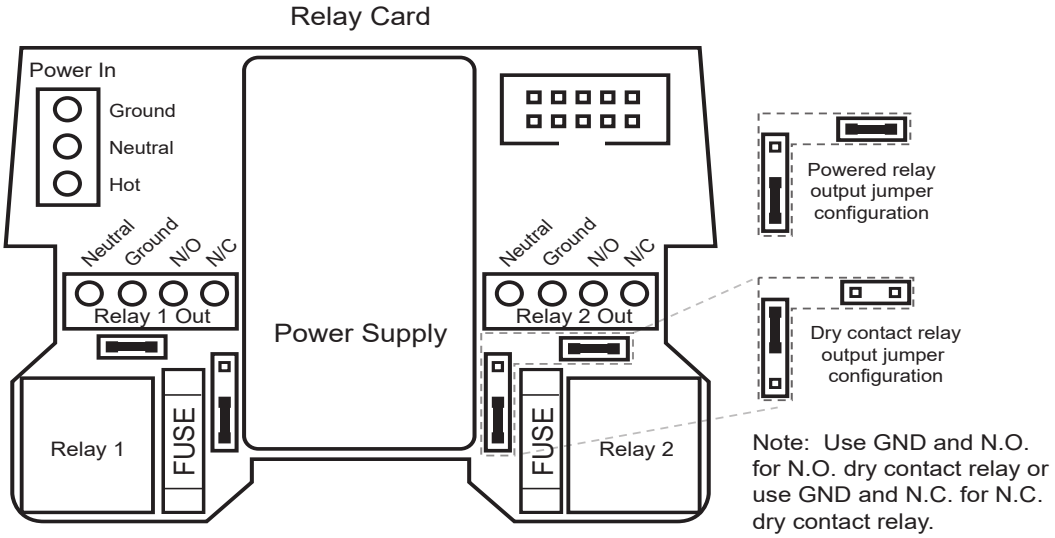
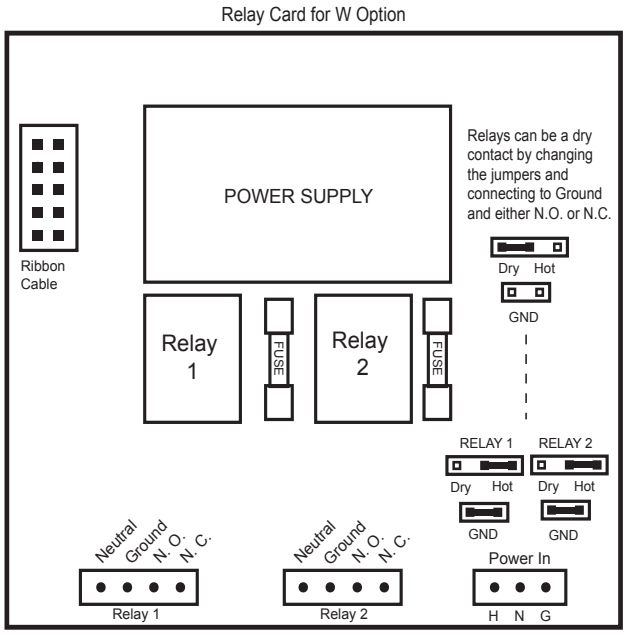
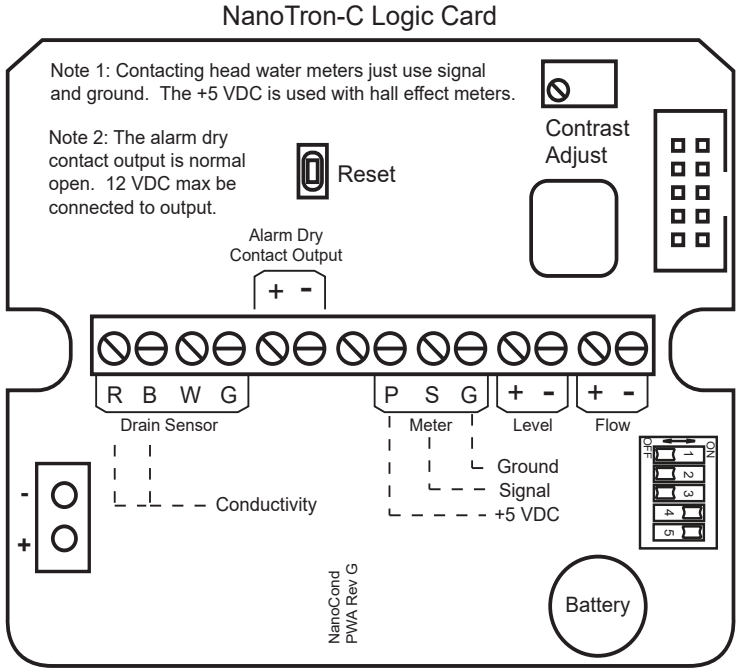
|---|
| 5. The controller should be connected to its own isolated circuit breaker, and for best results, the ground should be a true earth ground, not shared. Any attempt to bypass the grounding will compromise the safety of users and property. |
| 6. The electrical installation of the controller must 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 the manufacturer 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. |

