SHARK*TX* & SHARK*TXP* MULTI-PARAMETER TRANSMITTER USER'S MANUAL

N116-35 Rev 3

A57-24

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Introduction

The SHARK*TX* & SHARK*TXP* multi-parameter transmitter is a microprocessor based transmitter capable of measuring one of the following parameters, pH, ORP, conductivity or flow.

When shipped from the factory, the Shark is not set to measure any one parameter. When the Shark is powered up for the first time, it will display the meter selection screen where the meter type must be selected. (refer to section 4.5 Meter Selection)

This meter selection screen will only be displayed when the Shark is powered up for the first time.

After the user selects a meter type the Shark will remain set to that meter type until it is changed with the meter selection menu function in the Utilities menu.

To return the Shark to its factory settings, the user must re-select the current meter type from the meter selection menu function. This will override all set-points and return all settings back to the factory settings.

The Shark Users menu has been divided into five main categories

- Calibration, used to calibrate the Shark with the selected sensor
- Utilities, used to manually control or override the outputs.
- Setup, used to configure the Sharks many options
- Diagnostics, used to troubleshoot problems with the Shark or sensor
- Outputs, used to configure the Shark's 4 to 20mA output.

SHARK*TX* is packaged in a rugged NEMA 4X polycarbonate enclosure with a universal mounting kit for surface, panel and pipe-mount applications. This enclosure is perfect for stand-alone or panel-mount operation.

SHARK*TXP* enclosure is also polycarbonate with a NEMA 4X front panel. Panel mount, and DIN rail mounting hardware are supplied.

Section I - Specifications

	pH	ORP	Conductivity	Flow
Display	2 x 16 alpha-numeric LCD display			
Power Requir ements	4 to 20mA, Loop Powered, 16 to 32 VDC			
Measuring Range	pH: 0.01 to 14.00 Temp: 0 to 100°C or 32° to +212°F	ORP: -1999 to +1999mV (Dependent on sensor) Temp: 0 to 100°C or 32° to +212°F	MΩ/cm³: 0 to 19.99 / 0.01 uS/cm³: 0 to 2.000 / 0.01; 0 to 20.00 / 0.1; 0 to 200.0 / 0.1; 0 to 5000 / 1.0 mS/cm³: 0 to 20.00 / 10; 0 to 200.0 / 50 Temp: 0 to 100°C or 32° to +212°F	Flow: 0 to 9999 with selectable flow rate units Volume: 0 - 999 with Auto Range Flow rate units: Gallons (GP), Cubic Feet (CF), Liters (LP), Cubic Meters (CM), custom by entering factor related to Gallons Time units: Seconds (S), Minutes (M) Hours (H)
Temperatur e Compensation	Automatic or Manual 0 - 100°C (32° to +212°F)	Not required	Automatic or Manual User selectable temperature compensation slope 0.0 to 10.0%/°C. 0 to 100°C (32° to +212°F)	Not required
Temperatur e Unit	°C or °F			Not required
Temperatur e Sensor	User selectable: 300Ω NTC Thermistor, 3000Ω NTC Thermistor or Pt. 1000 RTD			Not required
Calibration Modes	Auto-Calibration Manual Calibration Temperature Calibration	Manual Calibration Temperature Calibration	Dry Calibration Sample Calibration Temperature Calibration	K factor Input
Ambient Conditions	Temperature: -20°C to +60°C or -4°F to +140°F Humidity: 0 to 90% RH (non-condensing)			
Sensor to Transmitter Distance	Differential Sensor: 3000 ft Combination Sensor: 10 ft		300 ft	2000 ft
Analog Output	4 to 20mA Isolated Output, Range expand 0 to 100% of full scale (min segment 10% of full scale), max. load 800Ω			
Memory Back-up	All user settings are retained indefinitely in memory (EEPROM)			
Mechanical	SHARK*TX* Enclosure: NEMA 4X, 1/4 DIN, polycarbonate enclosure with two 1/2" conduit holes SHARK*TXP* Enclosure: NEMA 4X front panel, 1/4 DIN, polycarbonate			
	SHARK*TX* Mounting: Universal Mounting kit for surface, pipe and panel mount included SHARK*TXP* Mounting: Panel and DIN rail mount included			
Sensor Input	Probe: -600 to +600mV Temp. Sensor: 0 to 9999Ω	Probe: -1999 to +1999mV Temp. Sensor: 0 to 9999Ω	Cell: 0 to 9999Ω Temp. Sensor: 0 to 9999Ω	Paddle: 0 to 2000Hz
Invalid Entries	Invalid entries cannot be stored			
Manual Test Mode	Process value can be simulated with arrow keys to verify correct setup of output			
Output Hold	4 to 20mA output is placed on hold when the transmitter is in Menu mode			
Calibration Data	Recall data from last calibration, calibration mode, 1st & 2nd accepted buffer value and probe mV output, calibration temperature, calibration slope, and probe efficiency		Recall data from last calibration, calibration buffer accepted value, and cell resistance, calibration temperature	Recall store K factor.
Auto Retur n	User selectable auto return if the transmitter is left in menu mode for more than 10 min.			
Display Damping	User can select rate at which the transmitter updates display. Enables display damping of unstable process			
Net Weight	SHARK*TX*: 0.71 lbs (0.32 kg) SHARK*TXP*: 0.25 lbs (0.12 kg)			
Appr ovals	ULC (pending)			

Section 2 - Installation

2.1 Unpacking

Save the shipping carton and packing material in case the instrument needs to be stored or returned. Inspect the instrument and packing material for shipping damage and report any problems immediately.

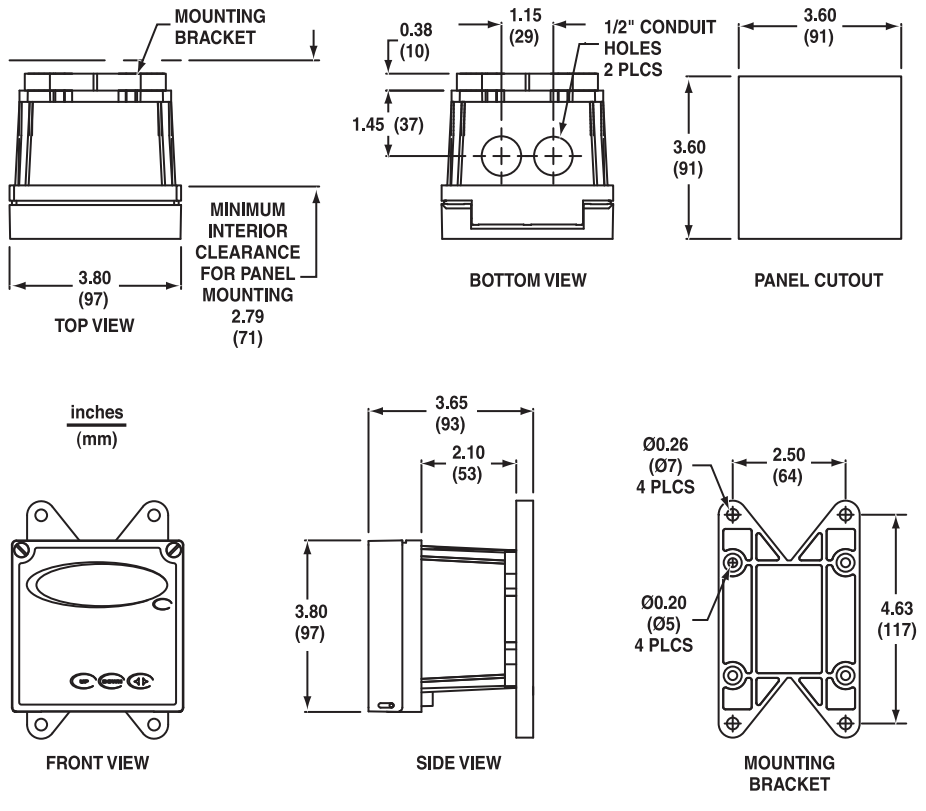
2.2 Location

Locate the transmitter close to the sensor. The list below gives typical maximum distances for various sensors. Refer to the sensor specifications for exact information.

- Aquametrix Differential PH Probe 3000 ft (914 meters)
- Aquametrix Combination PH Probe 10 ft (3 meters)
- Aquametrix Conductivity Probe 300 ft (91 meters)
- Aquametrix Flow sensor 2000 ft (610 meters)

2.3 Mounting

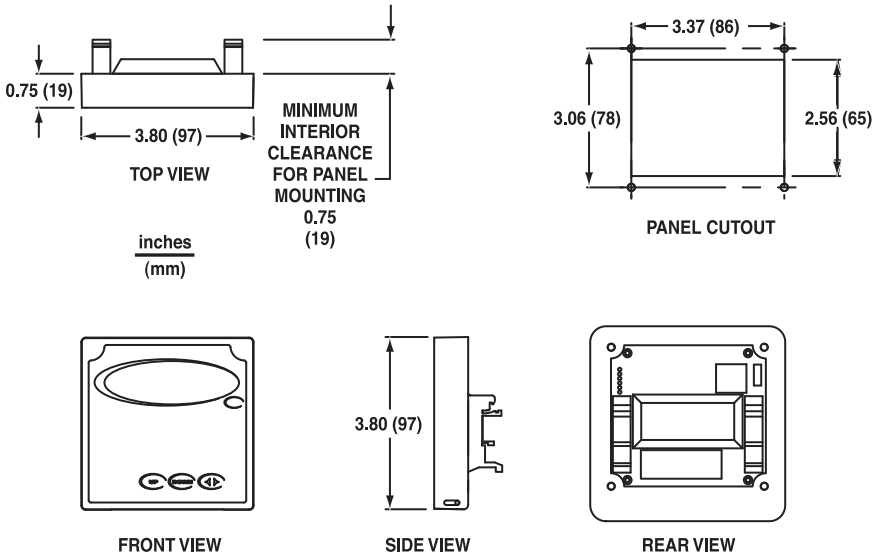
Fig 2.1 SHARK*TX* Transmitter dimensions



Dwg# N106-128

Section 2 - Installation

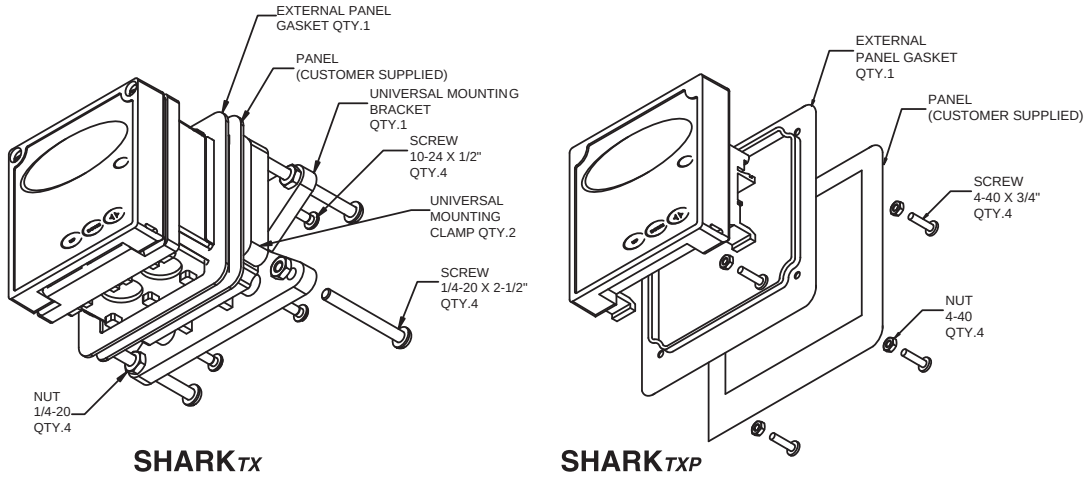
Fig 2.2 SHARK*TXP* Transmitter dimensions



Dwg# N106-129

Panel Mount – The transmitters can be panel mounted to a panel using the hardware kit provided. The panel cutout dimensions are shown in fig. 2.1 and 2.2.

Figure 2.3 Panel Mount



Dwg# N105-101 & N105-104

Section 2 - Installation

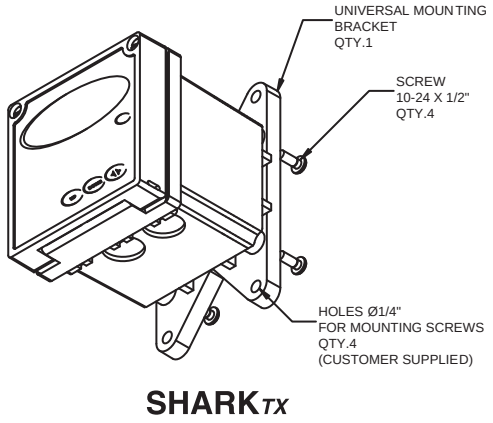
Surface Mount – The SHARK*TX* can be surface mounted using the hardware kit provided with the unit.

Pipe Mount – The SHARK*TX* can be mounted to a horizontal or vertical pipe with:

- a minimum outside diameter of 1.30" (33mm) (for example 1" CPVC pipe)
- and a maximum of 2.375" (60mm) (for example 2" CPVC pipe)

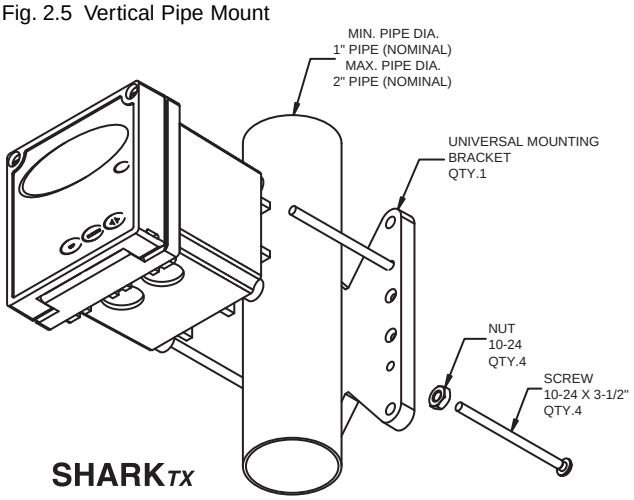
DIN Rail Mount – The SHARK*TXP* can be DIN rail mounted or panel mounted. See figure 2.3 & figure 2.7.

Figure 2.4 Surface Mount



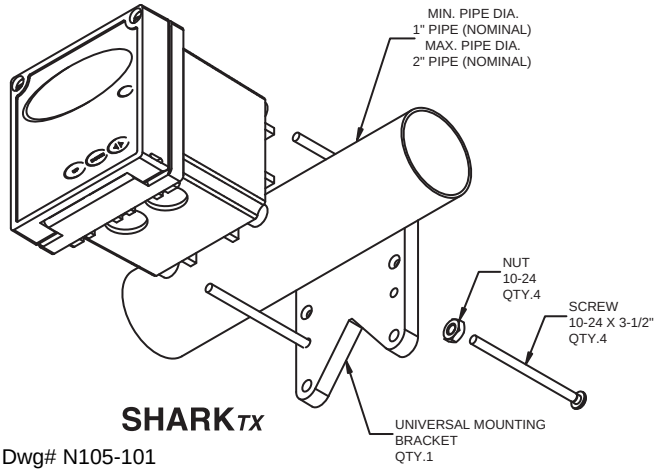
Dwg# N105-101

Fig. 2.5 Vertical Pipe Mount



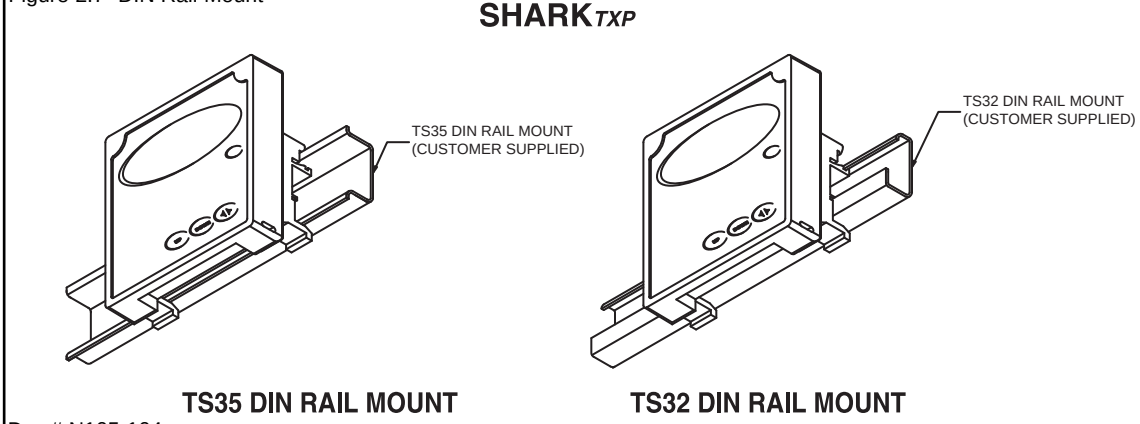
Dwg# N105-101

Figure 2.6 Horizontal Pipe Mount



Dwg# N105-101

Figure 2.7 DIN Rail Mount



Dwg# N105-104

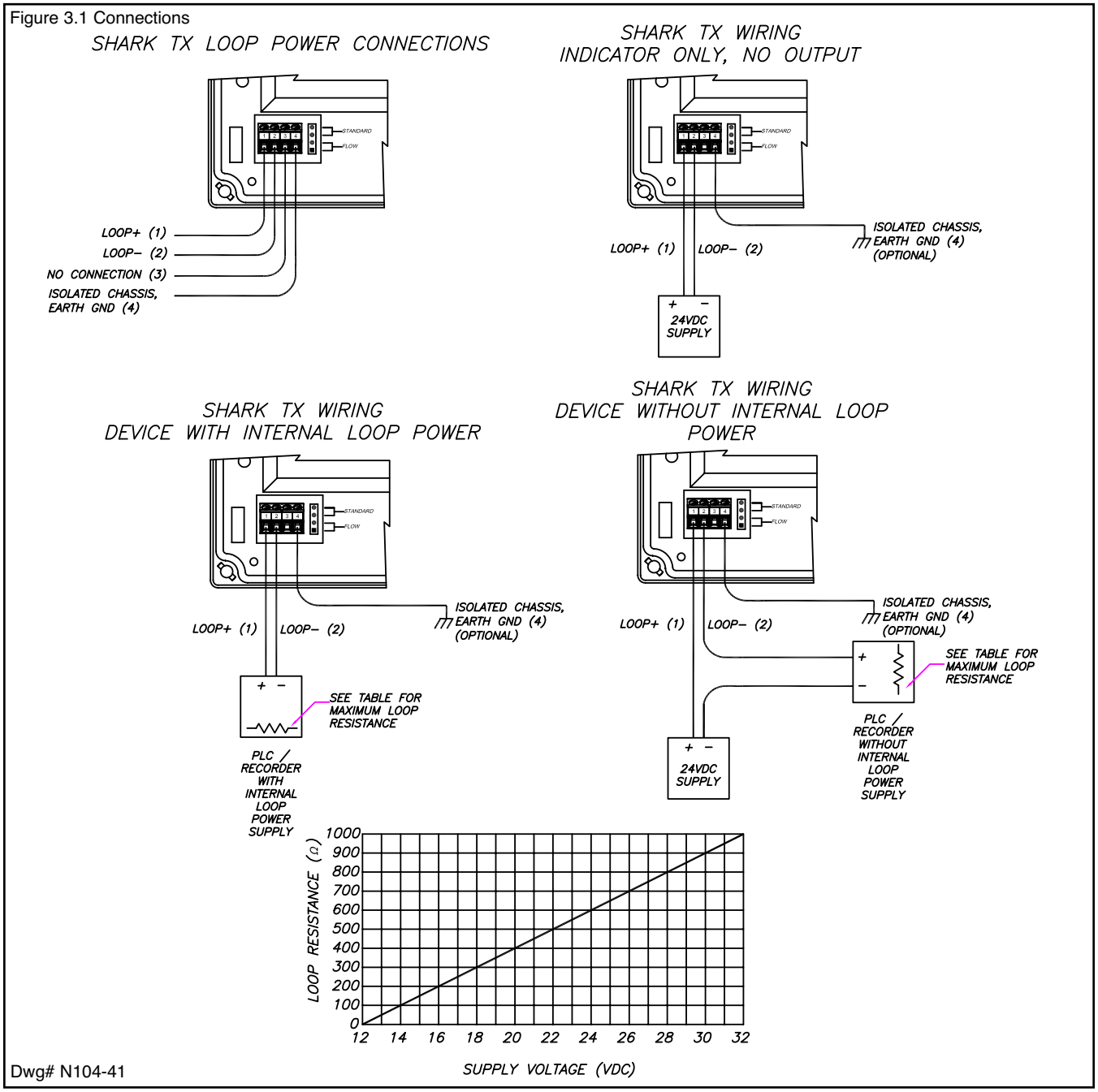
Section 3 - Electrical Connections and Setup

3.1 Conduit Connections

The SHARK*TX* has two 1/2" conduit holes at the bottom of the enclosure as shown on fig. 2.1. The unit is shipped with these holes plugged with liquid tight conduit seals. These must be left in unused holes to maintain the NEMA 4X integrity. Use approved conduit hubs to connect the conduit, connect these to the conduit before connecting to the enclosure.

3.2 Power Connections

Figure 3.1 Connections



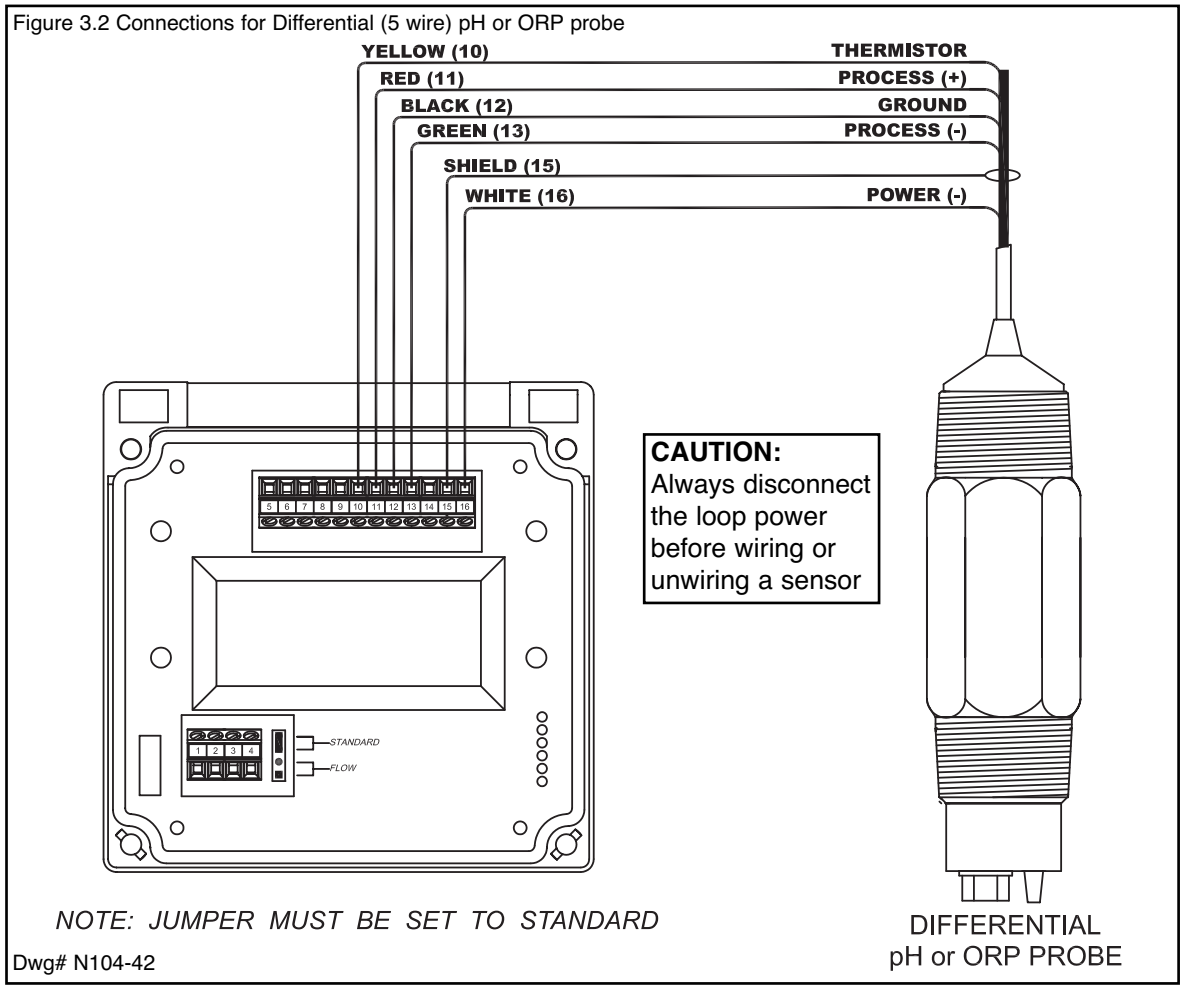
Dwg# N104-41

Section 3 - Electrical Connections and Setup

3.3 pH and ORP Differential Probe connections and setup

The drawing shows the connections for the Aquametrix Differential (5 wire) probe. The cable should be run in a conduit separate from AC power wires, and via a separate conduit hole.