## Logic and Relay Cards

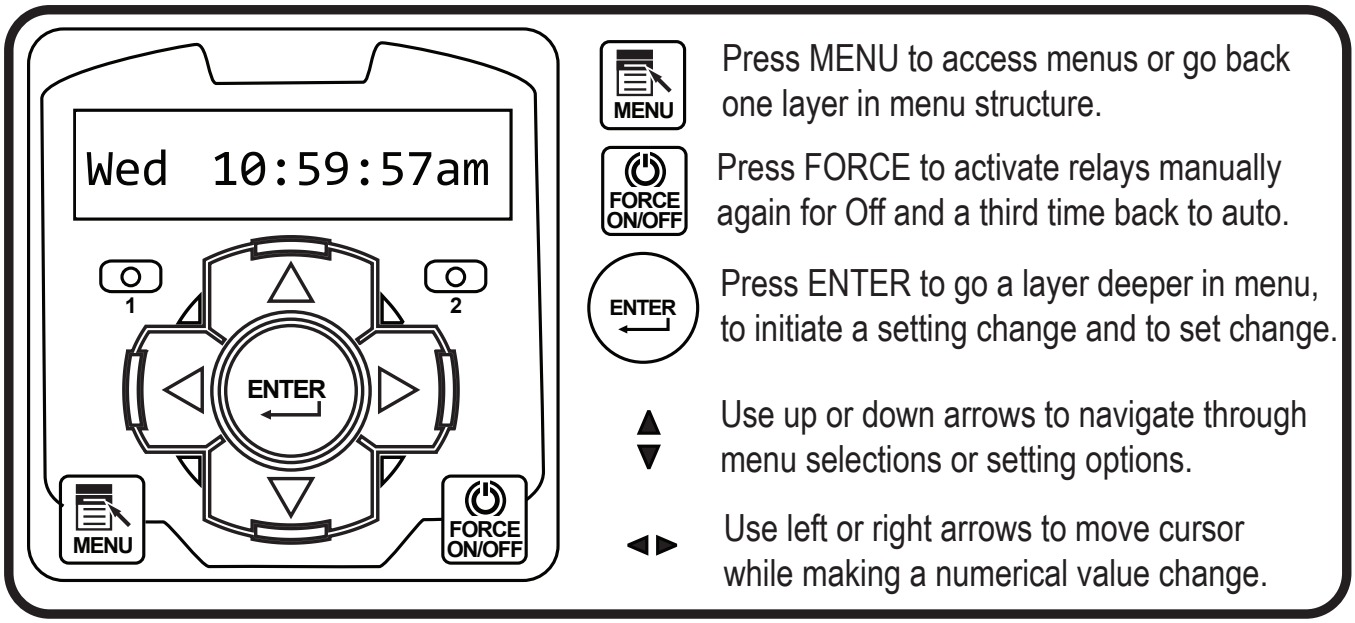



**Note:** Relay 1 is for drain alarm. Relay 2 is for Flush Timer

## IV. Front Panel Description




## V. System Operation Overview

### Description of