Figure 3.2 Connections for Differential (5 wire) pH or ORP probe



Dwg# N104-42

Once connected, step through the LCD menus to select the probe in the order shown. The first two steps may be skipped if the meter is already configured for pH or ORP and a Differential Probe.
When using a pH probe, it is important to ensure that the transmitter is reading the probe temperature correctly for accurate temperature compensation. The ORP probe does not require temperature compensation, although the transmitter can display process temperature measured by the probe. The factory temperature calibration is usually accurate enough that no adjustments are necessary.

METER SELECTION	SELECT pH SEC. 4.6 or ORP SEC. 5.5 (IF NECESSARY)
PROBE SELECT	SELECT DIFFERENTIAL PROBE pH SEC. 4.7 or ORP SEC. 5.6 (IF NECESSARY)
MANUAL CAL PH	MANUAL CALIBRATE pH PROBE SEC. 4.1 or ORP PROBE SEC. 5.1
7.15pH 25.0C	RUN MODE

Section 3 - Electrical Connections and Setup

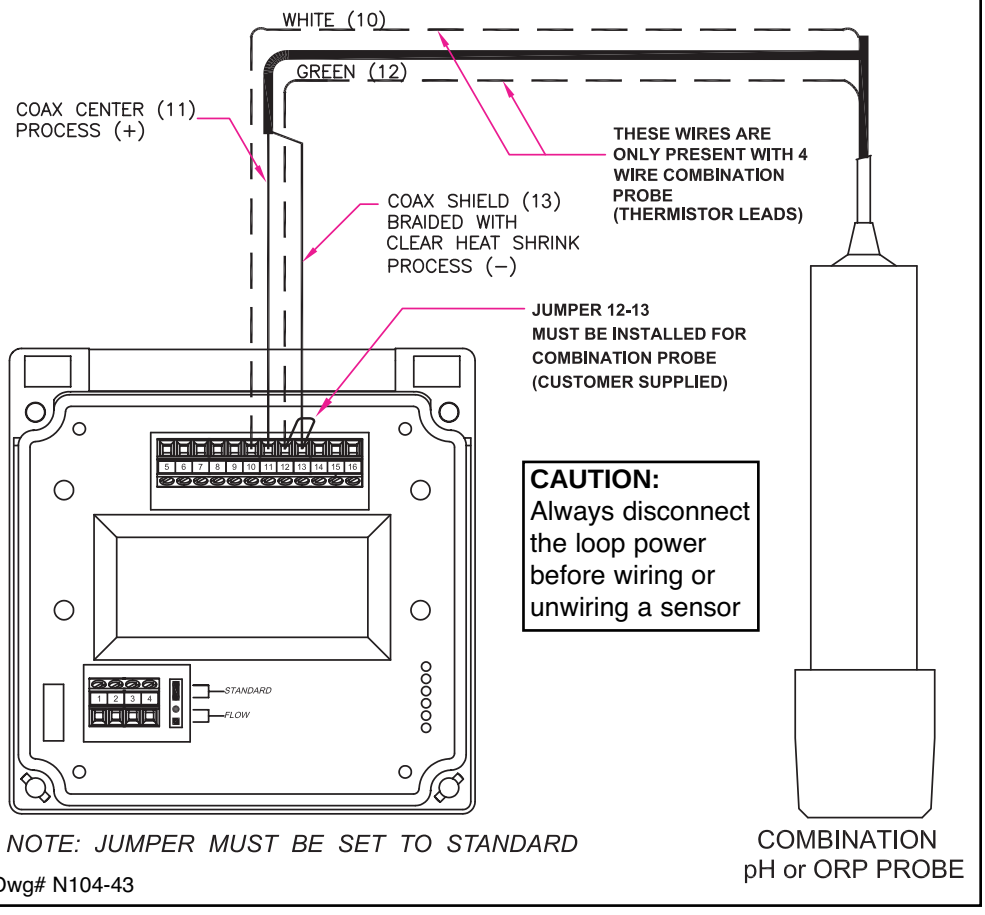
3.4 pH or ORP Combination Probe connections and setup

The drawing shows the connections for the Aquametrix Combination probe. The cable should be run in a conduit separate from AC power wires, and via a separate conduit hole. The cable length should not exceed 10 feet (3 meters).

The **2 wire** version has no temperature sensor and is connected via a coaxial wire.
In a pH meter, the user should set the **T COMP OVERRIDE** menu to **ON** (Section 4.10) and adjust the temperature setting to the actual probe temperature.
In an ORP meter, the user should set the **T.DISP OVERRIDE** to **ON** (Section 5.9) to blank the temperature reading on the display.

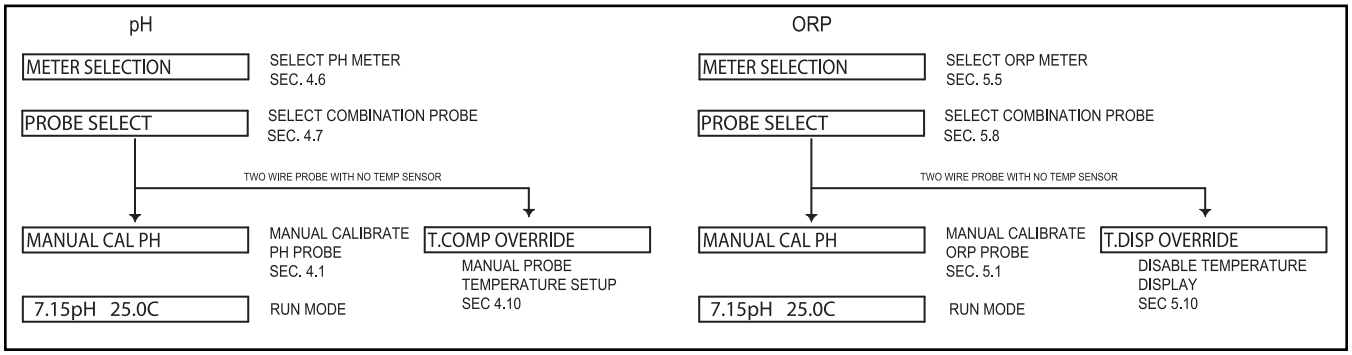
The **4 wire** version has two additional wires for the probe internal temperature sensor. Ensure that the **T COMP OVERRIDE or T.DISP OVERRIDE** is **OFF.**

Fig. 3.3 Connections for the 2 and 4 wire Combination Probe



Dwg# N104-43

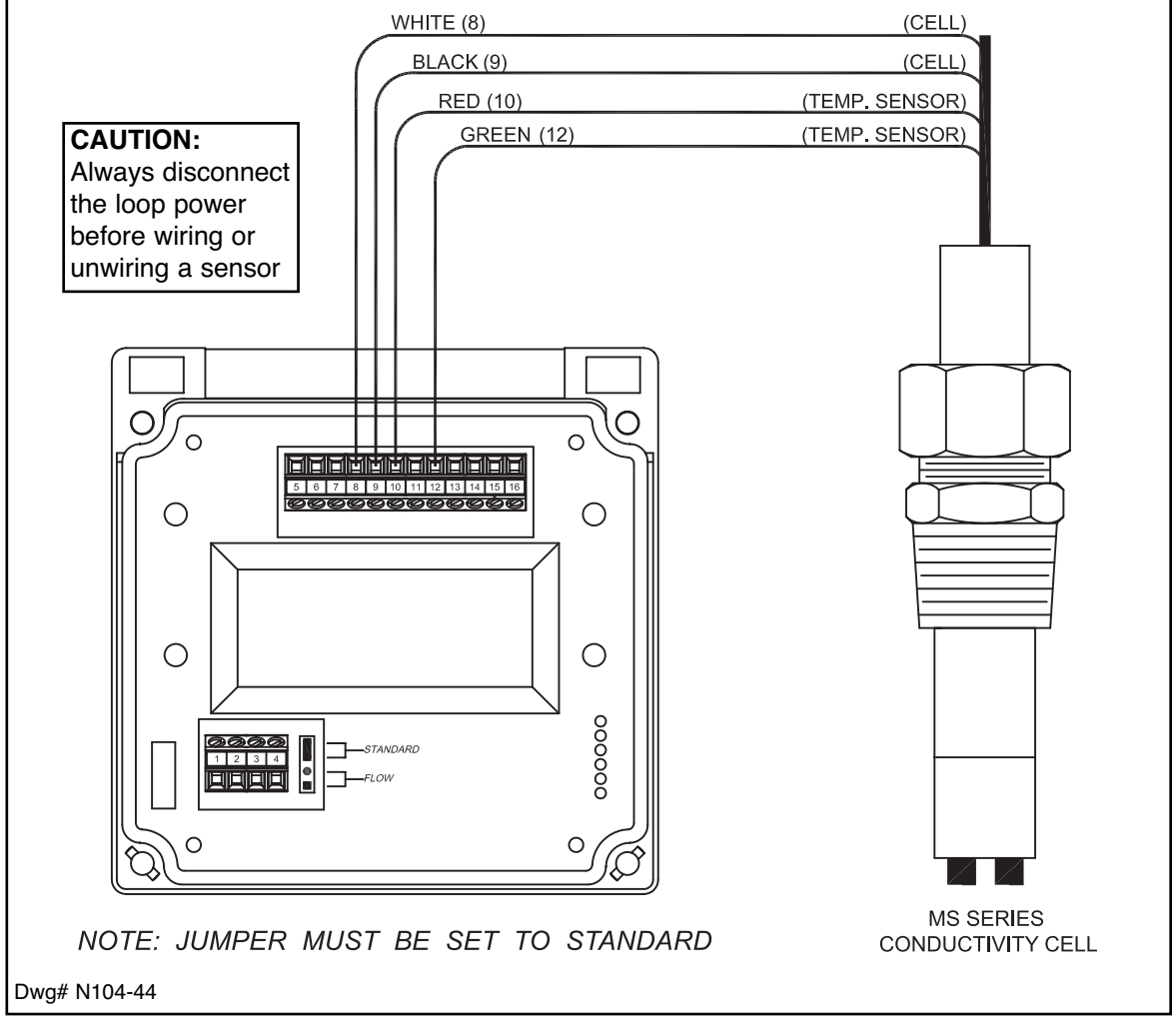
Once connected, step through the LCD menus to select the probe in the order shown. The first two steps may be skipped if the meter is already configured for a Combination Probe. If a two wire pH probe is used, which has no temperature sensor, ensure that the Temp. Comp. Override is set to same temperature as the buffer before calibrating. If a two wire ORP probe is used, you can blank the Temp display with the T DISP OVERRIDE menu.



3.5 Conductivity Cell (Contacting style) connections and setup

The drawing shows the connections for the Aquametrix Conductivity Cells (Contacting style). The cable should be run in a conduit seperate from the AC power wires, and via a seperate conduit hole. The cell cable length should not exceed 300ft. (91 meters).

Figure 3.4 Connections for Conductivity Cells



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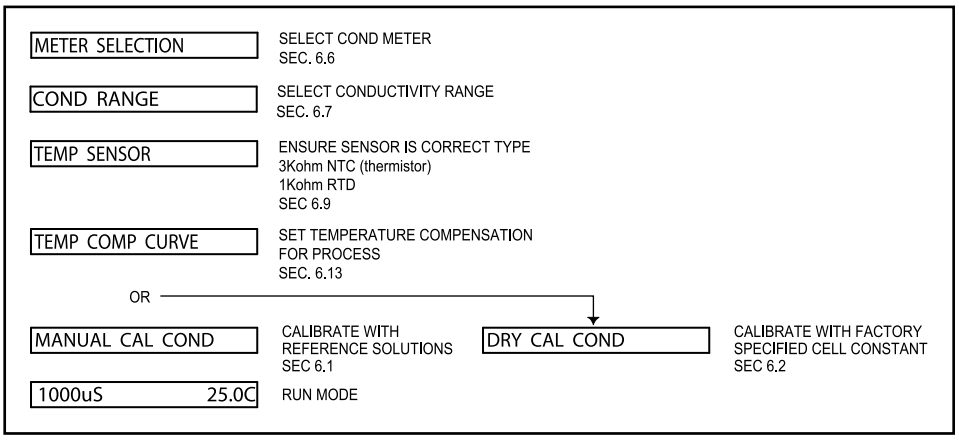
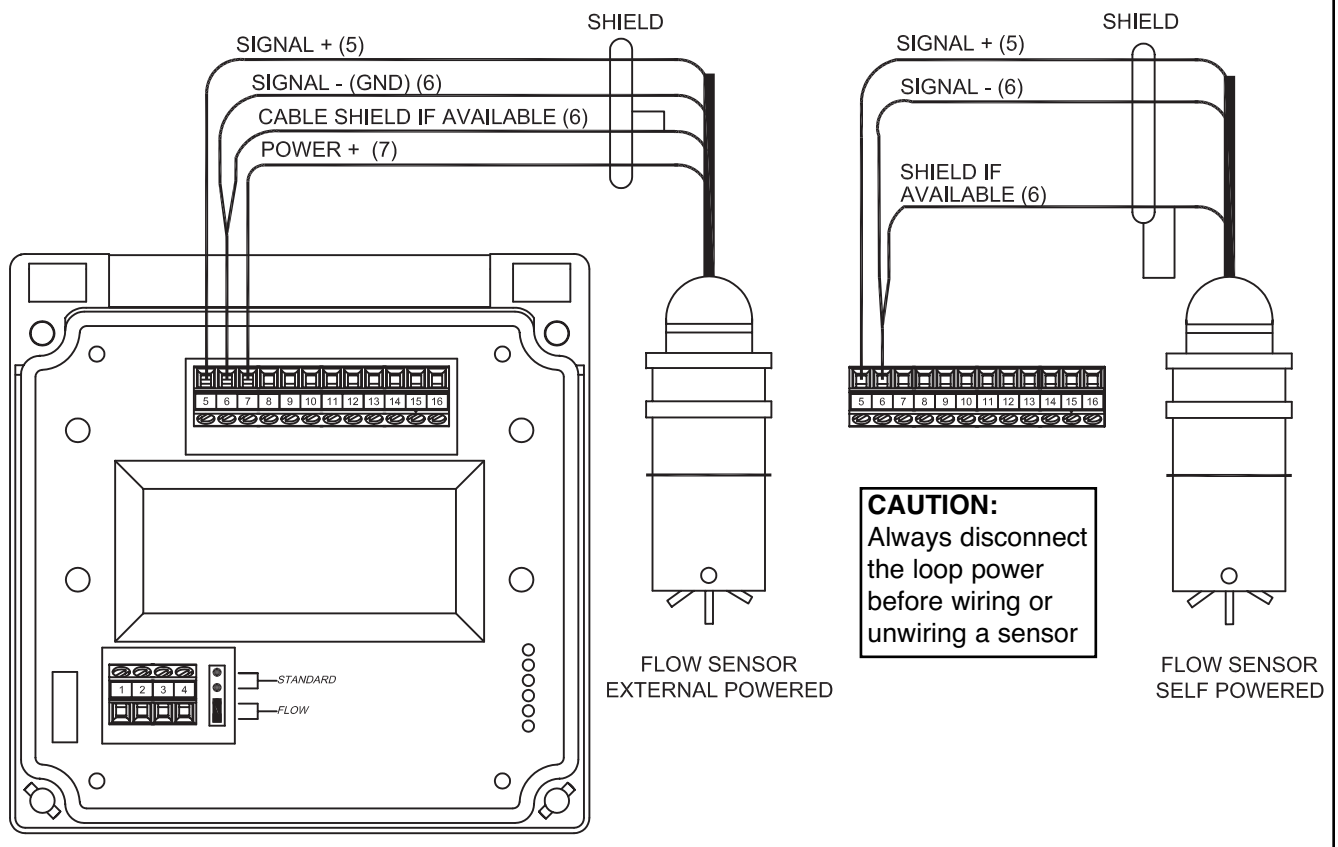
Once connnected, step through the LCD menus to select the cell in the order shown. The TEMP COMP CURVE setup default is 1.8%/deg C. This is acceptable for most process applications. If your process is significantly different from this, change the setting in the TEMP COMP CURVE menu.



3.6 Paddle Wheel Flow Sensor connections and setup

The drawing shows the connnections for a typical paddle wheel flow sensor. The cable to the sensor should not exceed 2000' (600 meters).

Figure 3.5 Connections for Flow Sensor



NOTE: JUMPER MUST BE SET TO FLOW

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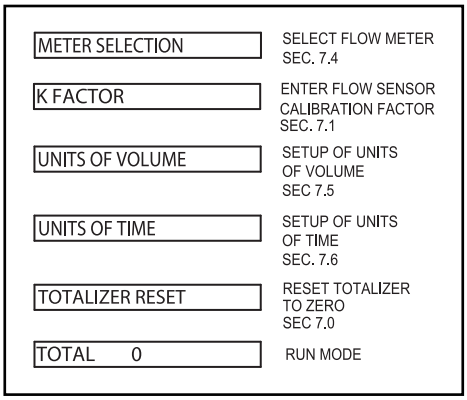
Once connected, step through the LCD menus to select the sensor in the order shown. The Sensor K factor (pulses per U.S. Gallon) is usually printed on the side of the sensor or on a label attached to the sensor cable.



3.10 MANUAL TEST MODE

(LCD MENU SECTIONS - pH: 4.4, ORP: 5.3, Conductivity: 6.4, Flow: 7.2)

The setup can be tested using Manual Test Mode to simulate process changes.

MANUAL TEST MODE is used to simulate a process reading in order to verify the correct response of the output.

3.11 4-20 mA Isolated Output

(LCD MENU SECTIONS - pH: 4.15, ORP: 5.14, Conductivity: 6.16, Flow: 7.14)

The Transmitter has a single 4 to 20mA output, electrically isolated from the ground. The output can source current into a resistive load. Maximum resistance depends on supply voltage. Drawing on page 6 (Fig. 3.1)

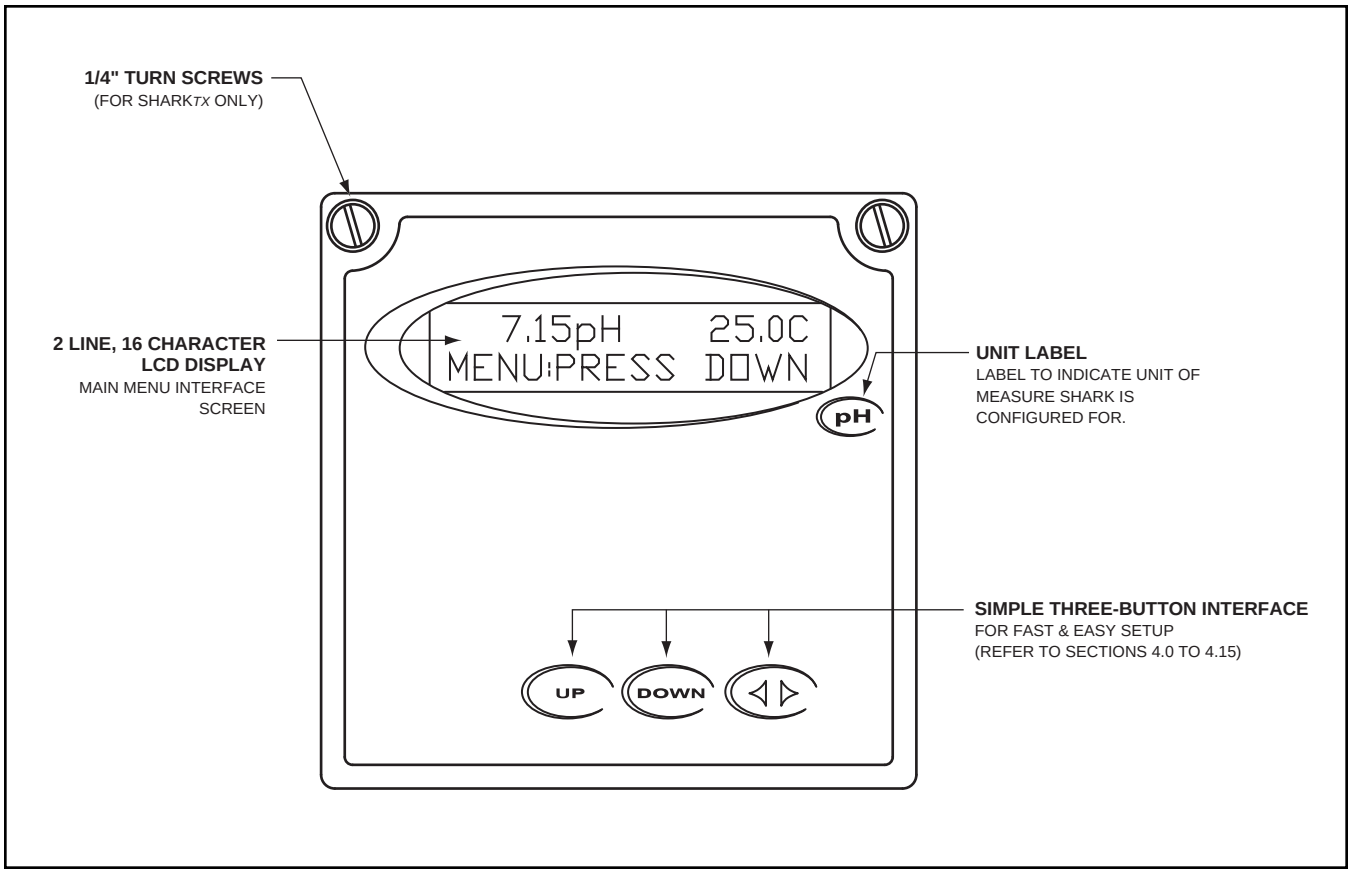
The output is dedicated to track the process and has fully independent and fully adjustable 4 & 20 mA output setpoints. This will enable the operator to span the output over the desired range.

The output can be precisely trimmed through the LCD menu for precision applications.

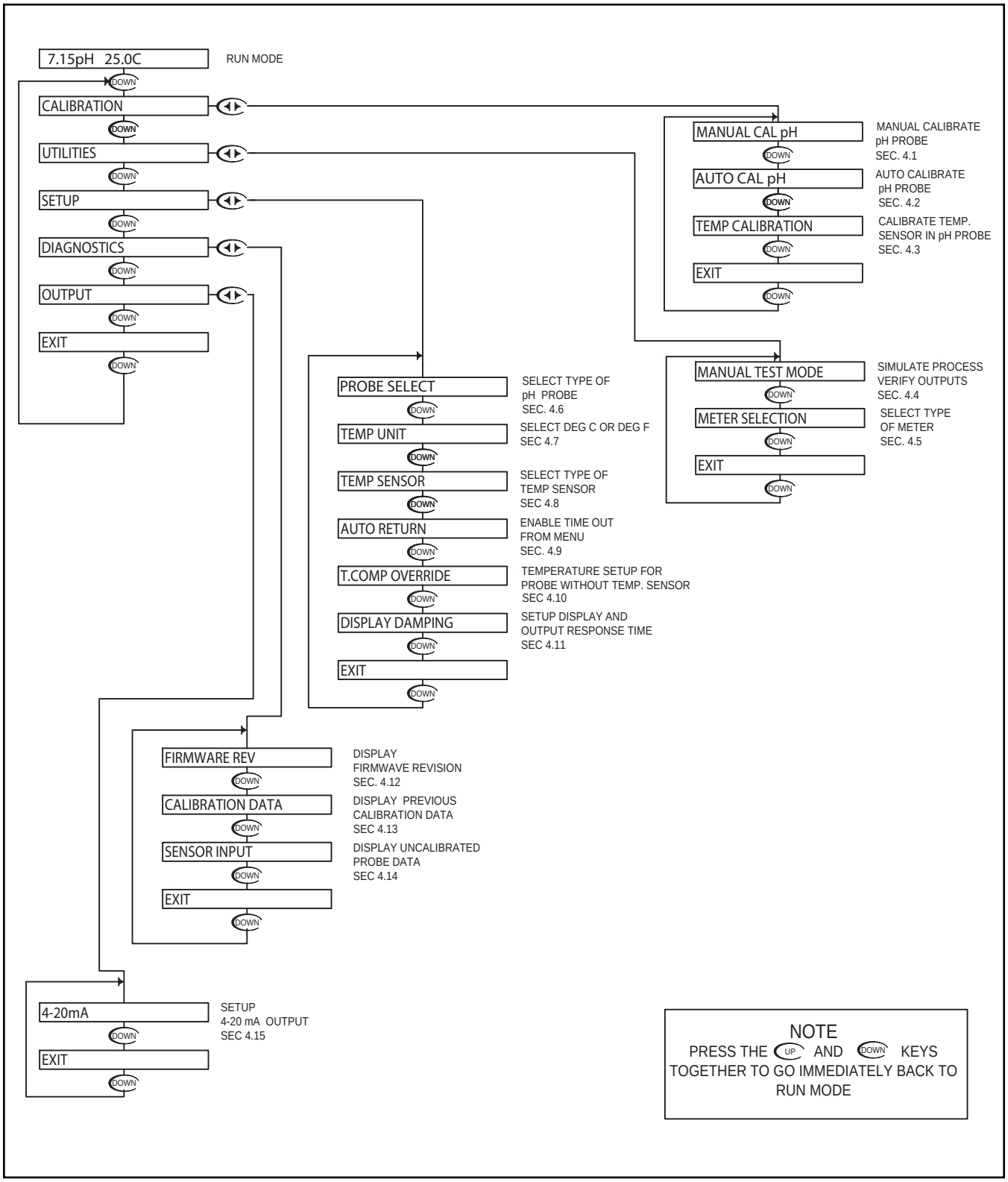
The drawing on page 6 (Fig. 3.1) shows the connections for the output.

Wire Specification: 22 AWG 7/30, insulation 0.010"

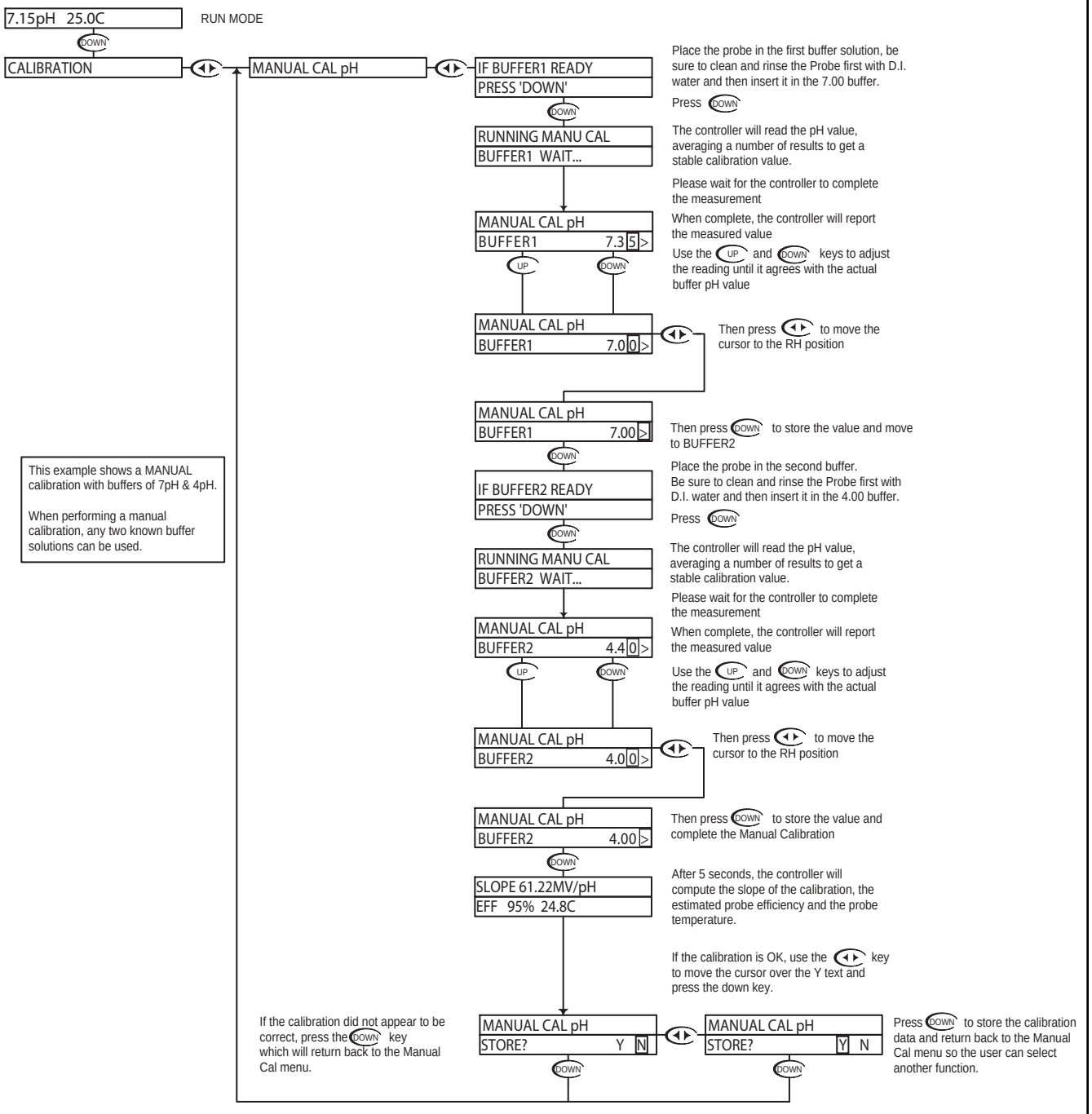
Section 4 - Using the Transmitter in pH Mode



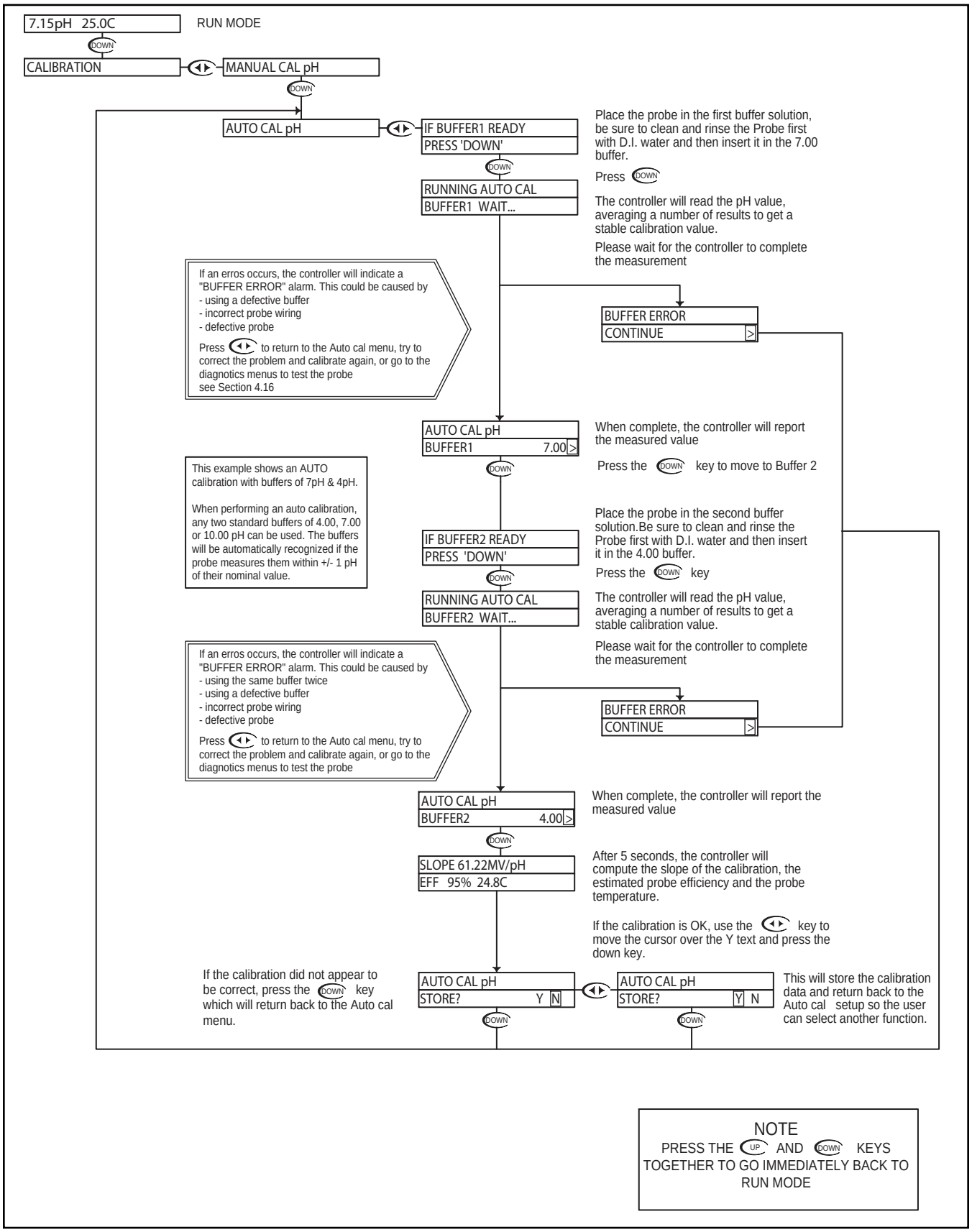
pH - Menu Overview 4.0



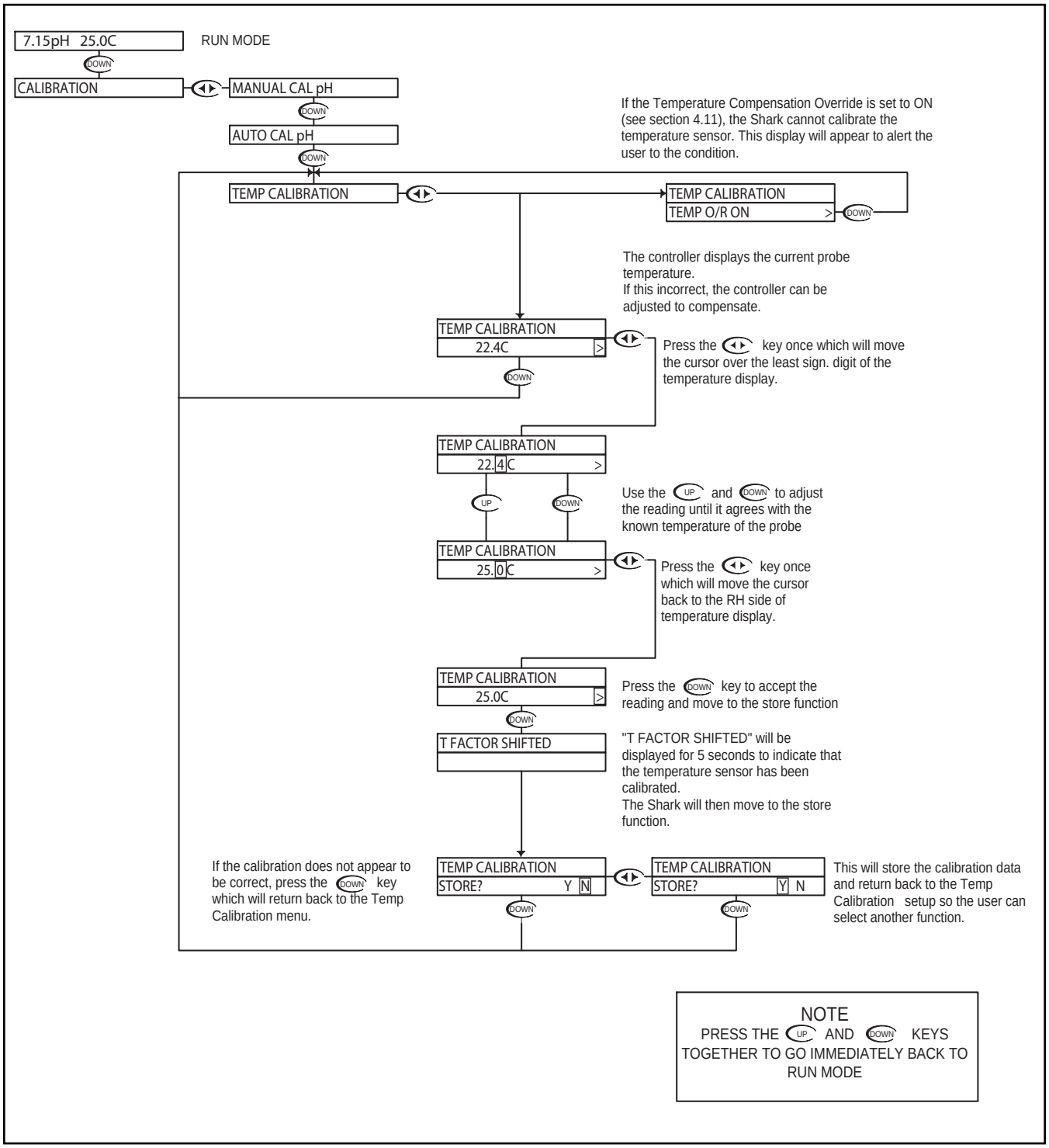
pH - Calibration Menu - Manual Calibrate 4.1



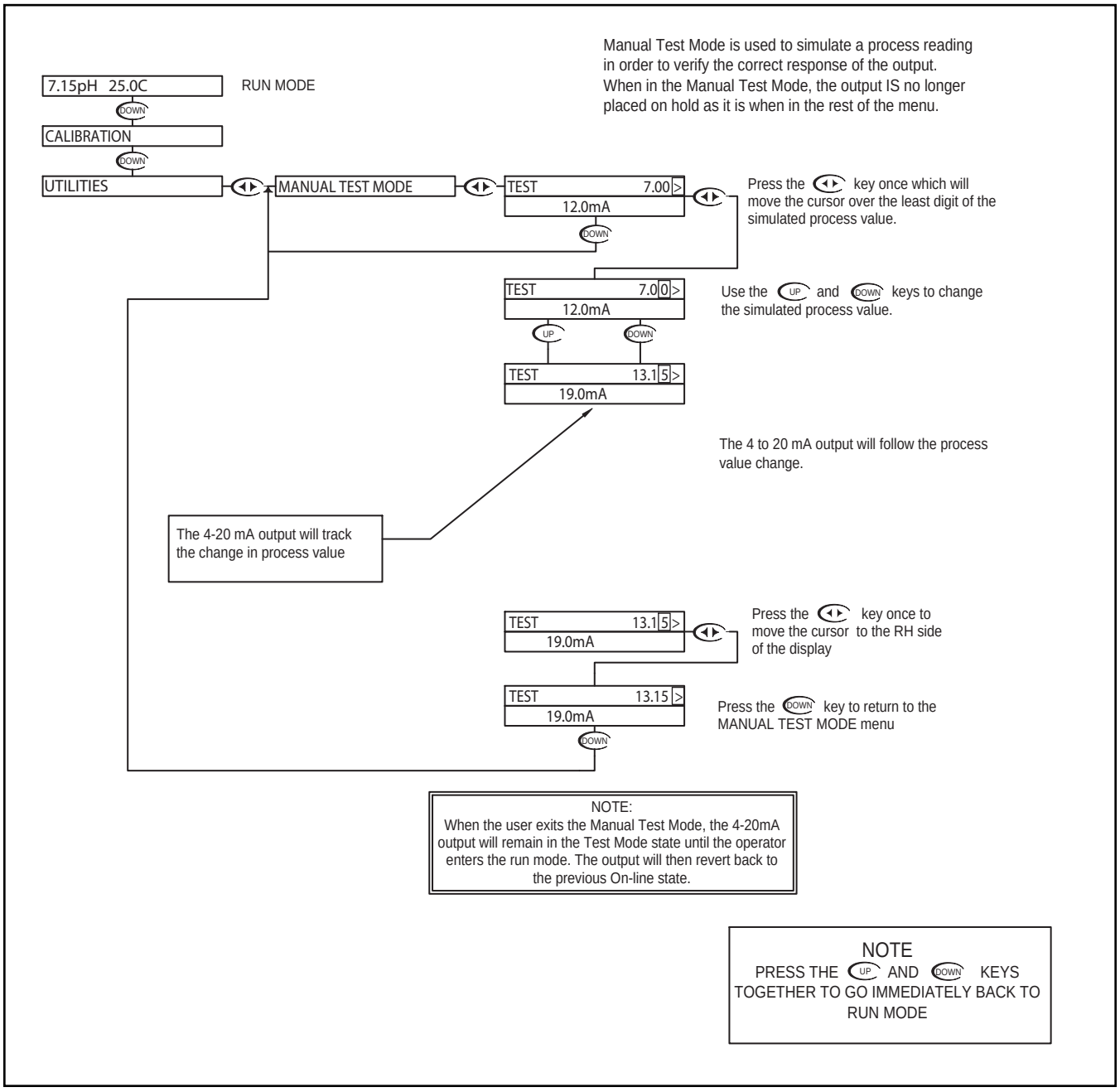
pH - Calibration Menu - Auto Calibrate 4.2



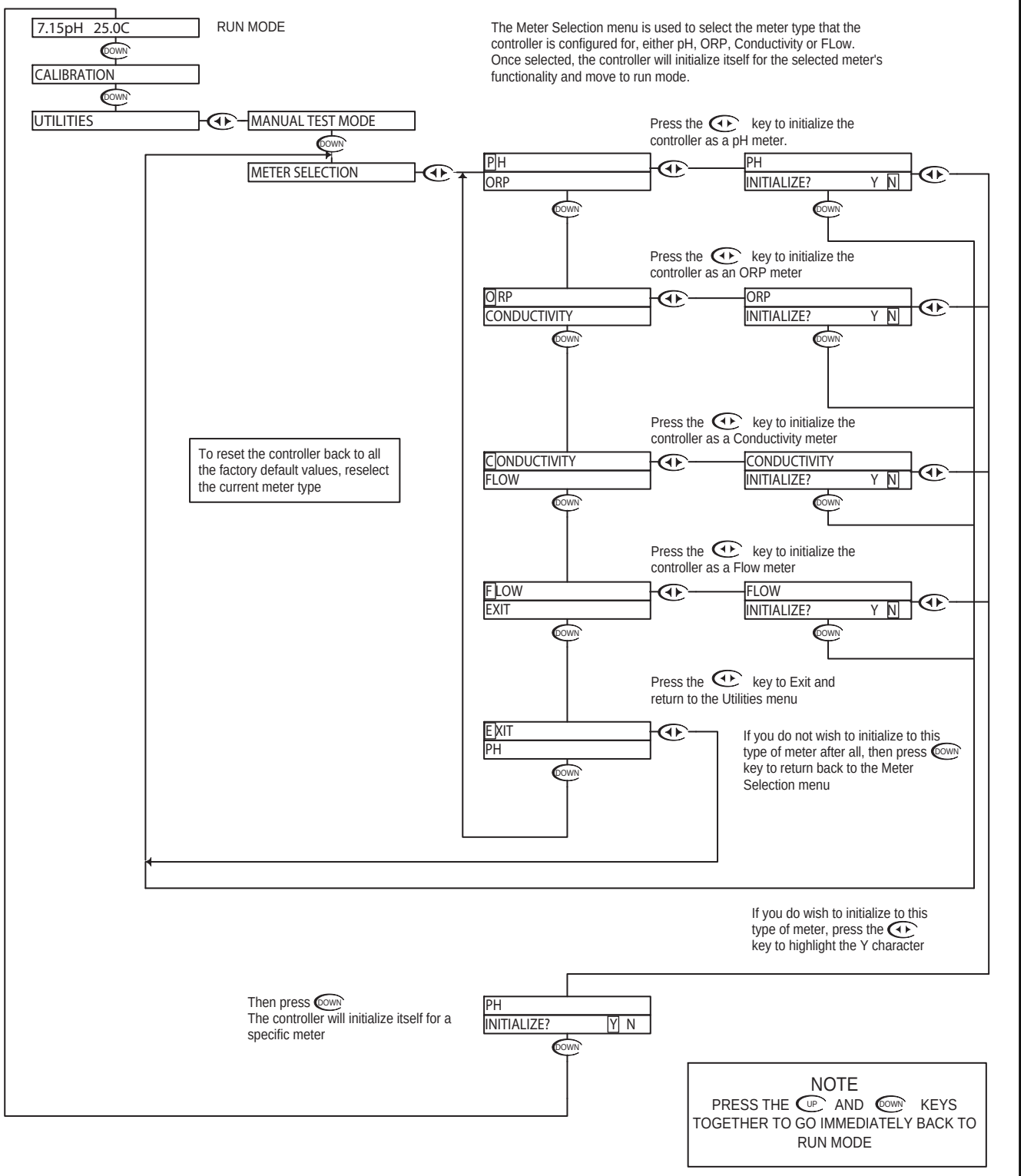
pH - Calibration Menu - Temperature Calibration 4.3