Menus

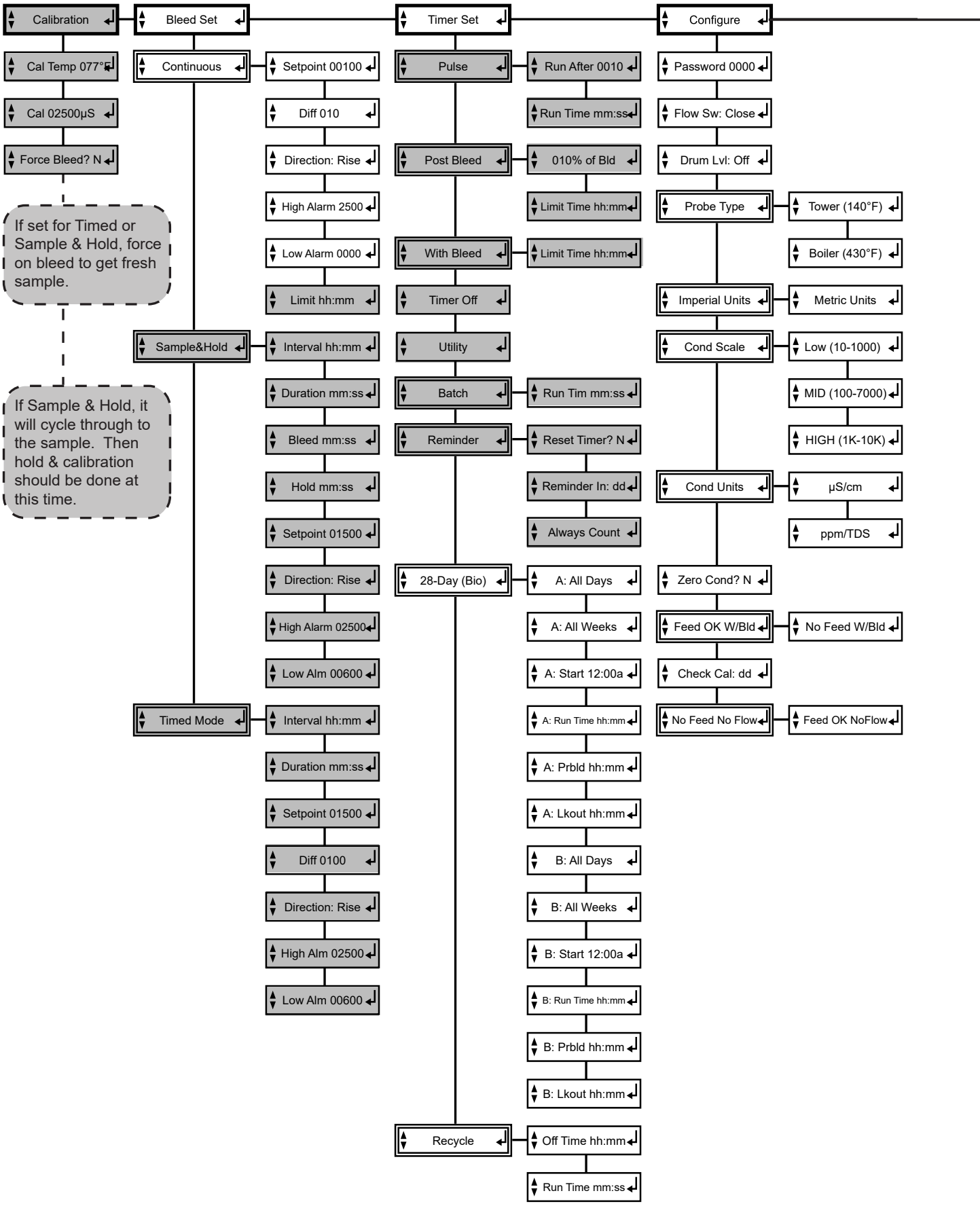
NanoTron controllers have three modes of operation, Run, Menu and Force. All menus are circular. Pressing the DOWN key will display the next line of information on the display.