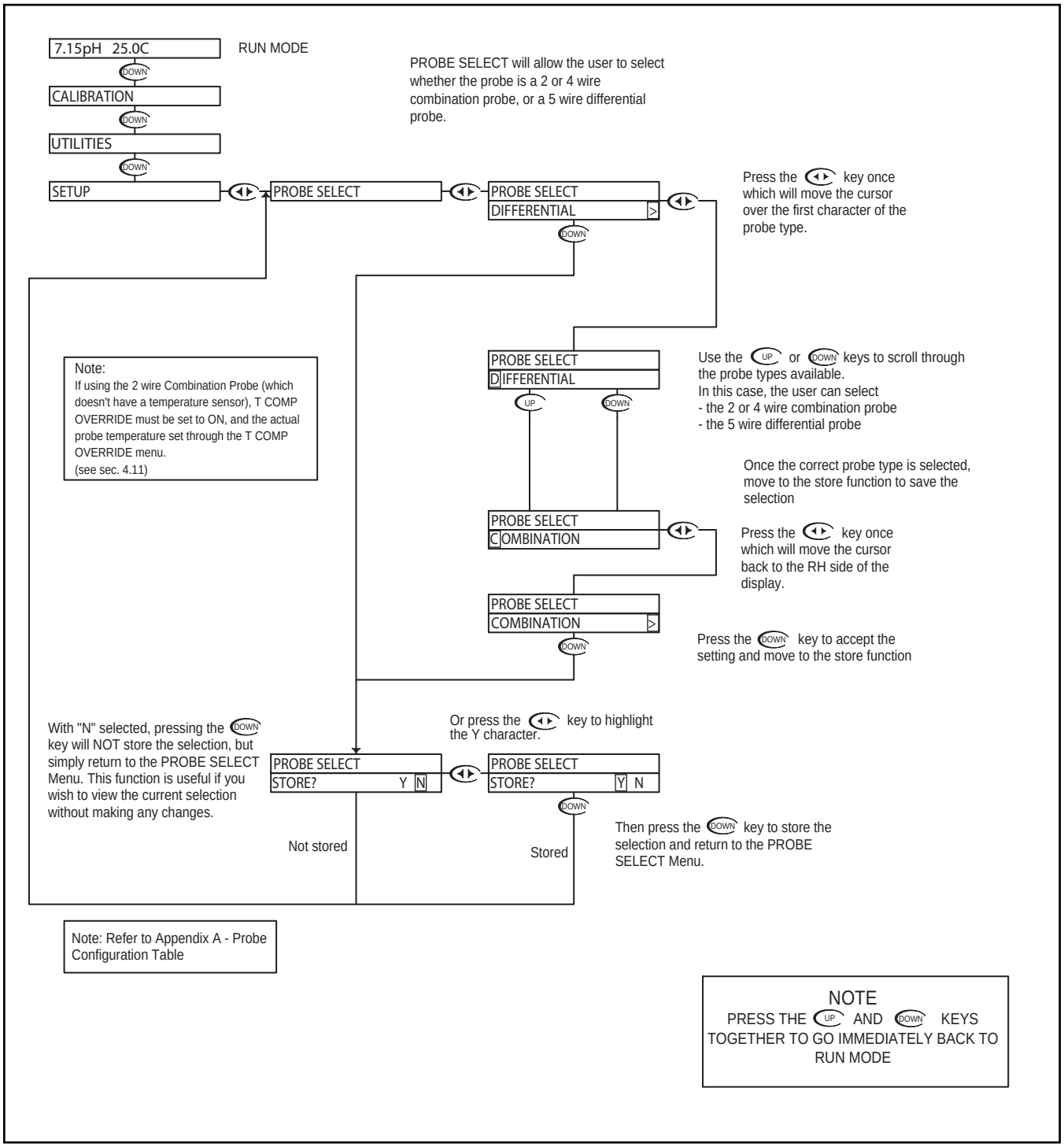
pH - Utilities Menu - Manual Test Mode 4.4



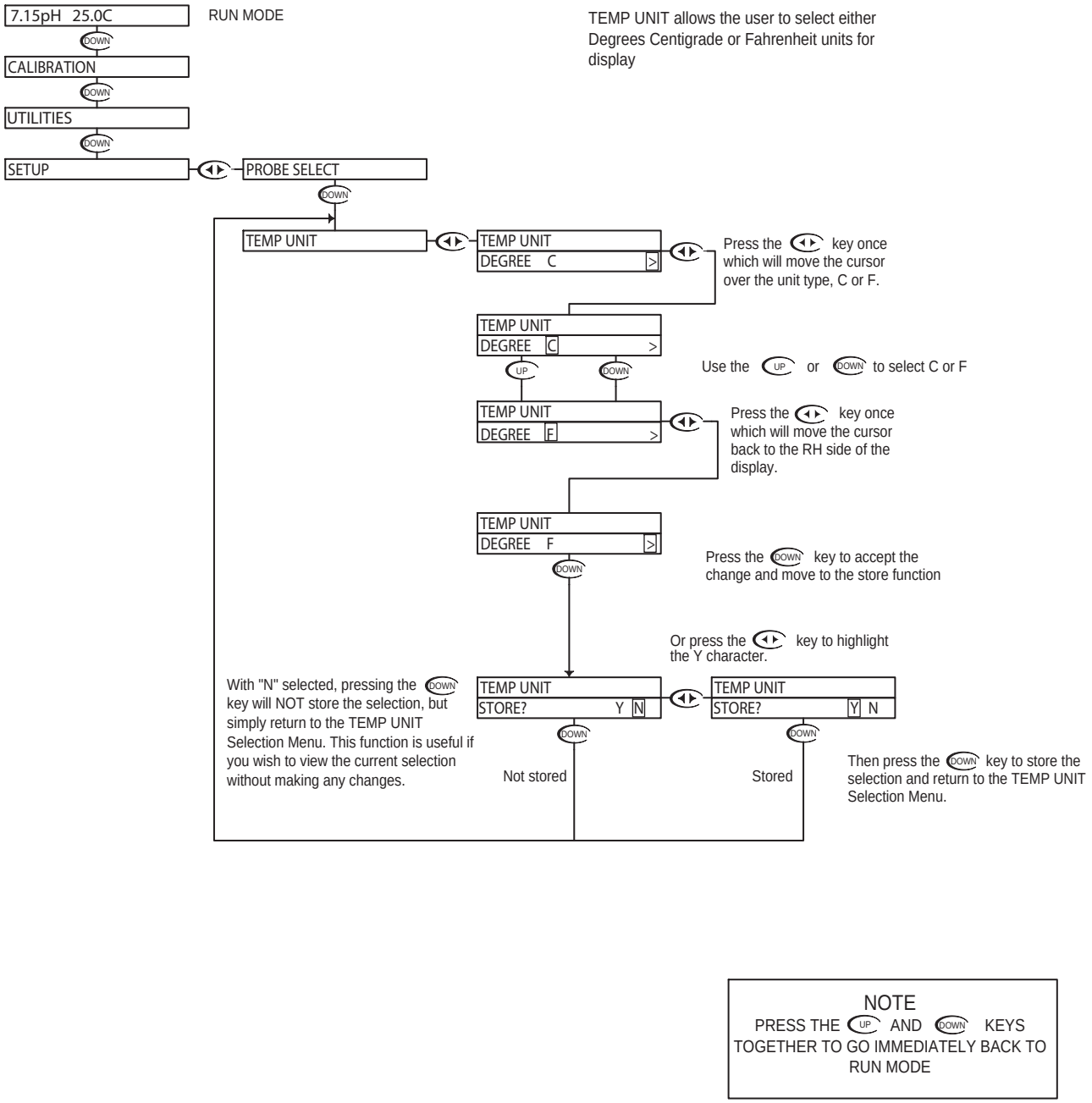
pH - Utilities Menu - Meter Selection 4.5



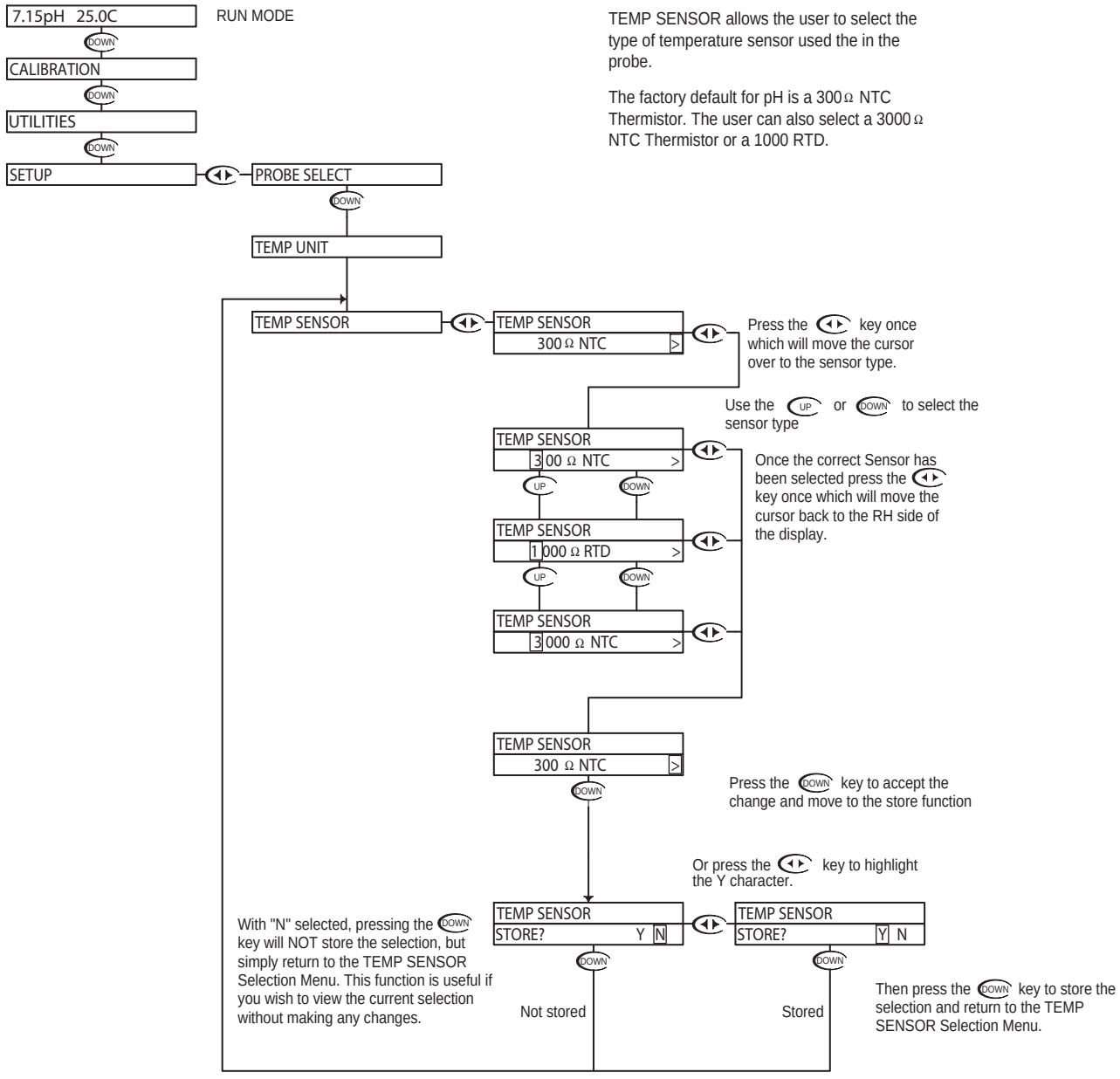
pH - Setup Menu - Probe Select 4.6



pH - Setup Menu -Temp Unit 4.7

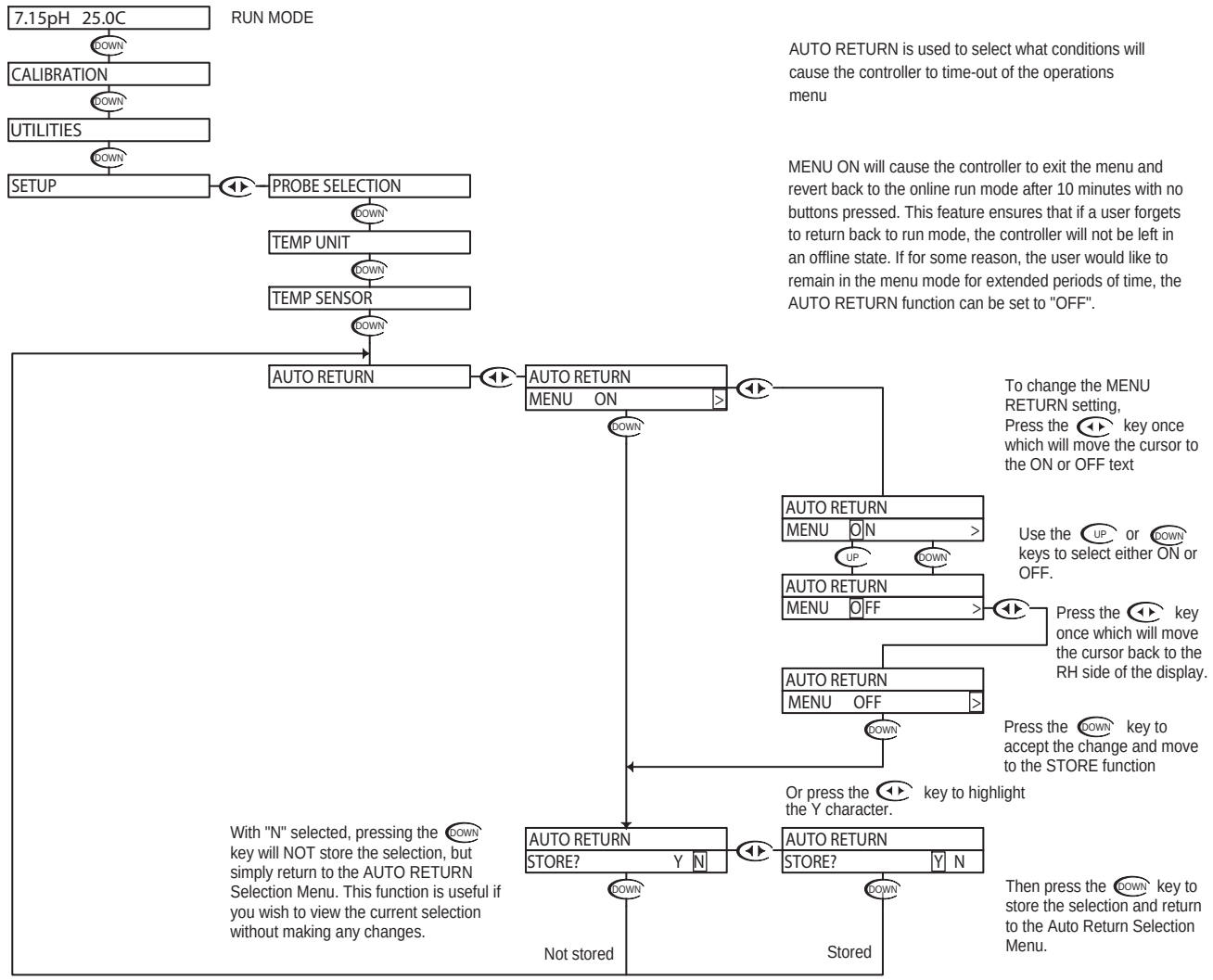


pH - Setup Menu - Temp. Sensor 4.8

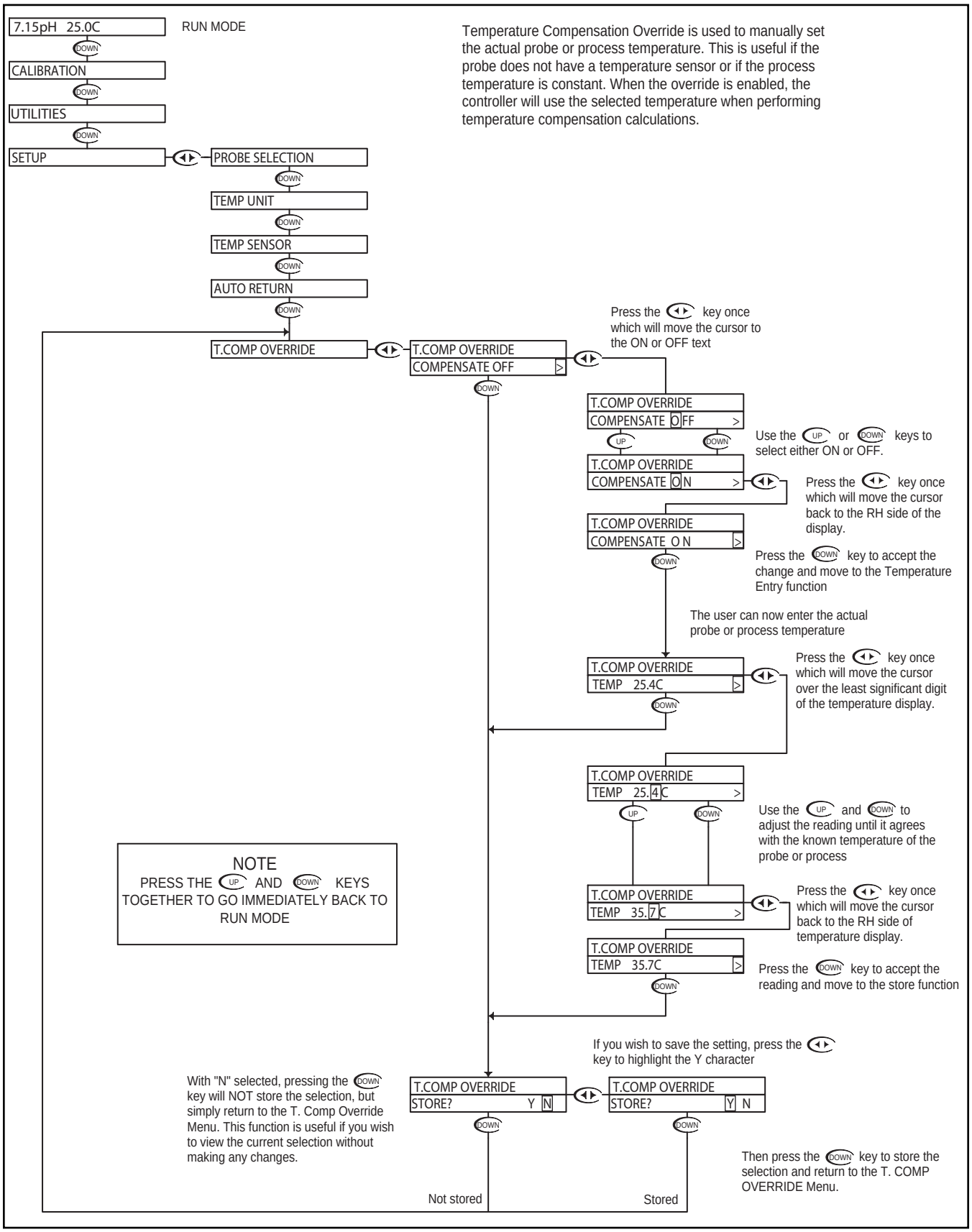


NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

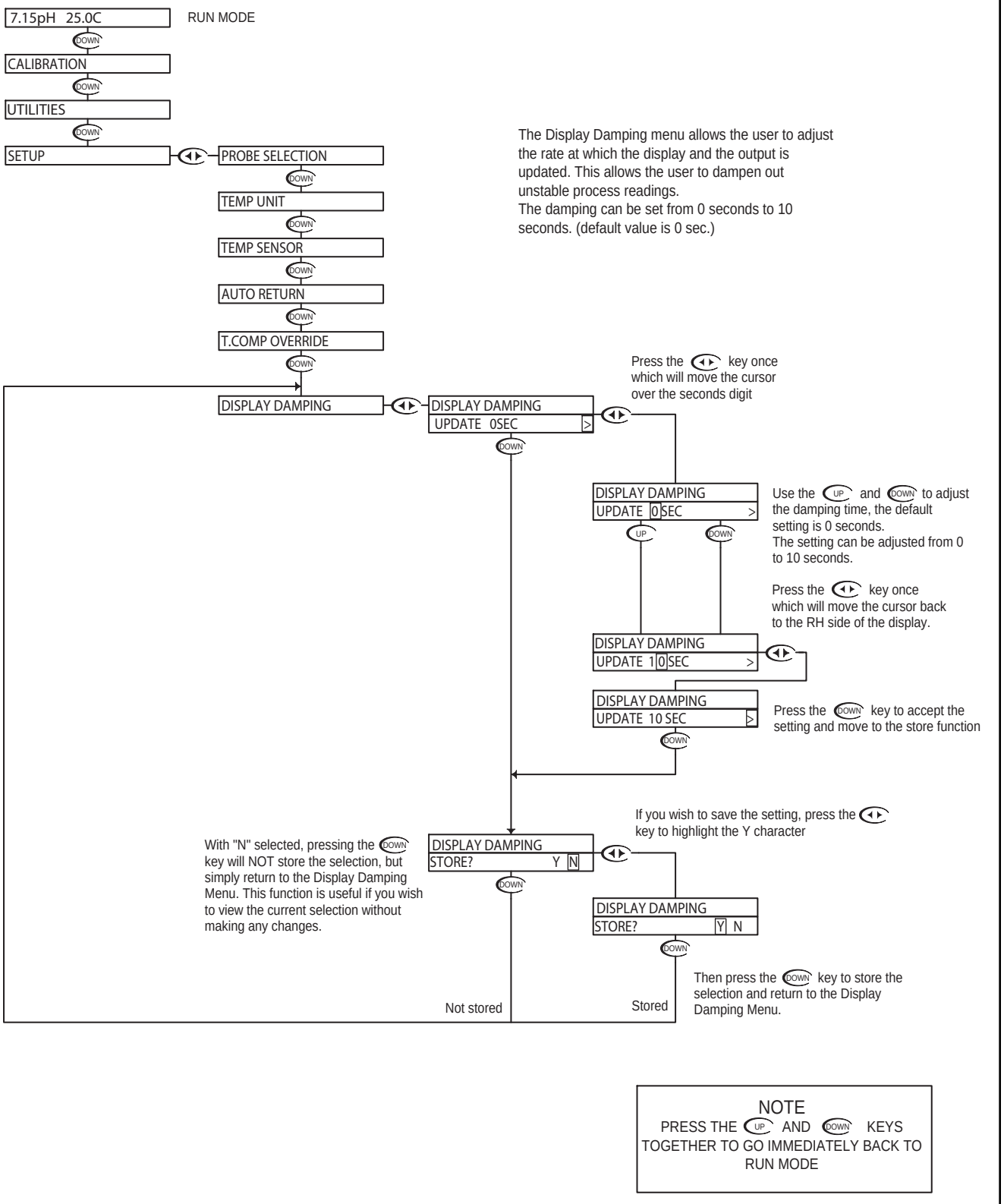
pH - Setup Menu - Auto Return 4.9



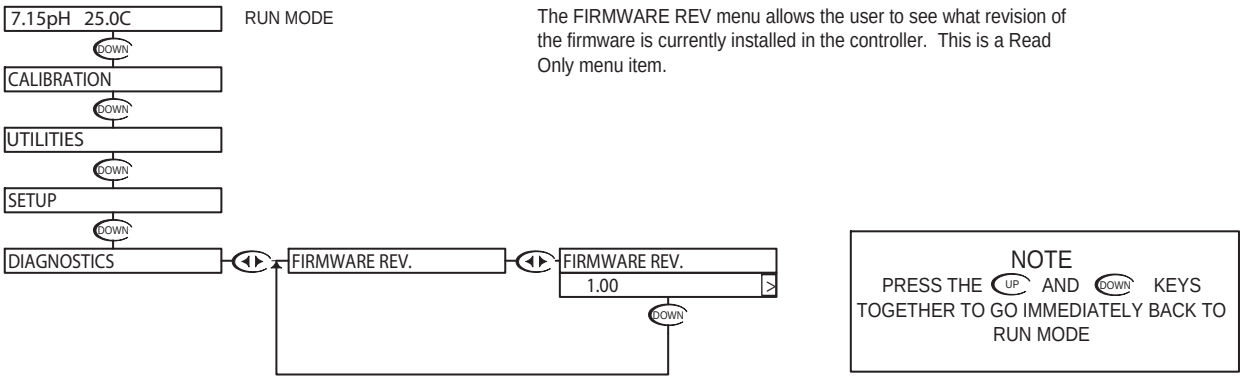
pH - Setup Menu - T.Comp Override 4.10



pH - Setup Menu - Display Damping 4.11



pH - Diagnostics Menu - Firmware Rev 4.12

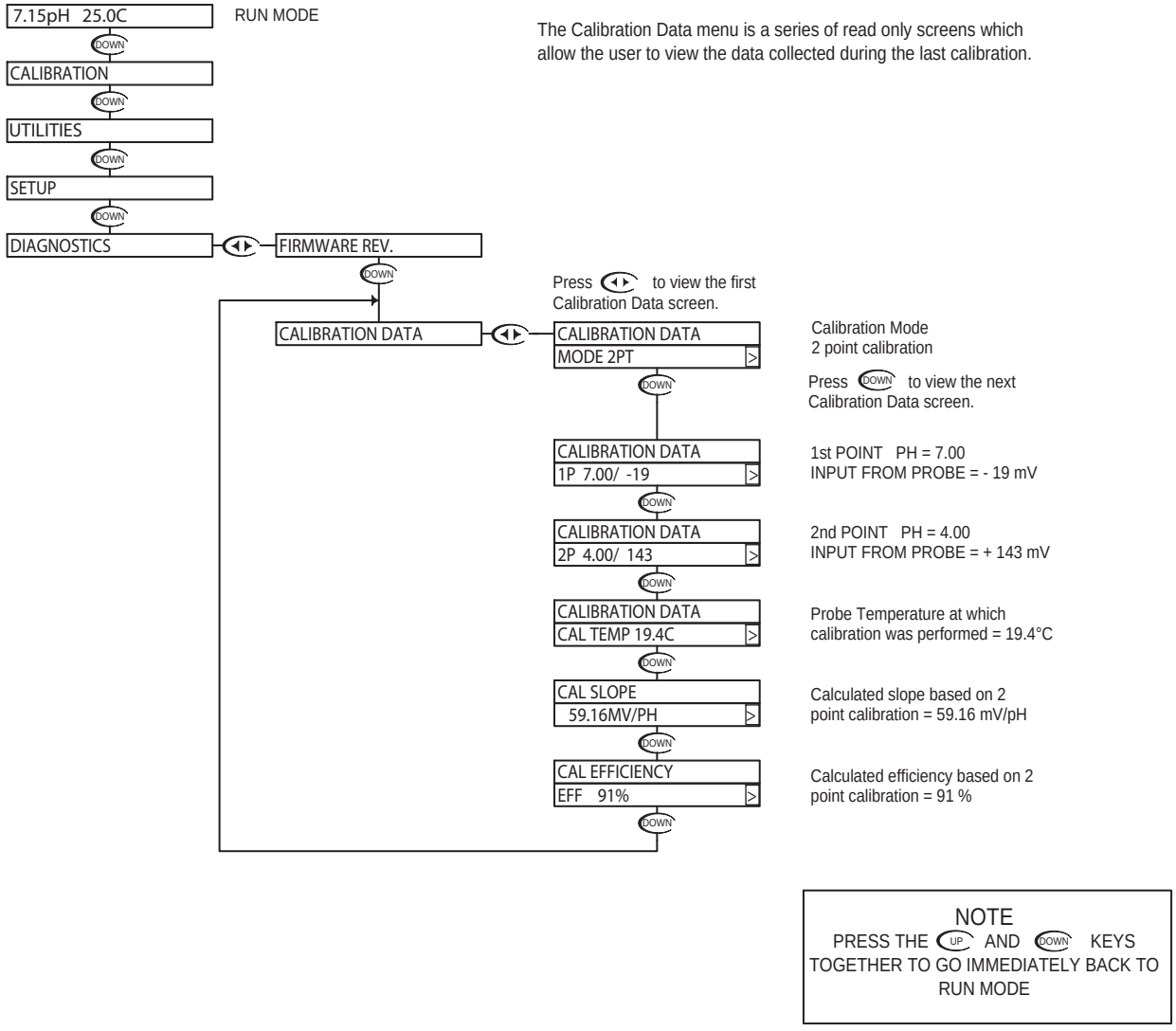


The FIRMWARE REV menu allows the user to see what revision of the firmware is currently installed in the controller. This is a Read Only menu item.

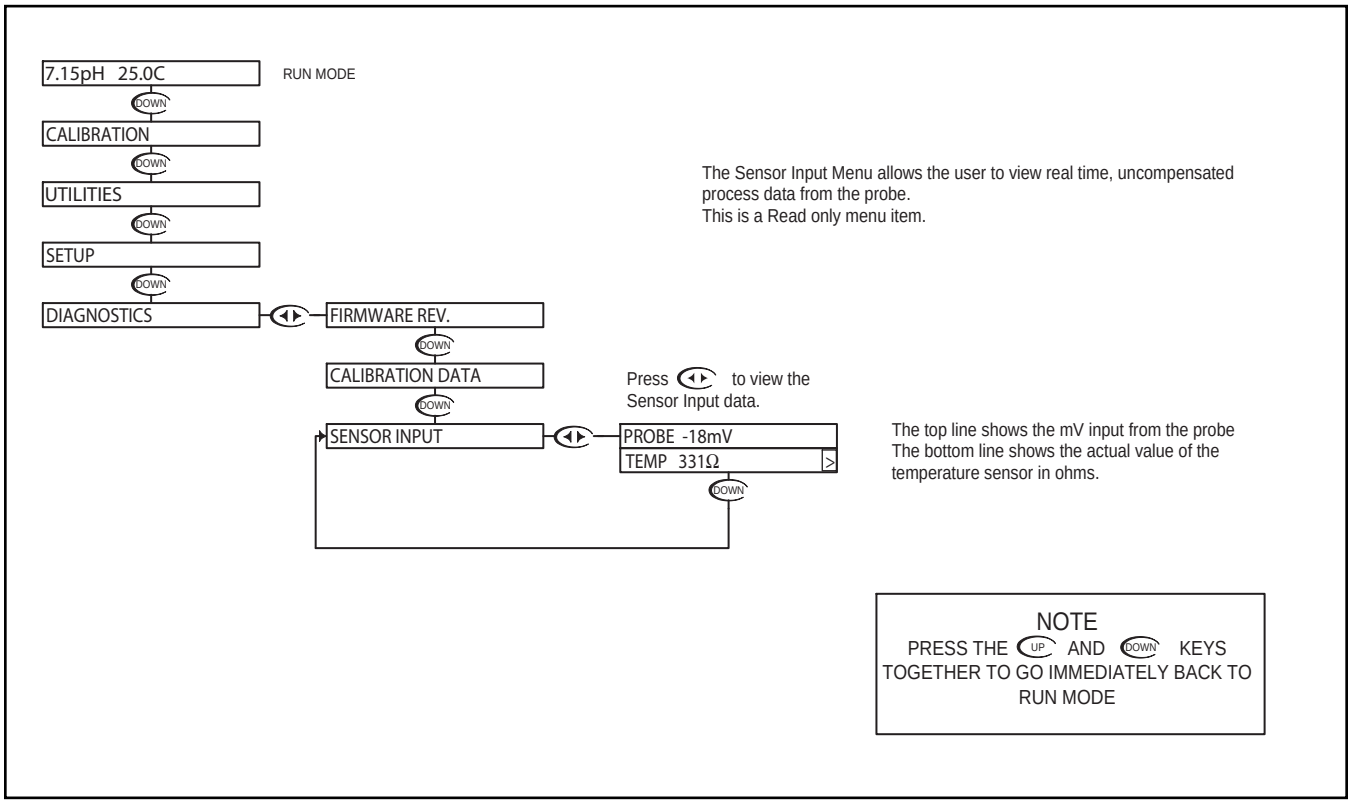
NOTE

PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

pH - Diagnostics Menu - Calibration Data 4.13



pH - Diagnostics Menu - Sensor Input 4.14



Troubleshooting a pH probe using the sensor input

Sensor input displays the uncompensated sensor input data. The pH probe values are displayed in mV (millivolts). The temperature sensor value is displayed in Ω (ohm).

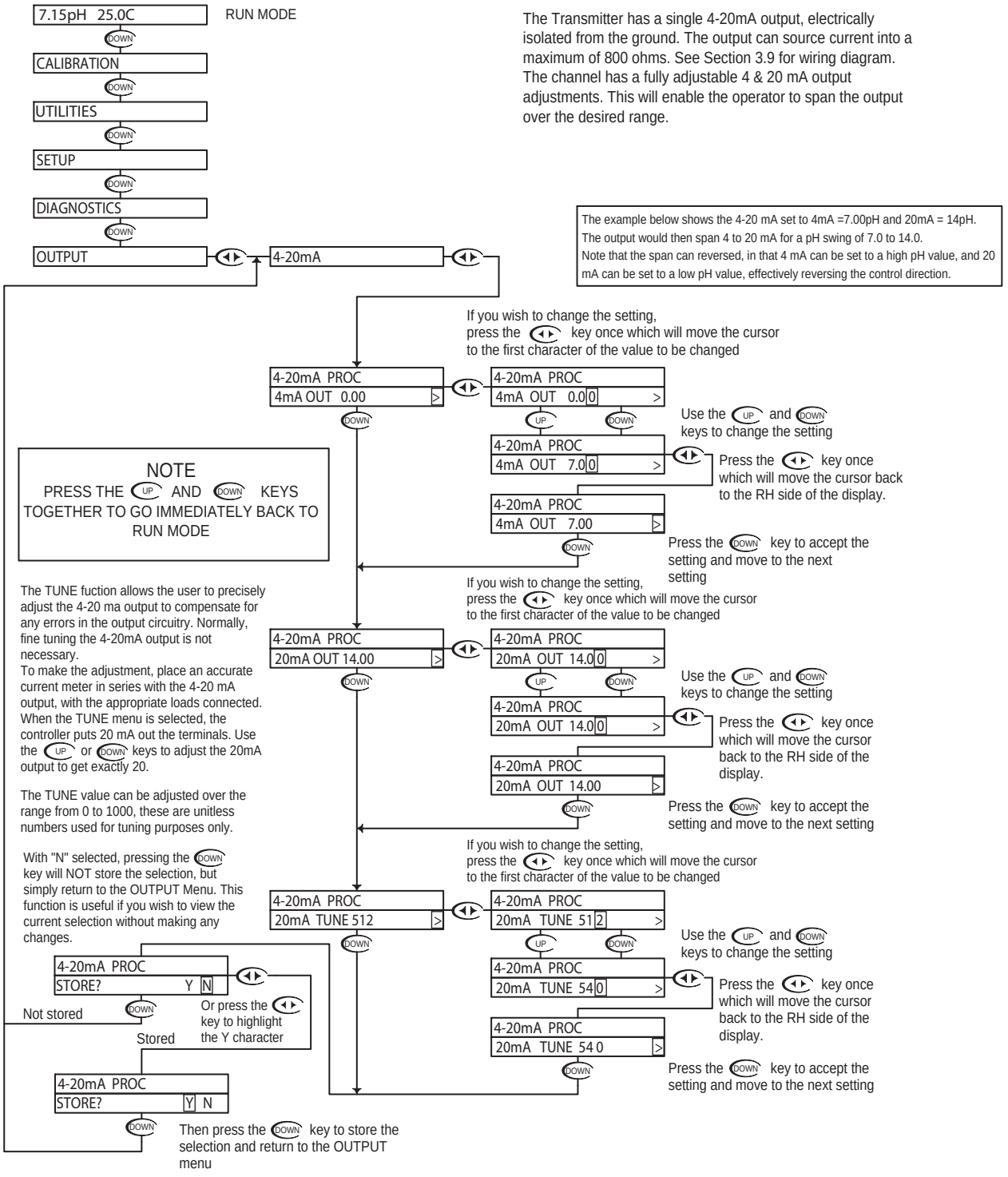
Connect the pH probe as per Probe Configuration Table in Appendix A.

1. Place the probe in buffer 7pH (allow temperature to stabilize)
   - Probe should read 0mV [±50mV]
   - Temperature should read 300Ω [±50Ω] @ 25°C
   - Record both of these numbers.

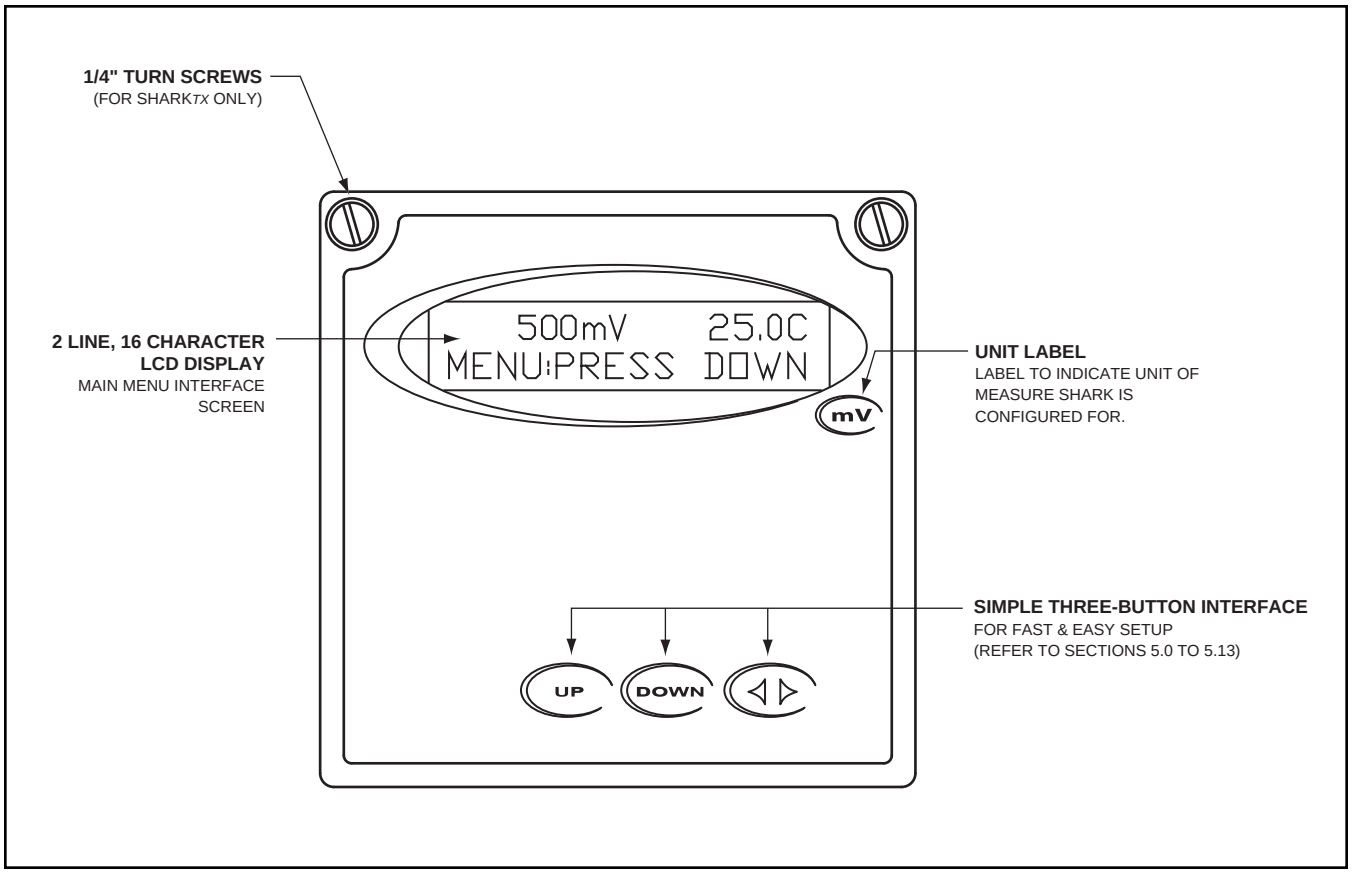
2. Place the probe in buffer 4pH
   - Probe should read +160mV more than probe value at 7pH
   - Temperature should read the same as in 7pH

3. Place the probe in buffer 10pH
   - Probe should read -160mV less then probe value at 7pH
   - Temperature should read the same as in 7pH

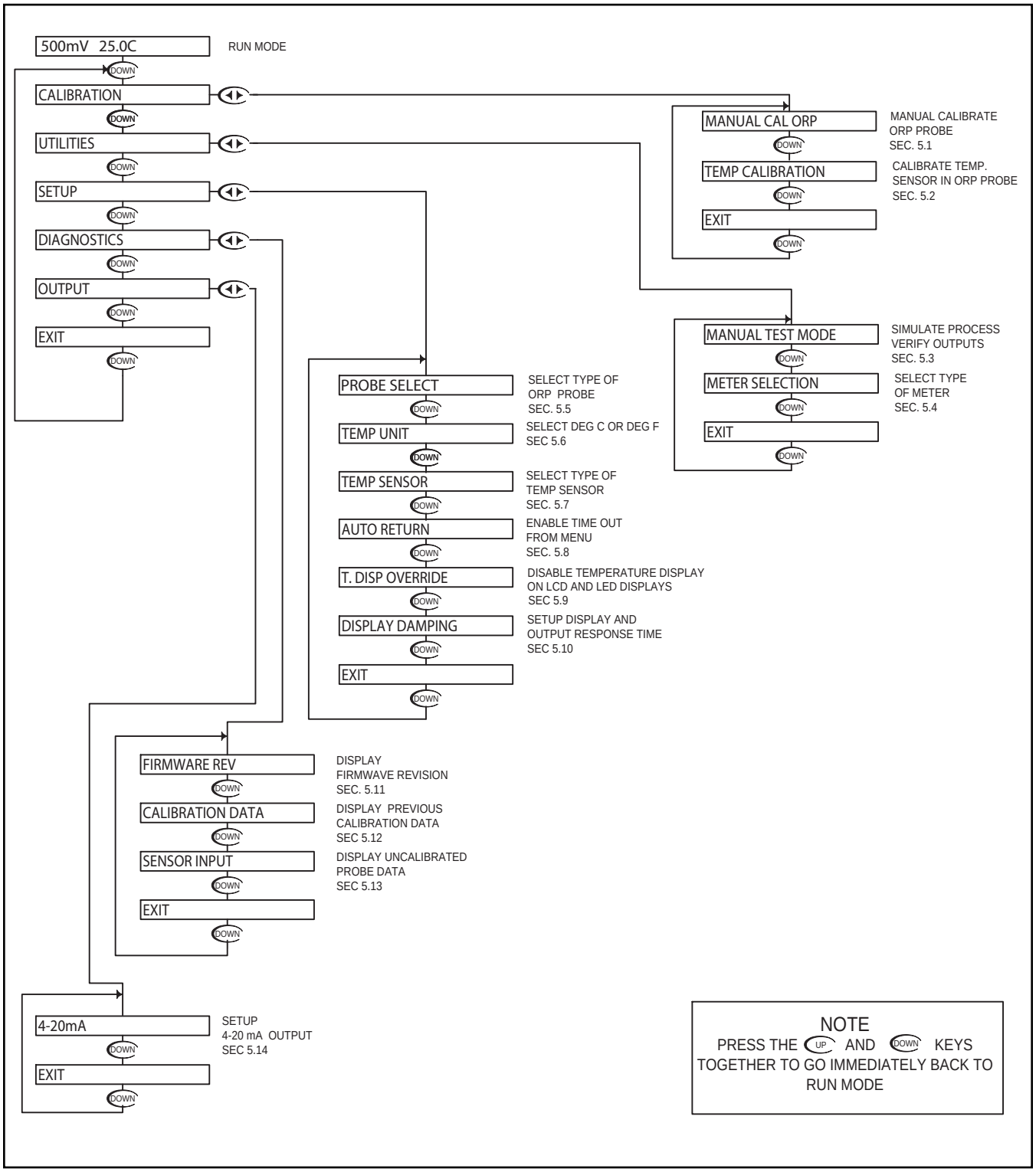
pH - Output Menu - 4-20mA Output 4.15



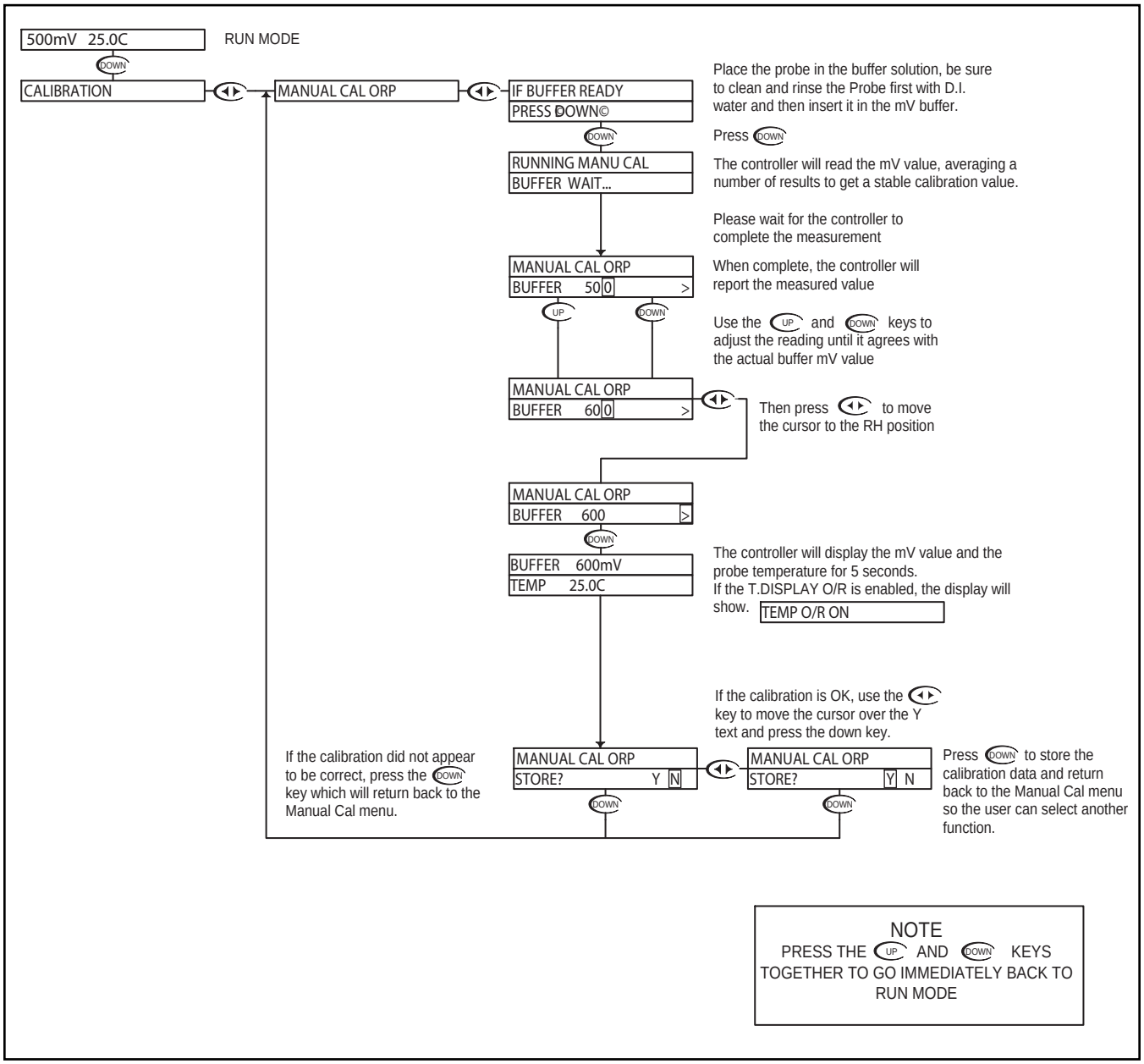
Section 5 - Using the Transmitter in ORP Mode