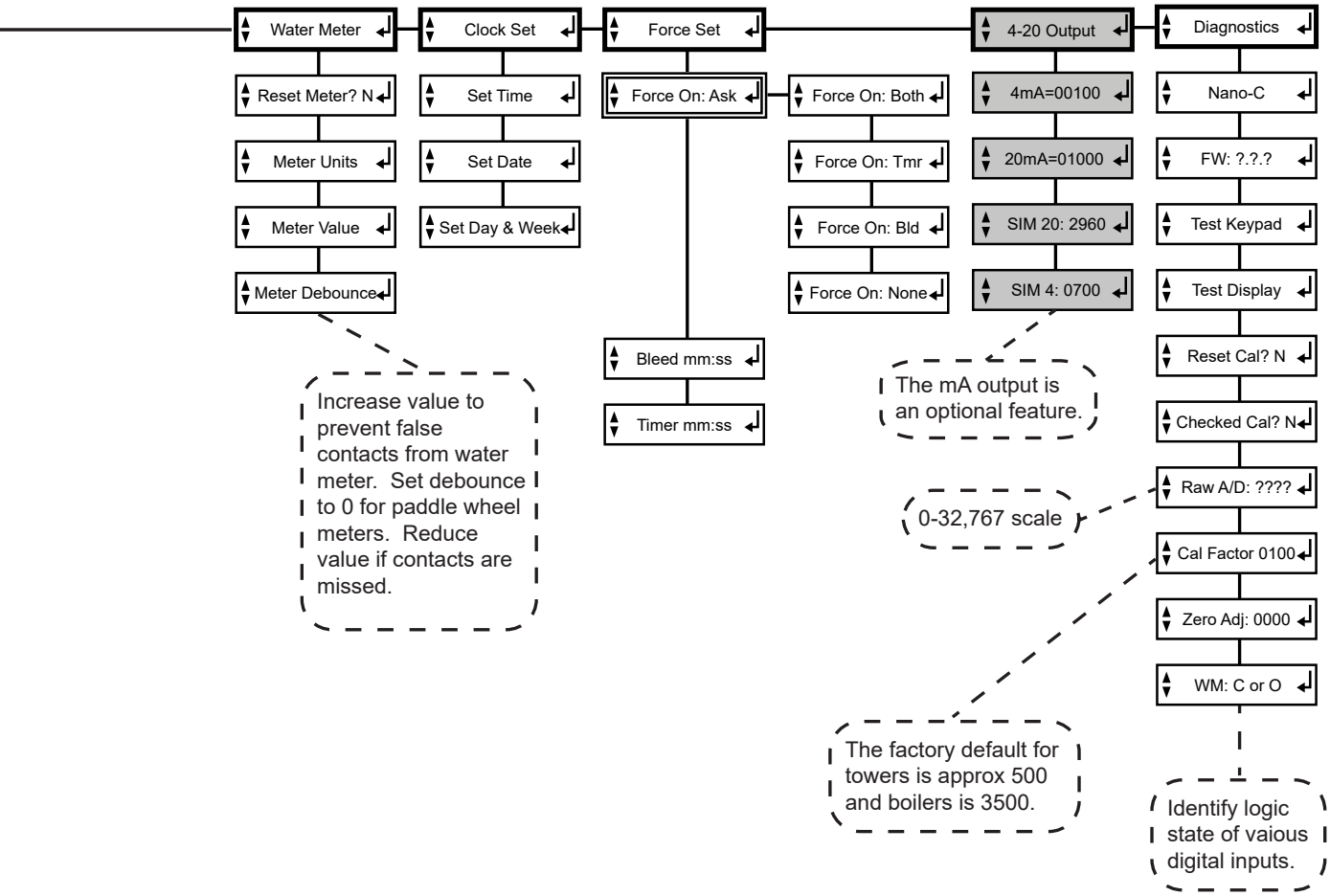
**Run -** This mode is for normal operation. The control relays will only be automatically active in this mode. In the Run mode, the display will read system values. If an alarm is present, the display flashes with the alarm status.

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.


Calibration
Cal Temp 077°F
Cal 02500µS
Force Bleed? N
If set for Timed or Sample & Hold, force on bleed to get fresh sample.
If Sample & Hold, it will cycle through to the sample. Then hold & calibration should be done at this time.
Bleed Set
Continuous
Setpoint 00100
Diff 010
Direction: Rise
High Alarm 2500
Low Alarm 0000
Limit hh:mm
Sample&Hold
Interval hh:mm
Duration mm:ss
Bleed mm:ss
Hold mm:ss
Setpoint 01500
Direction: Rise
High Alarm 02500
Low Alm 00600
Timed Mode
Interval hh:mm
Duration mm:ss
Setpoint 01500
Diff 0100
Direction: Rise
High Alm 02500
Low Alm 00600
Timer Set
Pulse
Run After 0010
Run Time mm:ss
Post Bleed
010% of Bld
Limit Time hh:mm
With Bleed
Limit Time hh:mm
Timer Off
Utility
Batch
Run Tim mm:ss
Reminder
Reset Timer? N
Reminder In: dd
Always Count
28-Day (Bio)
A: All Days
A: All Weeks
A: Start 12:00a
A: Run Time hh:mm
A: Prbld hh:mm
A: Lkout hh:mm
B: All Days
B: All Weeks
B: Start 12:00a
B: Run Time hh:mm
B: Prbld hh:mm
B: Lkout hh:mm
Recycle
Off Time hh:mm
Run Time mm:ss
Configure
Password 0000
Flow Sw: Close
Drum Lvl: Off
Probe Type
Tower (140°F)
Boiler (430°F)
Imperial Units
Metric Units
Cond Scale
Low (10-1000)
MID (100-7000)
HIGH (1K-10K)
Cond Units
µS/cm
ppm/TDS
Zero Cond? N
Feed OK W/Bld
No Feed W/Bld
Check Cal: dd
No Feed No Flow
Feed OK NoFlow




## VI. NanoTron Menu Map

NanoTron conductivity units have a main menu circle that includes:

**Calibration** - Calibrating the conductivity reading
**Bleed Set** - Setting the conductivity bleed (flush stop) setpoint and alarms
**Timer Set** - Select the timer type and run values
**Configure** - Password, flow switch direction, probe type, units of measure and more
**Water Meter** - Reset totalizer and setting contact value
**Clock Set** - Set time, date and week
**Force Set** - Set the force on time for manual relay activations
**Diagnostics** - Tests and calibration reset

## VII. 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 12 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.