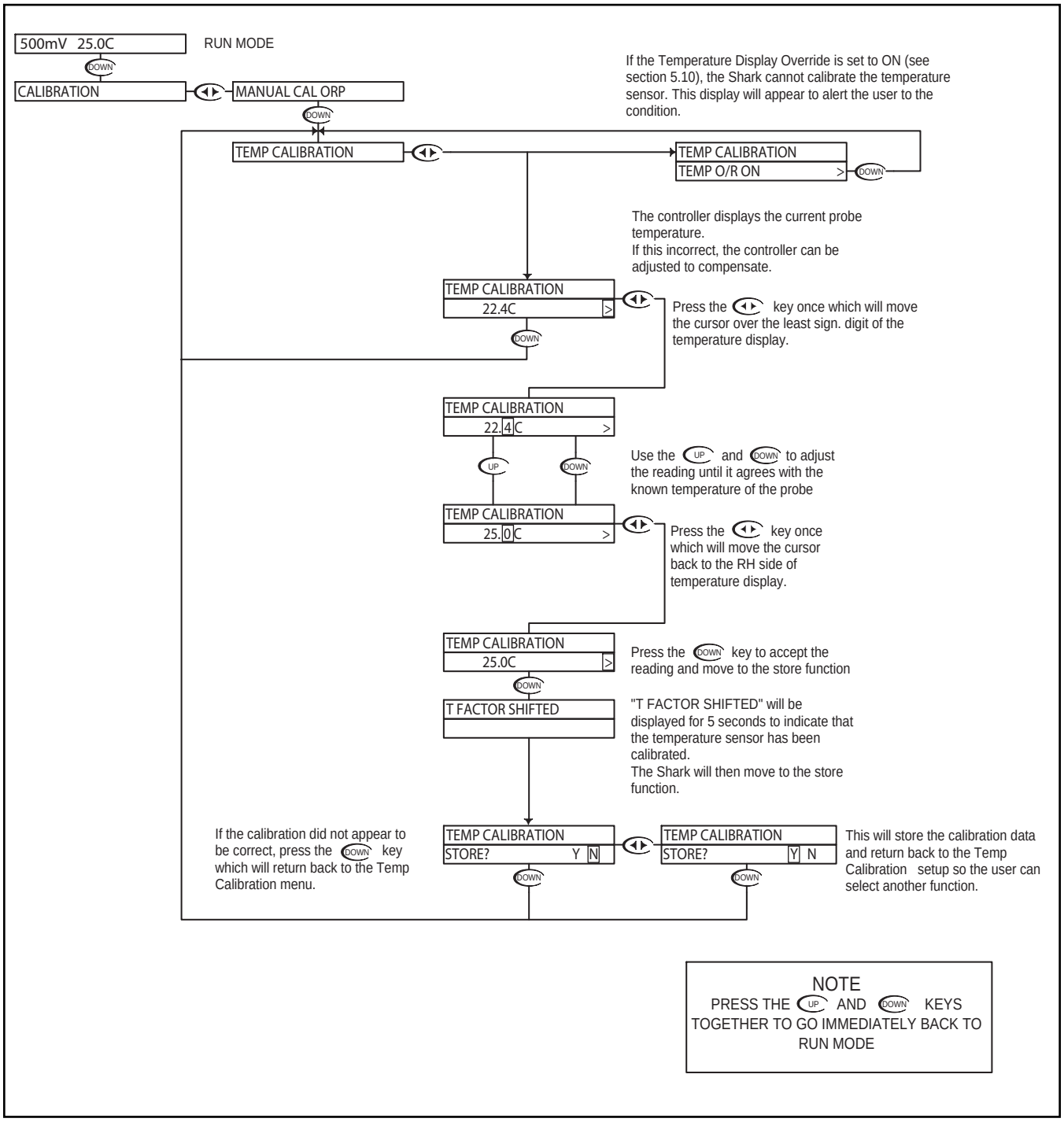
ORP - Menu Overview 5.0



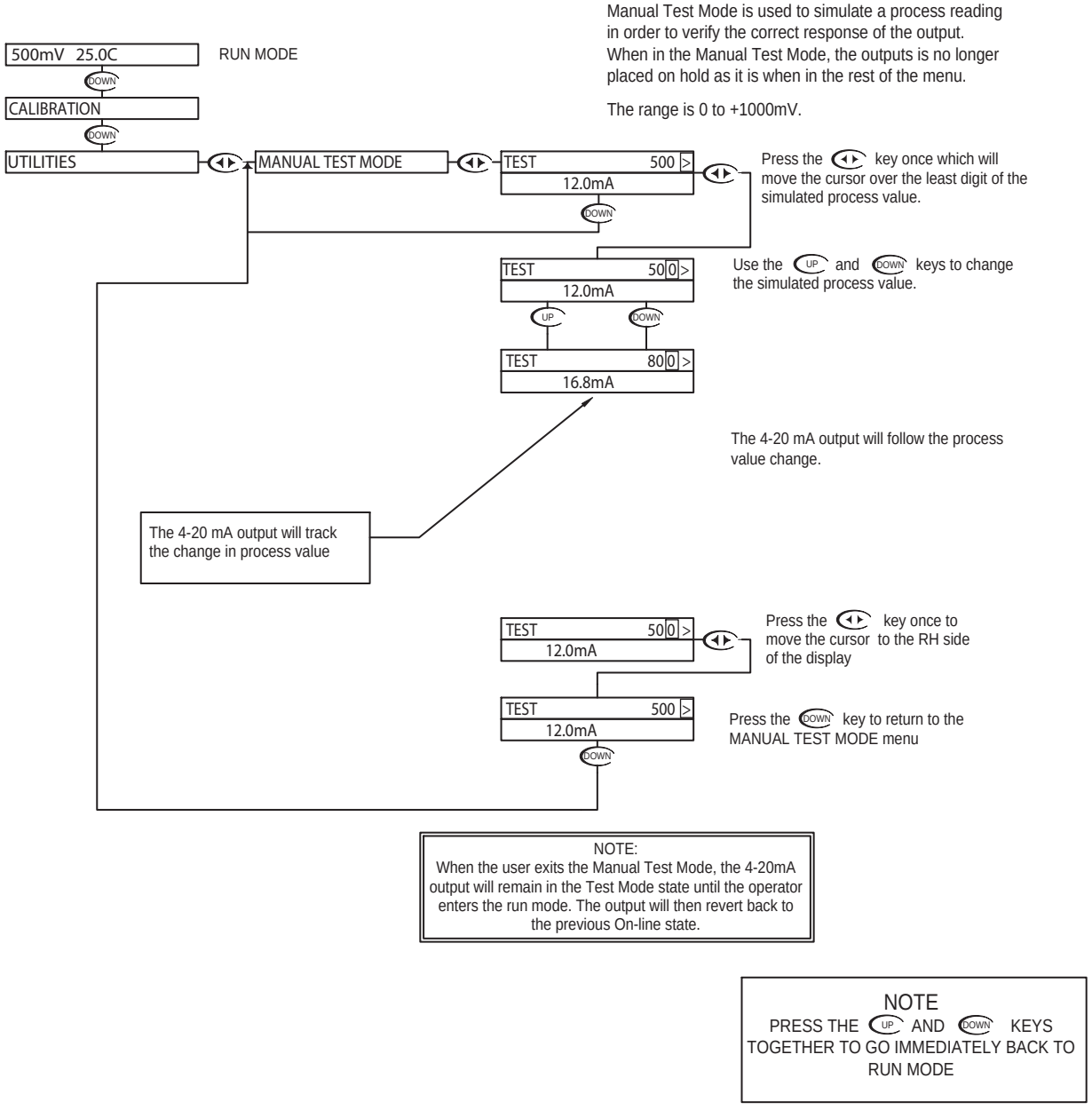
ORP - Calibration Menu - Manual Calibrate 5.1



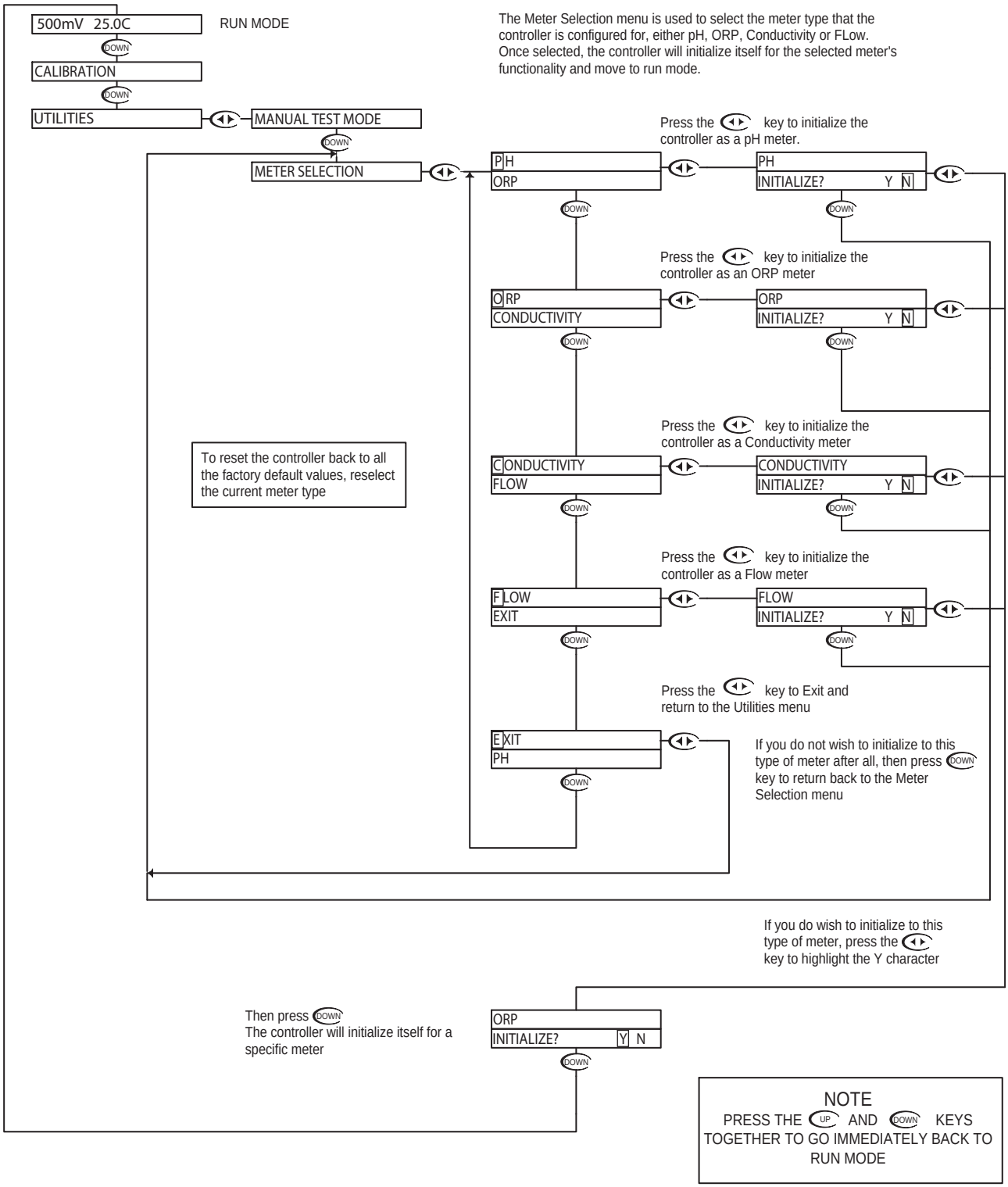
ORP - Calibration Menu - Temp. Calibration 5.2



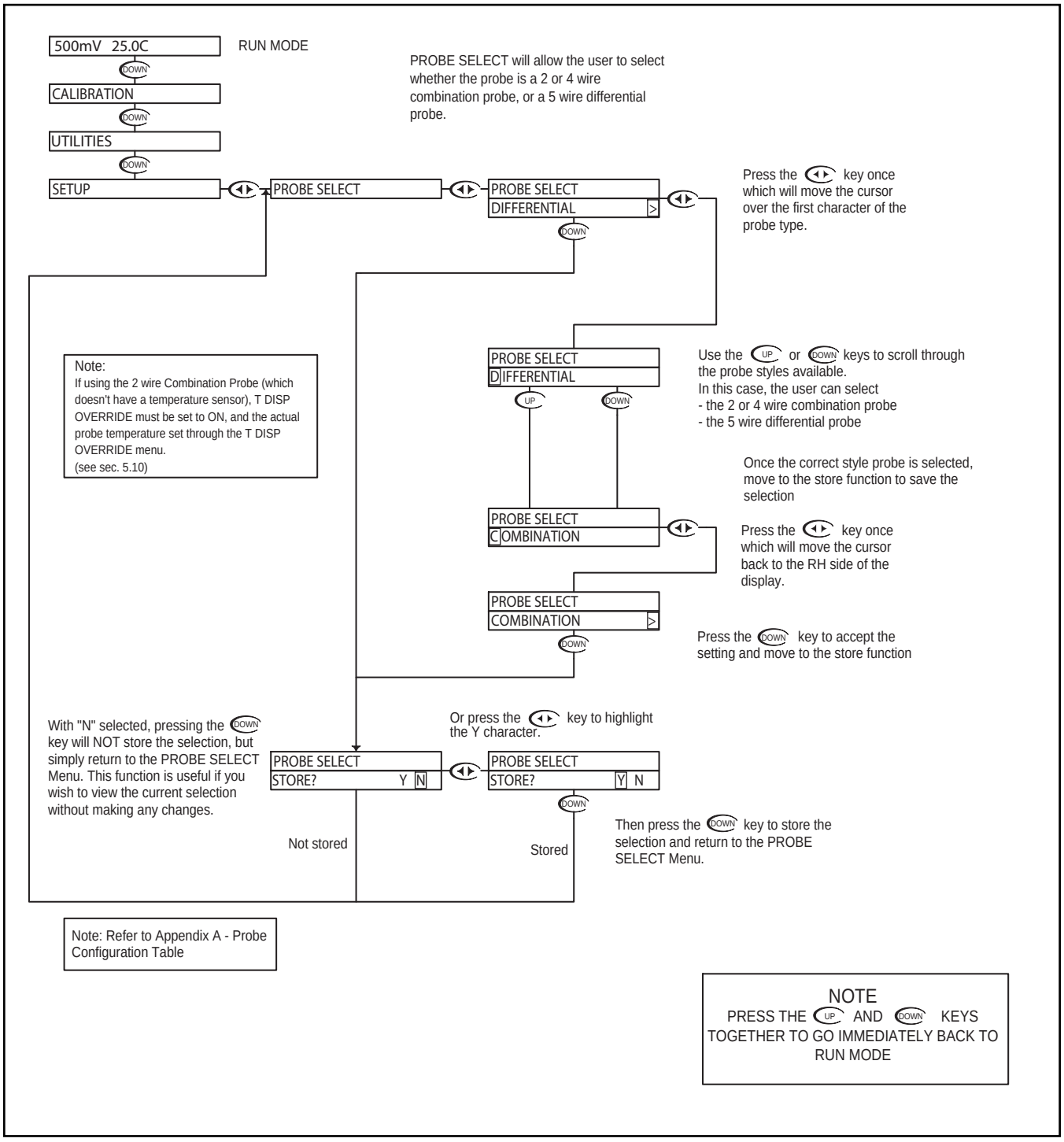
ORP - Utilities Menu - Manual Test Mode 5.3



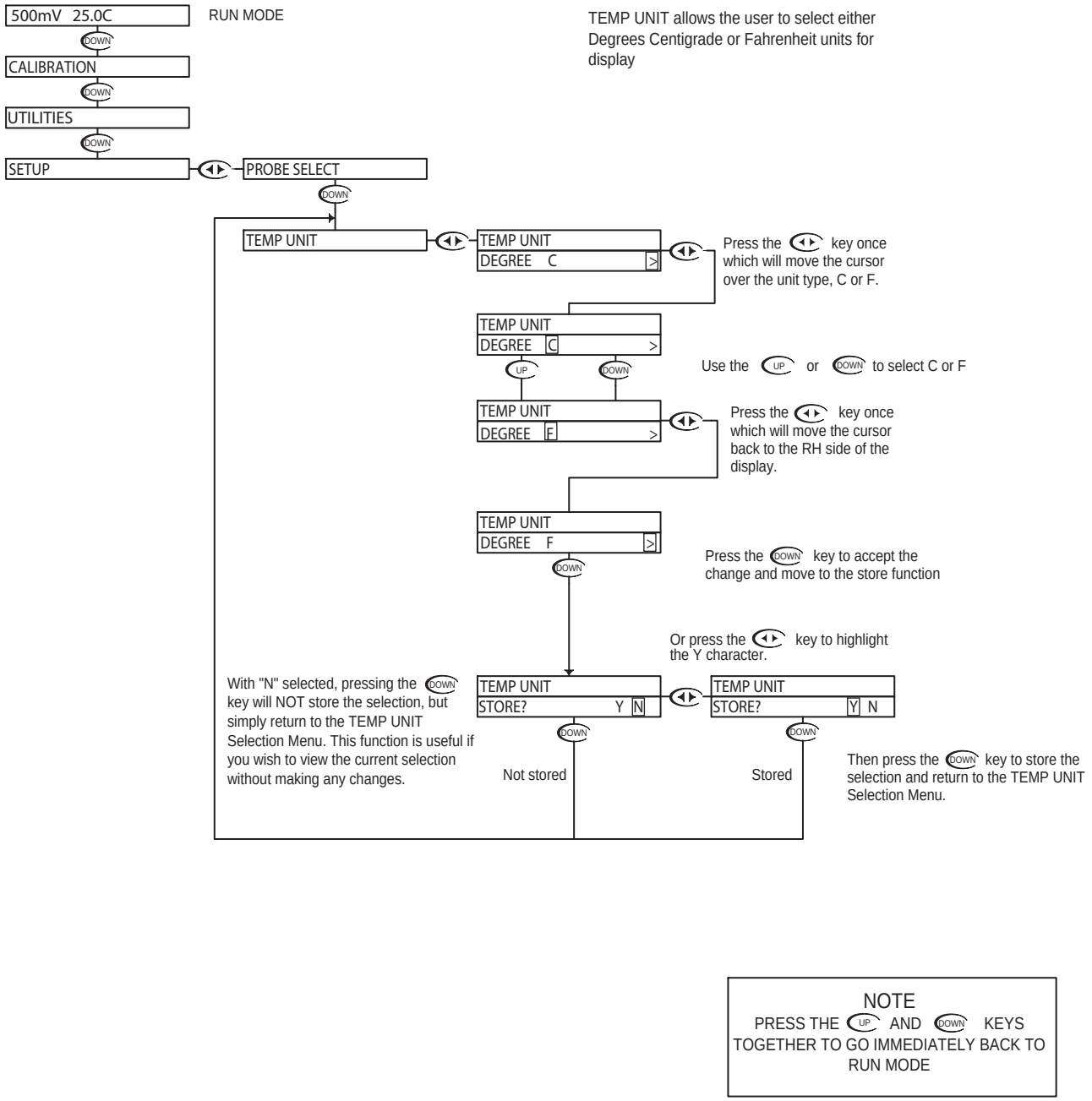
ORP - Utilities Menu - Meter Selection 5.4



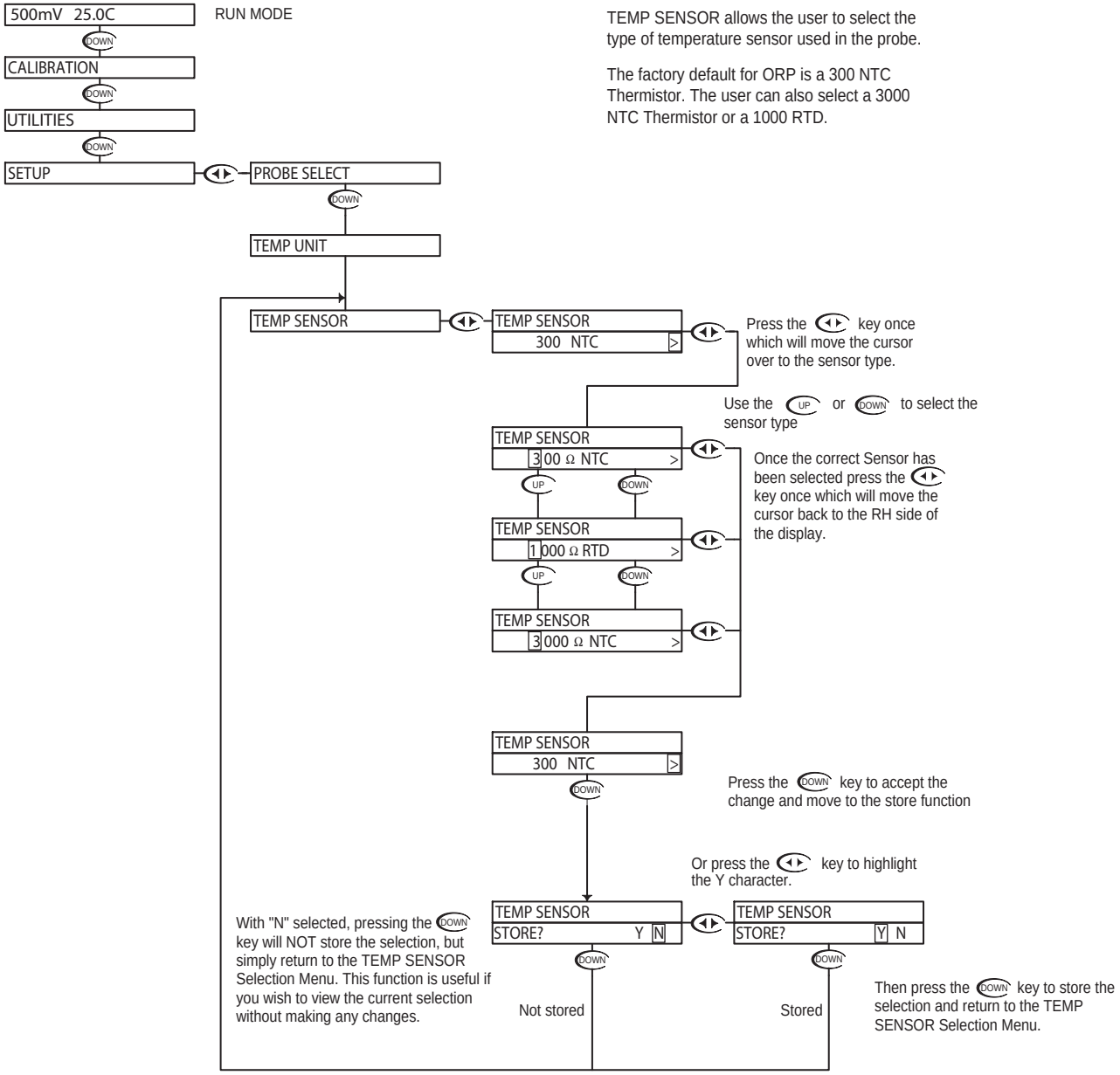
ORP - Setup Menu - Probe Select 5.5



ORP - Setup Menu - Temp. Unit 5.6

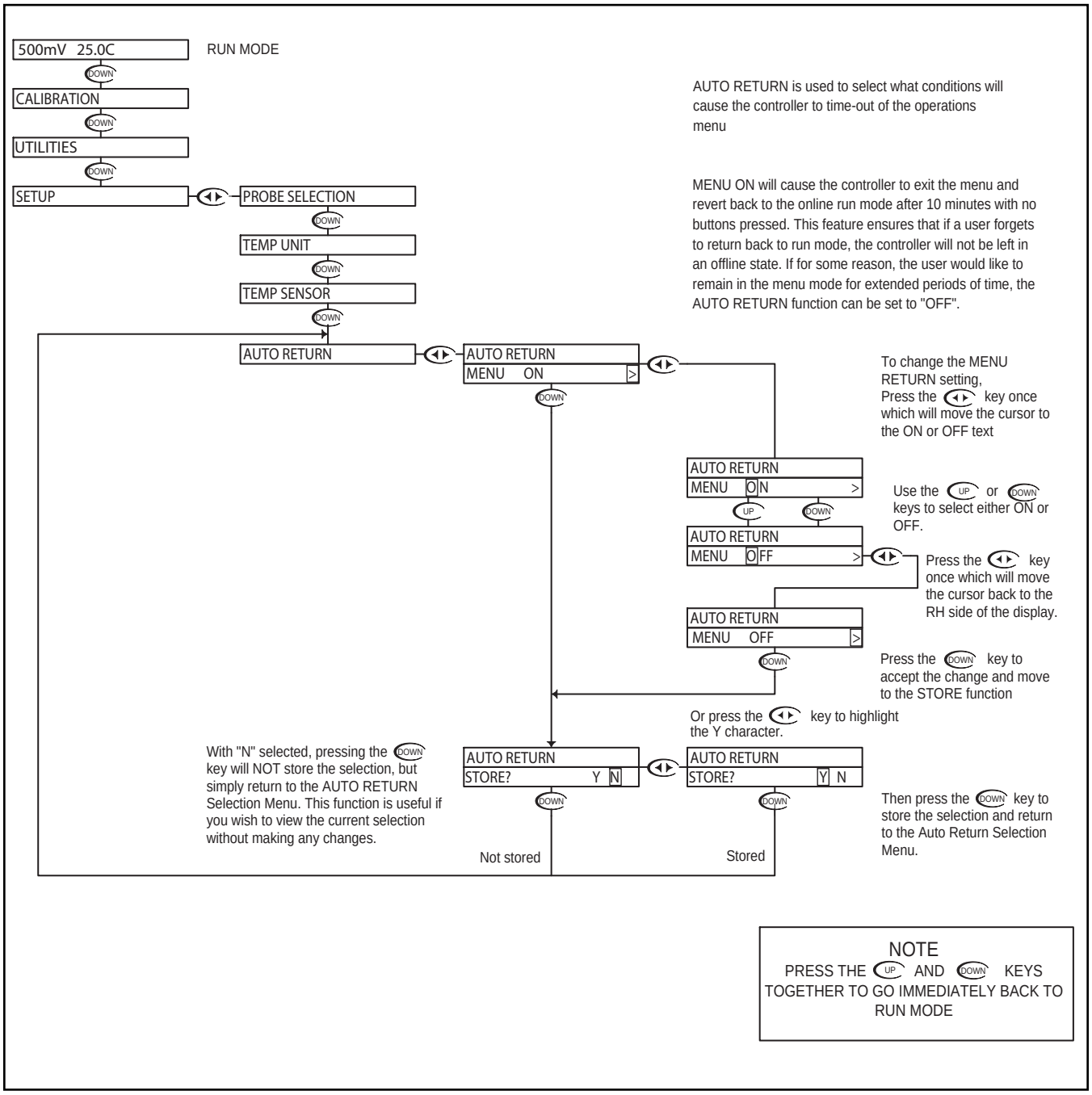


ORP - Setup Menu - Temp. Sensor 5.7

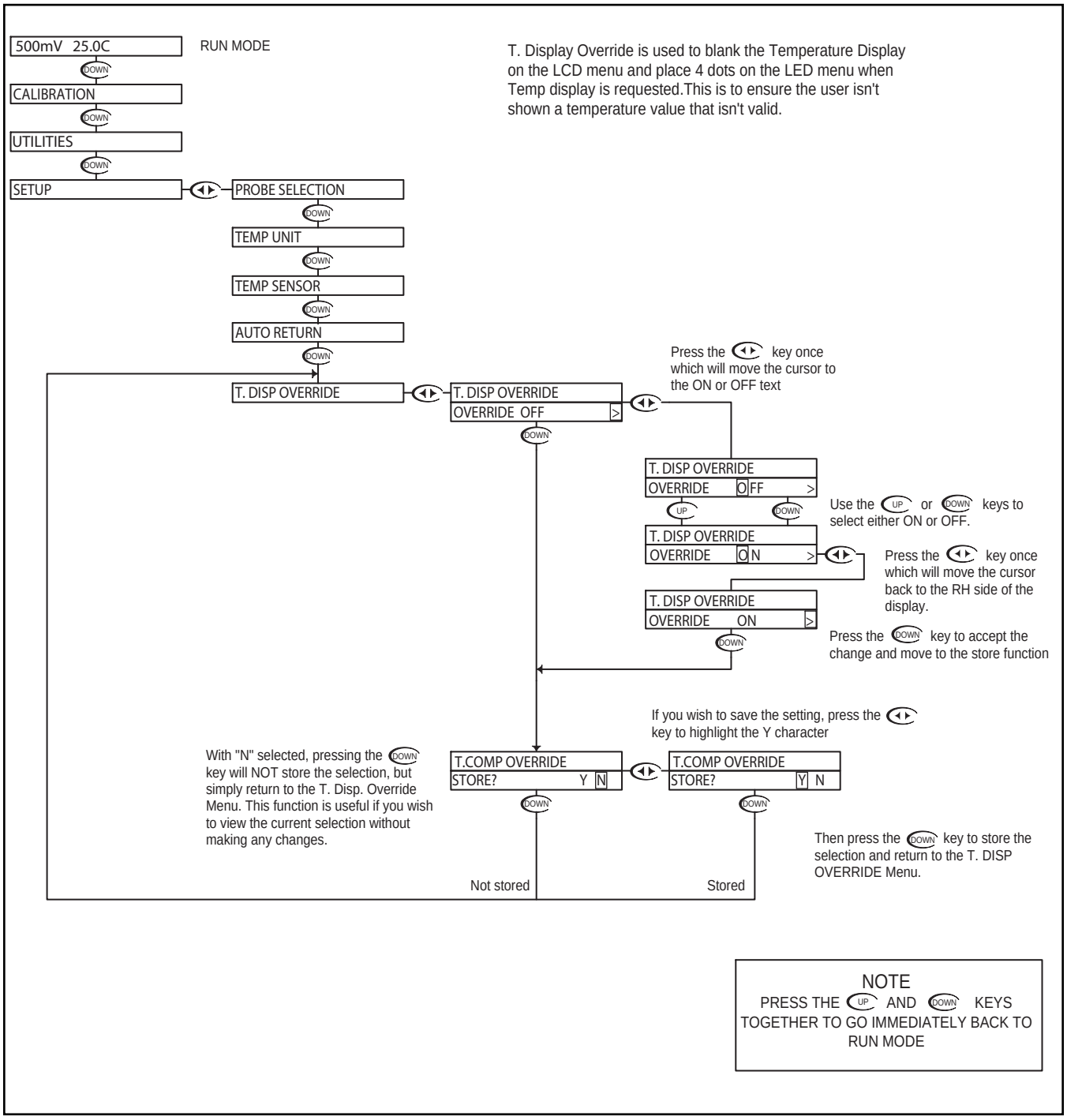


NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

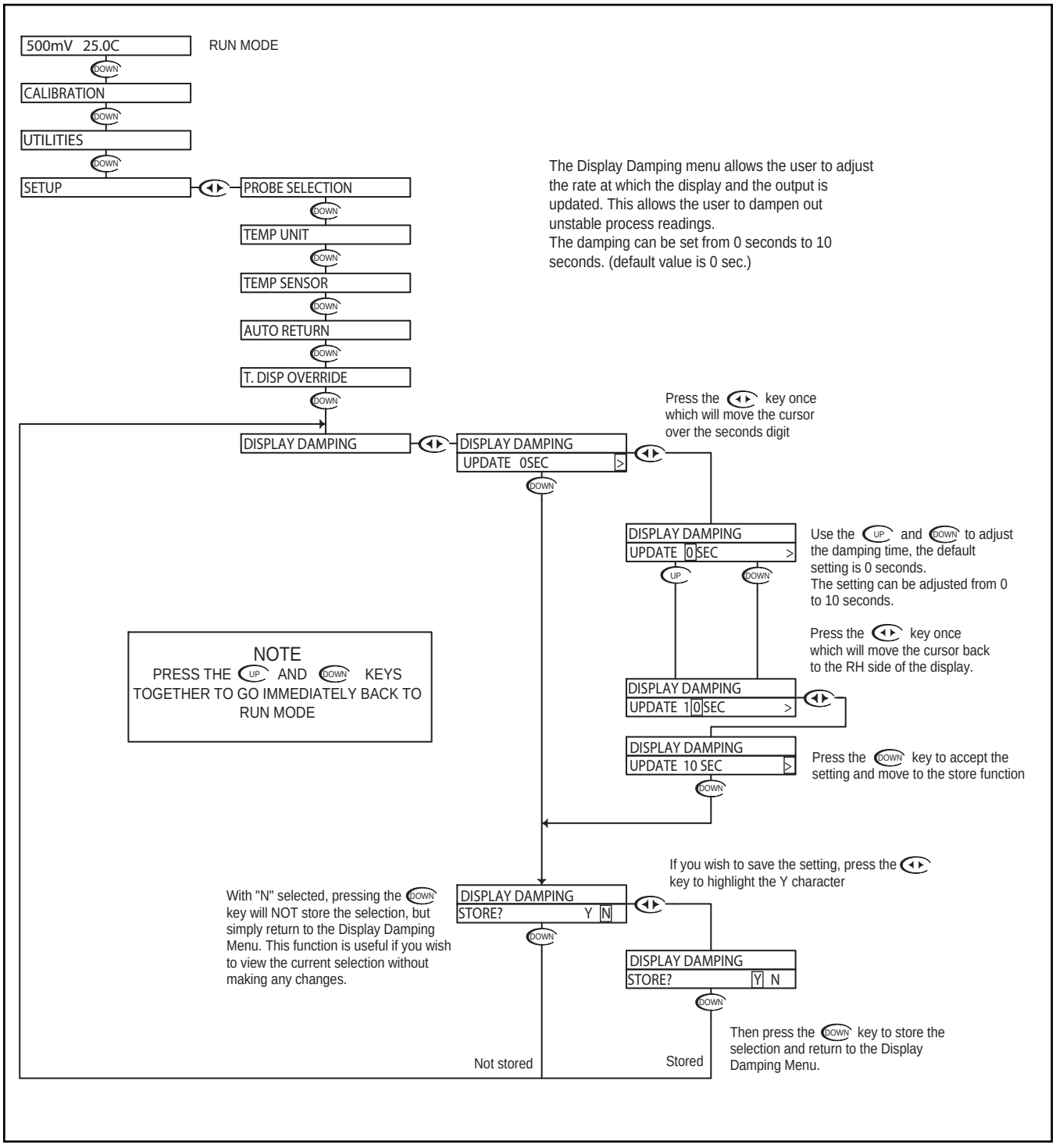
ORP - Setup Menu - Auto Return 5.8



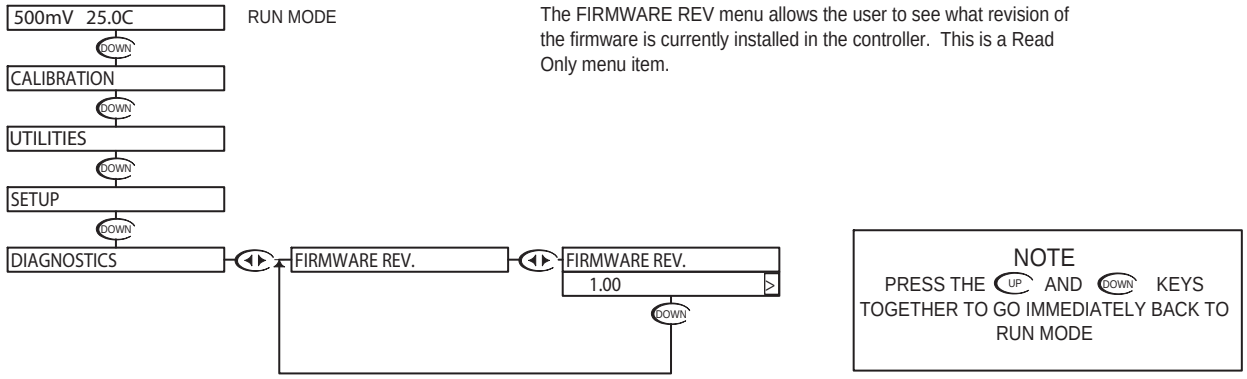
ORP - Setup Menu - Temp. Display Override 5.9



ORP - Setup Menu - Display Damping 5.10



ORP - Diagnostics Menu - Firmware Rev 5.11

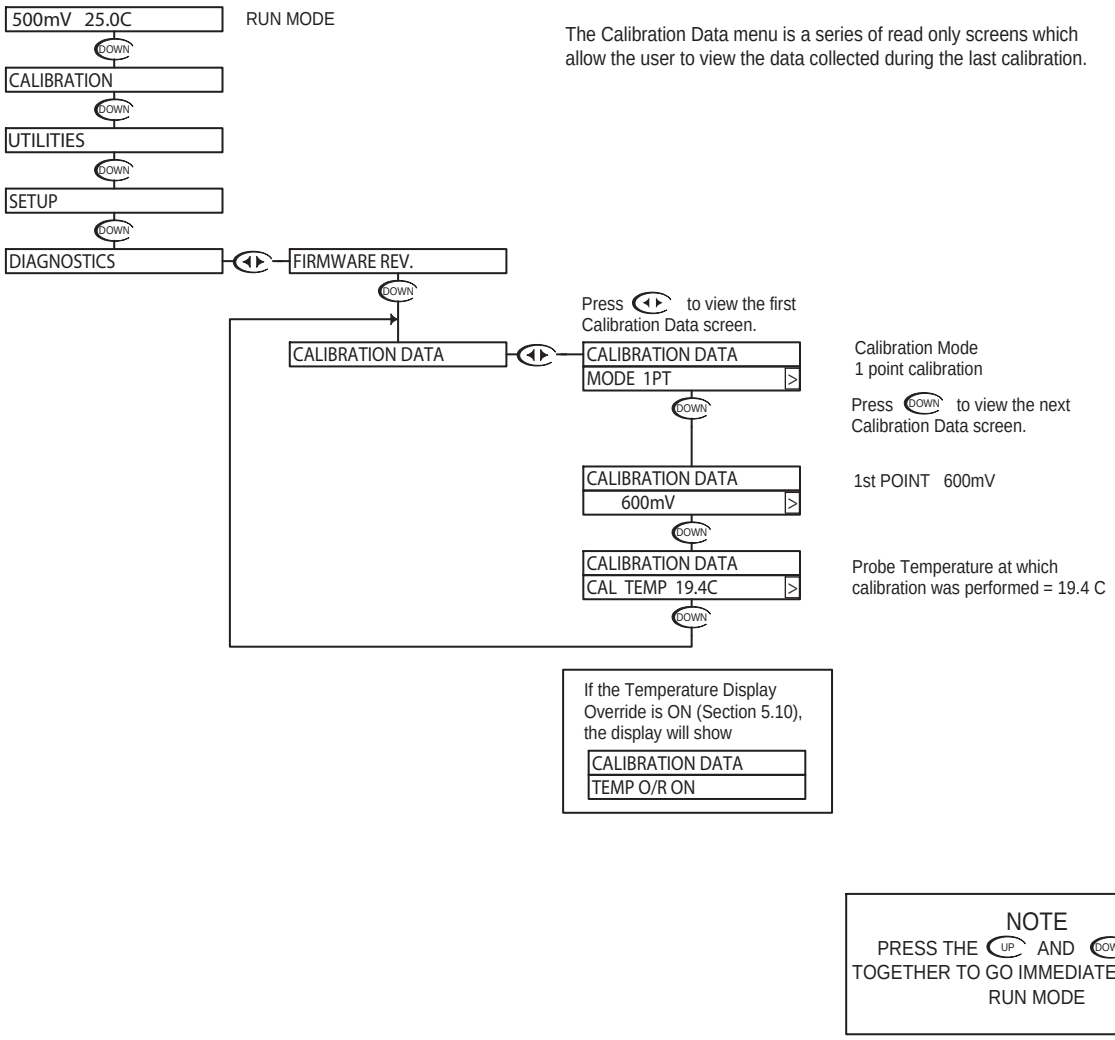


The FIRMWARE REV menu allows the user to see what revision of the firmware is currently installed in the controller. This is a Read Only menu item.

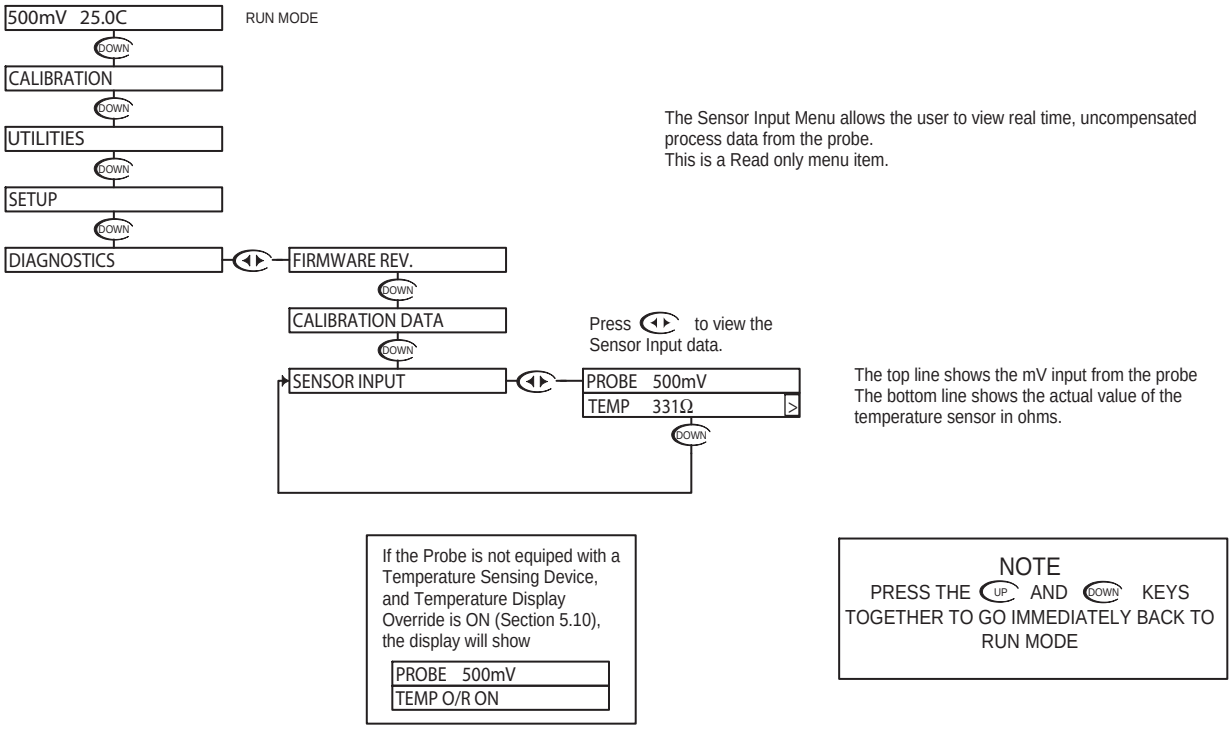
NOTE

PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

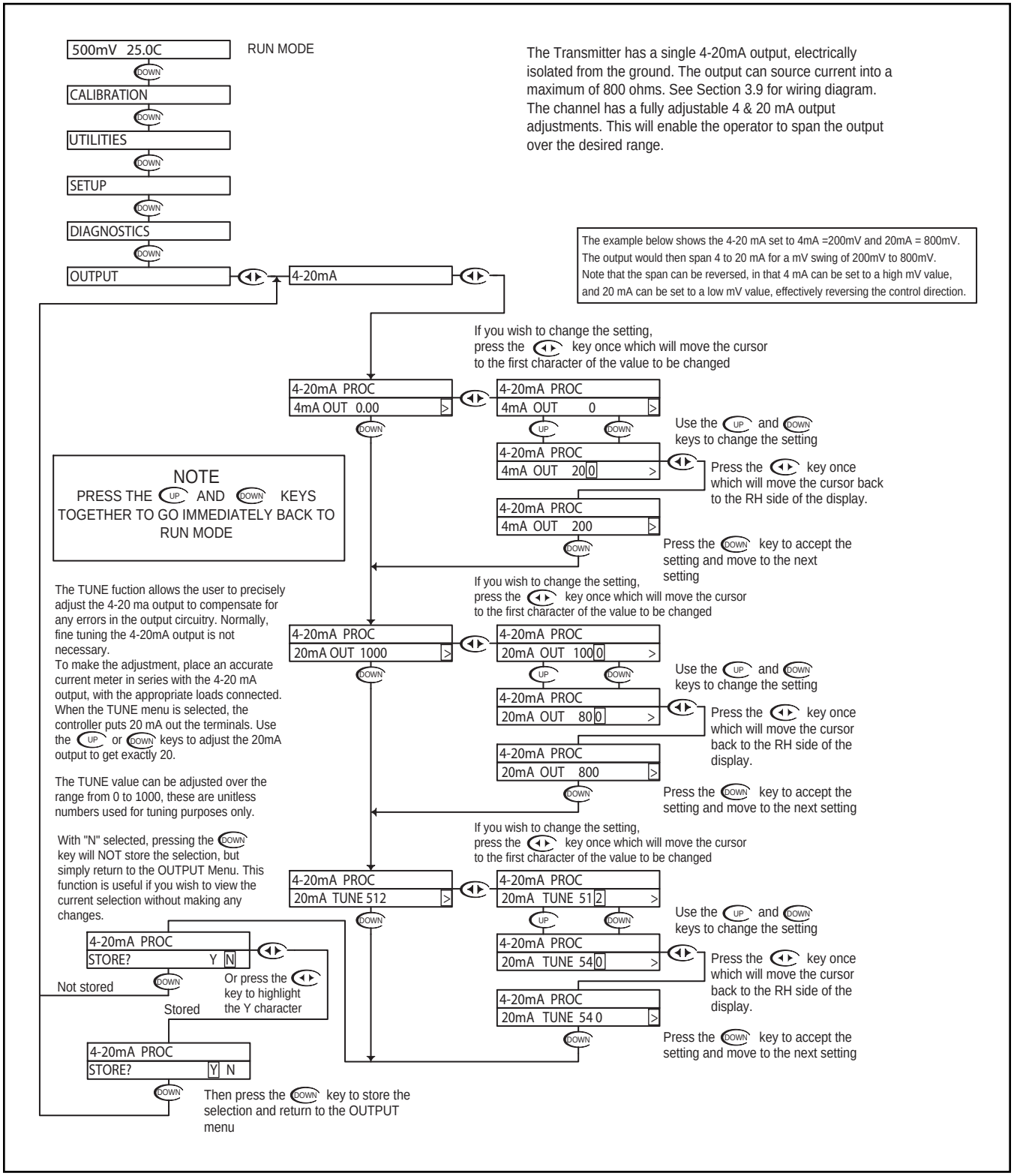
ORP - Diagnostics Menu - Calibration Data 5.12

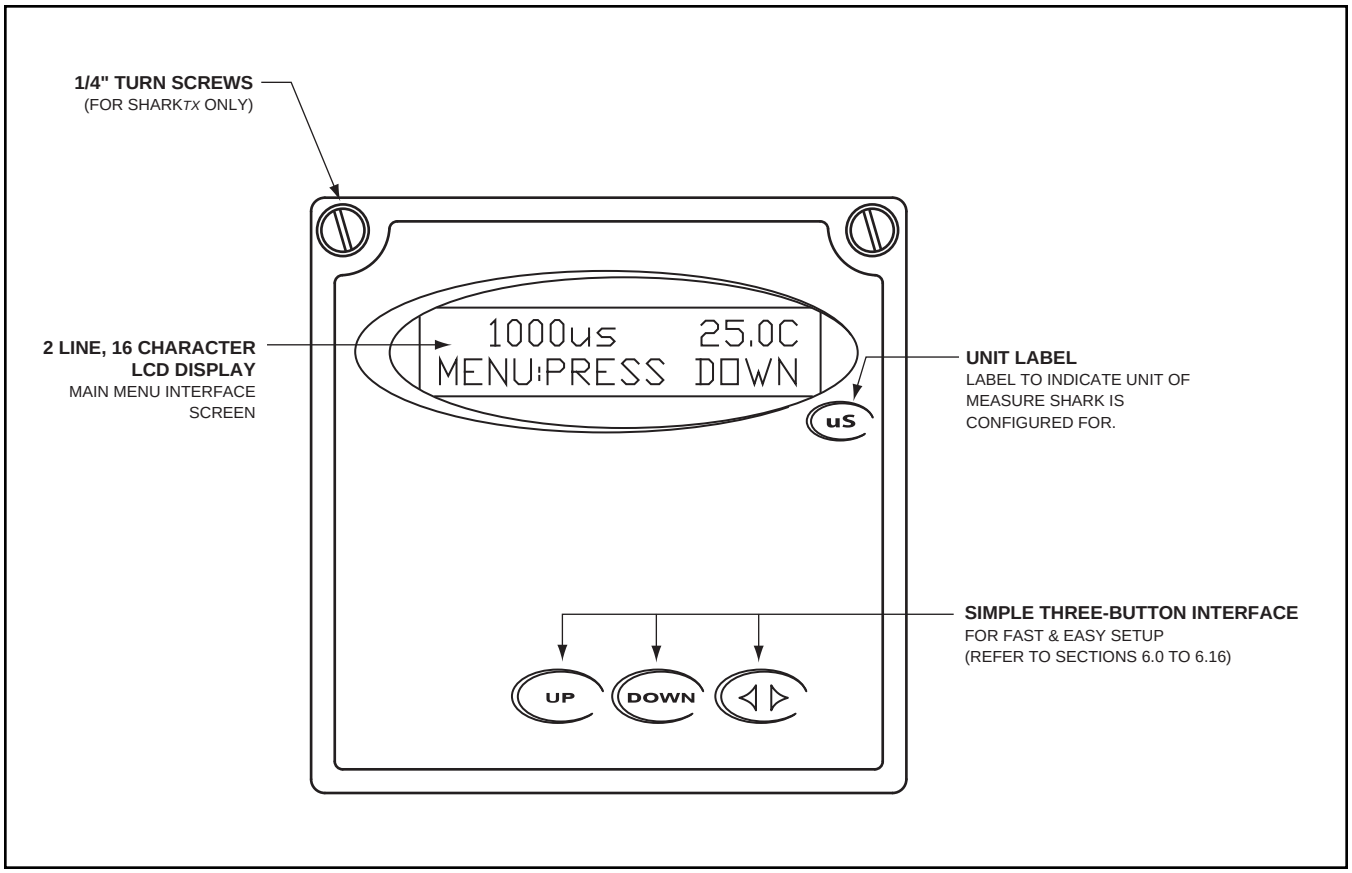


ORP - Diagnostics Menu - Sensor Input 5.13

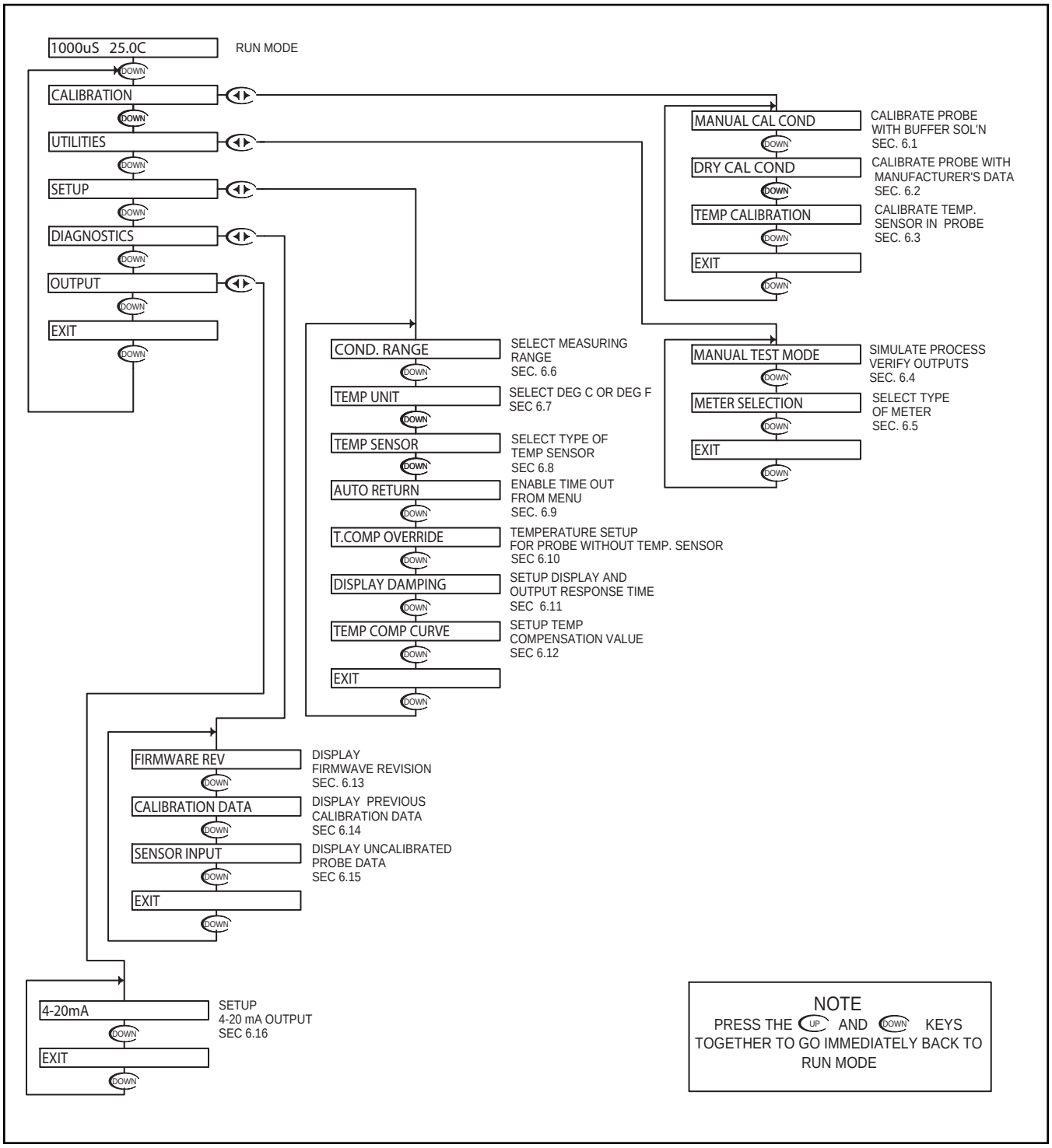


ORP - Output Menu - 4-20mA Output 5.14



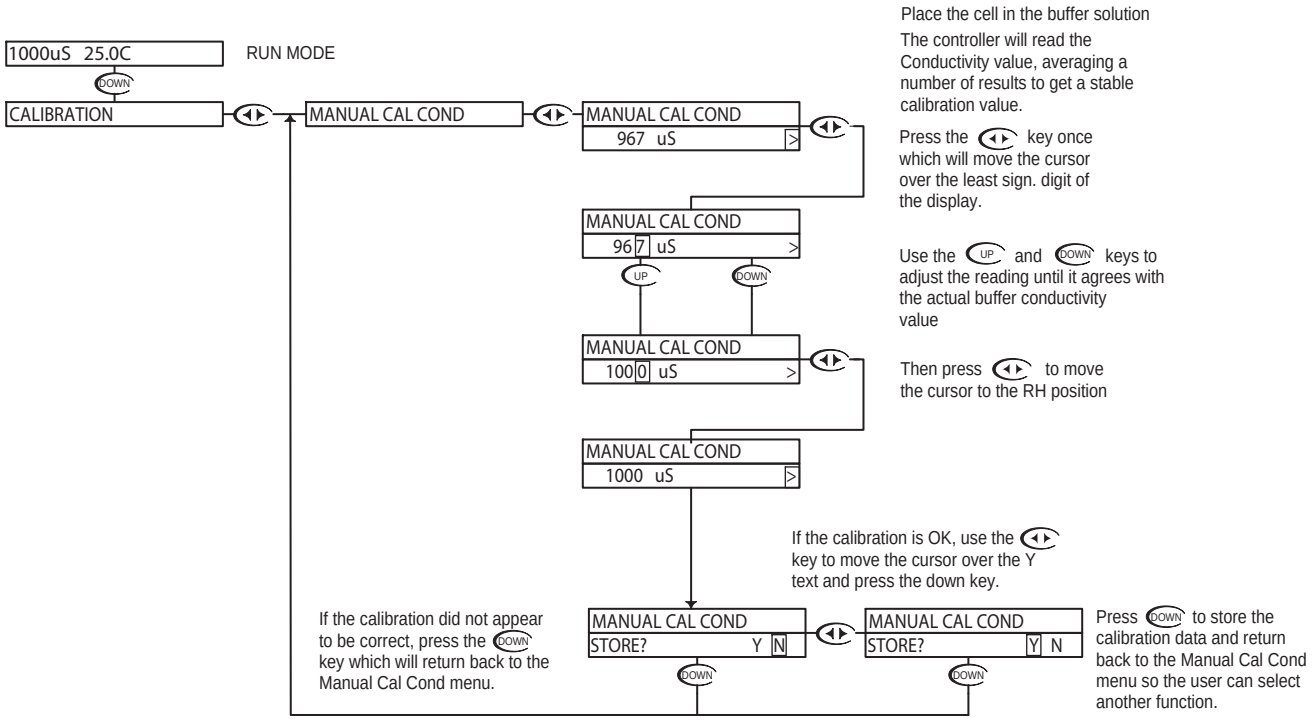

1/4" TURN SCREWS
(FOR SHARKtx ONLY)
2 LINE, 16 CHARACTER
LCD DISPLAY
MAIN MENU INTERFACE
SCREEN
1000us 25.0C
MENU:PRESS DOWN
uS
UNIT LABEL
LABEL TO INDICATE UNIT OF
MEASURE SHARK IS
CONFIGURED FOR.
SIMPLE THREE-BUTTON INTERFACE
FOR FAST & EASY SETUP
(REFER TO SECTIONS 6.0 TO 6.16)
UP
DOWN

Conductivity - Menu Overview 6.0



Conductivity - Calibration Menu - Manual Calibrate 6.1

Manual Calibration is used to "wet calibrate the cell". This can be done with the cell installed in the process, or with the cell suspended in a known buffer solution.
When calibrated "In Process", the actual conductivity is determined with a grab sample or a hand held meter, and the value entered in the display.
When calibrated with buffers, the cell is placed in a known buffer solution, and the value of the buffer entered on the display.
In both cases, make sure the cell has time to stabilize both in temperature and conductivity before entering any data.

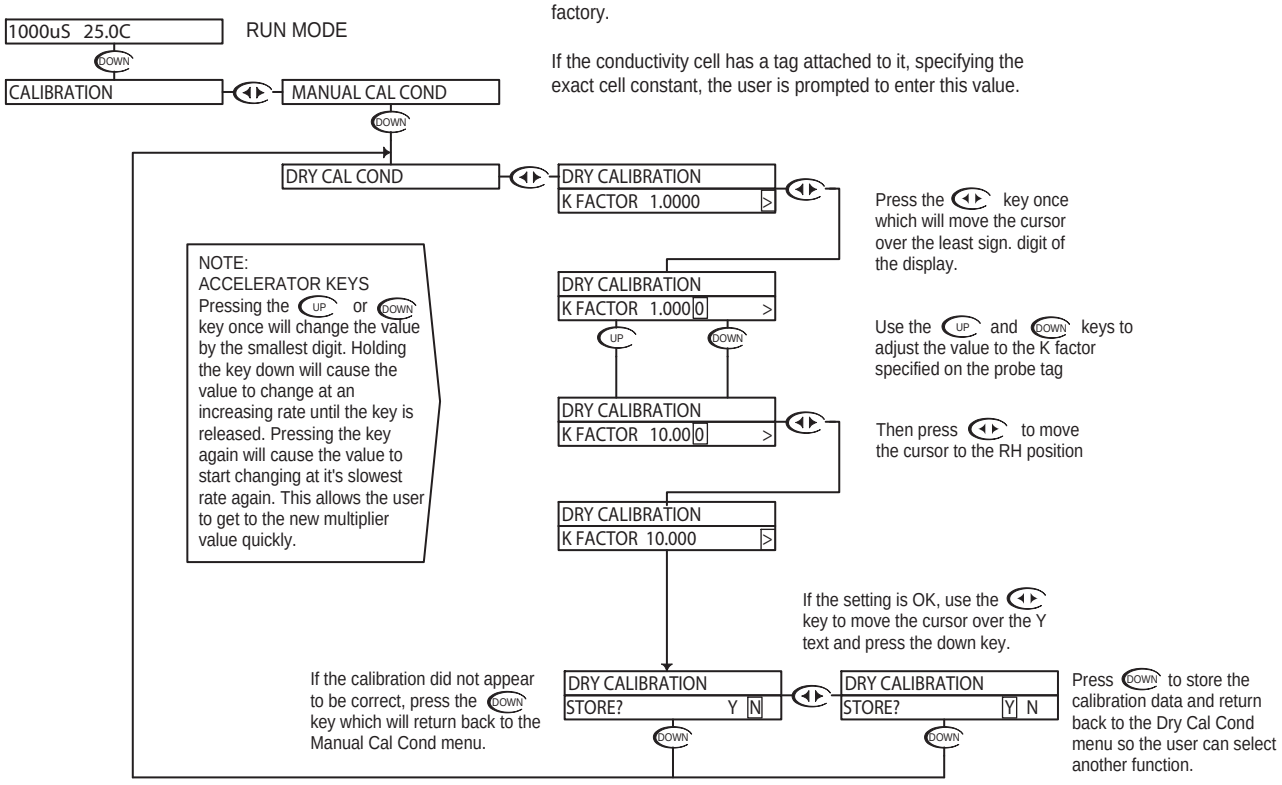


NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

Conductivity - Calibration Menu - Dry Cal Cond 6.2

Dry Calibration eliminates the need for conductivity reference solutions, the user inputs the Cell K factor supplied by the factory.

If the conductivity cell has a tag attached to it, specifying the exact cell constant, the user is prompted to enter this value.



NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

Conductivity - Calibration Menu - Temp. Calibration 6.3

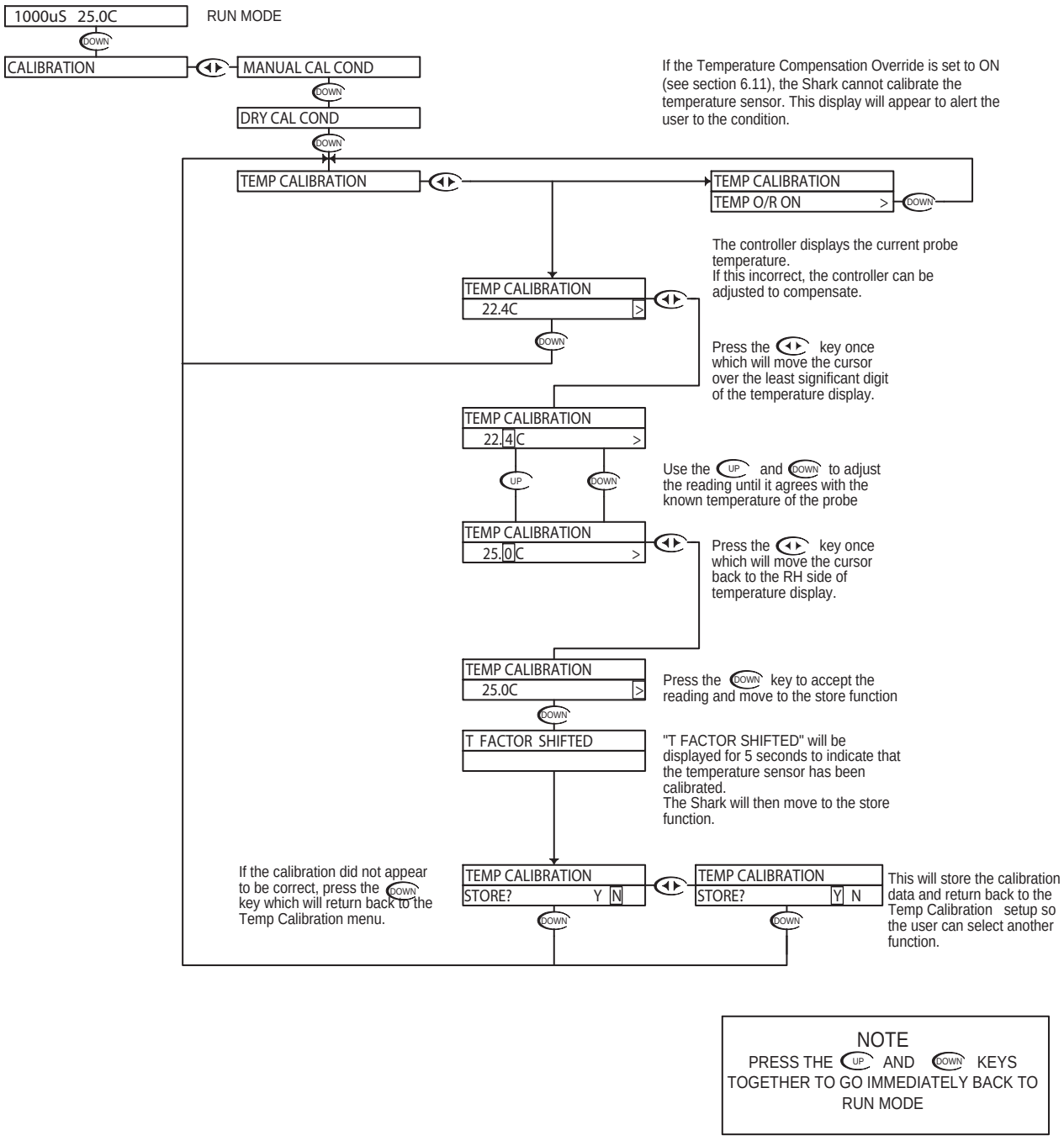
Temperature Calibration

In most cases, the factory temperature calibration is accurate enough to ensure correct temperature readings. However, in some circumstances, the user may wish to ensure the temperature sensor is calibrated accurately, especially when operating at the extreme end of the conductivity cell temperature operating range, or where the temperature compensation is critical to correct process readings.

This menu allows the user to calibrate the temperature anywhere within it's range.

Be aware, that the conductivity reading is affected by the temperature reading (due to the temperature compensation) so accurate temperature calibration is vital to obtaining accurate conductivity readings. If the user is unsure of the calibration test fixture, then it would be best to leave the temperature calibration at it's factory setting.

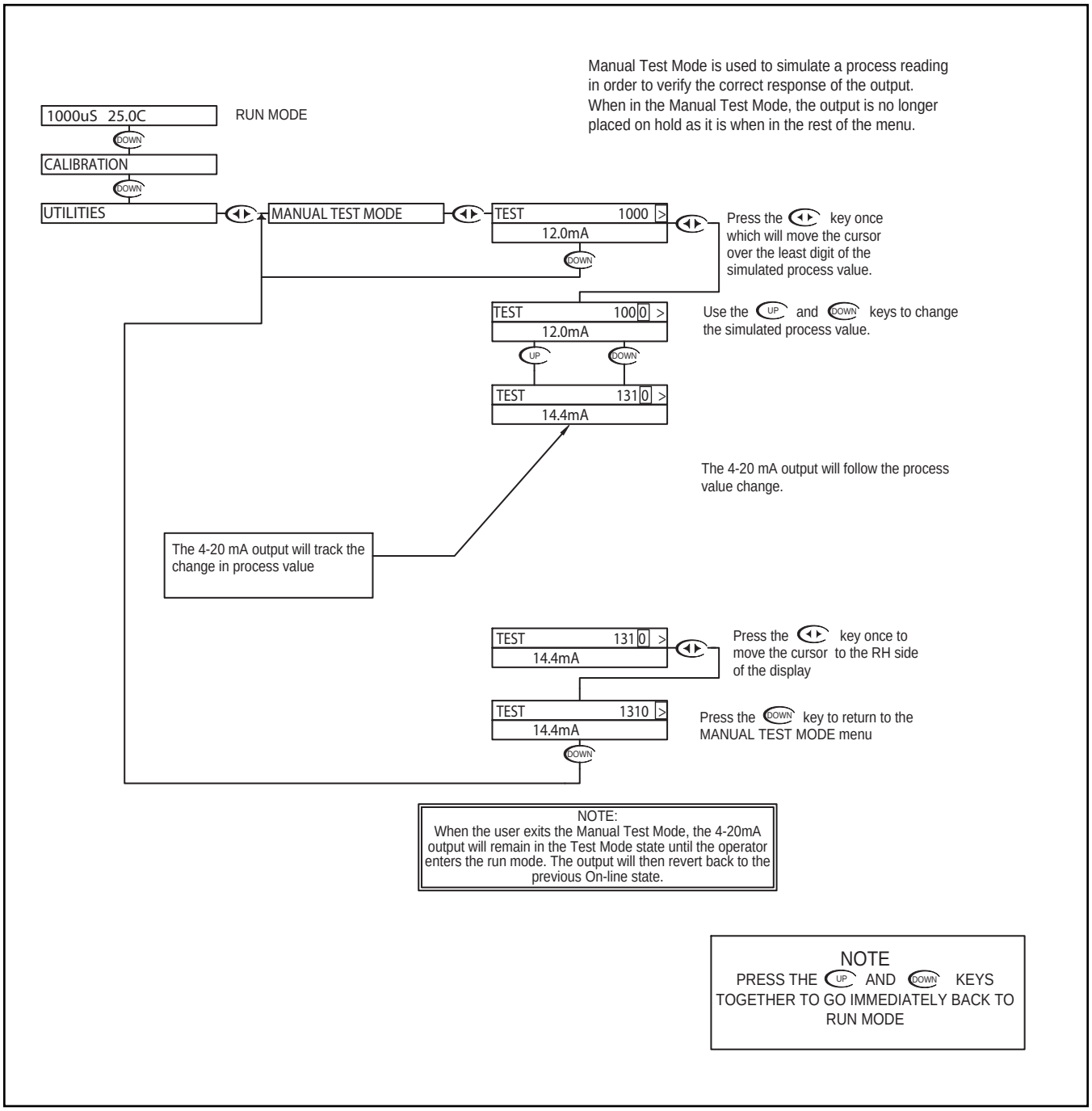
Be sure to allow the temperature of the cell to stabilize before attempting to calibrate the temperature sensor, this may take a significant amount of time as the sensor is buried behind a protective layer of epoxy which will cause some delay.



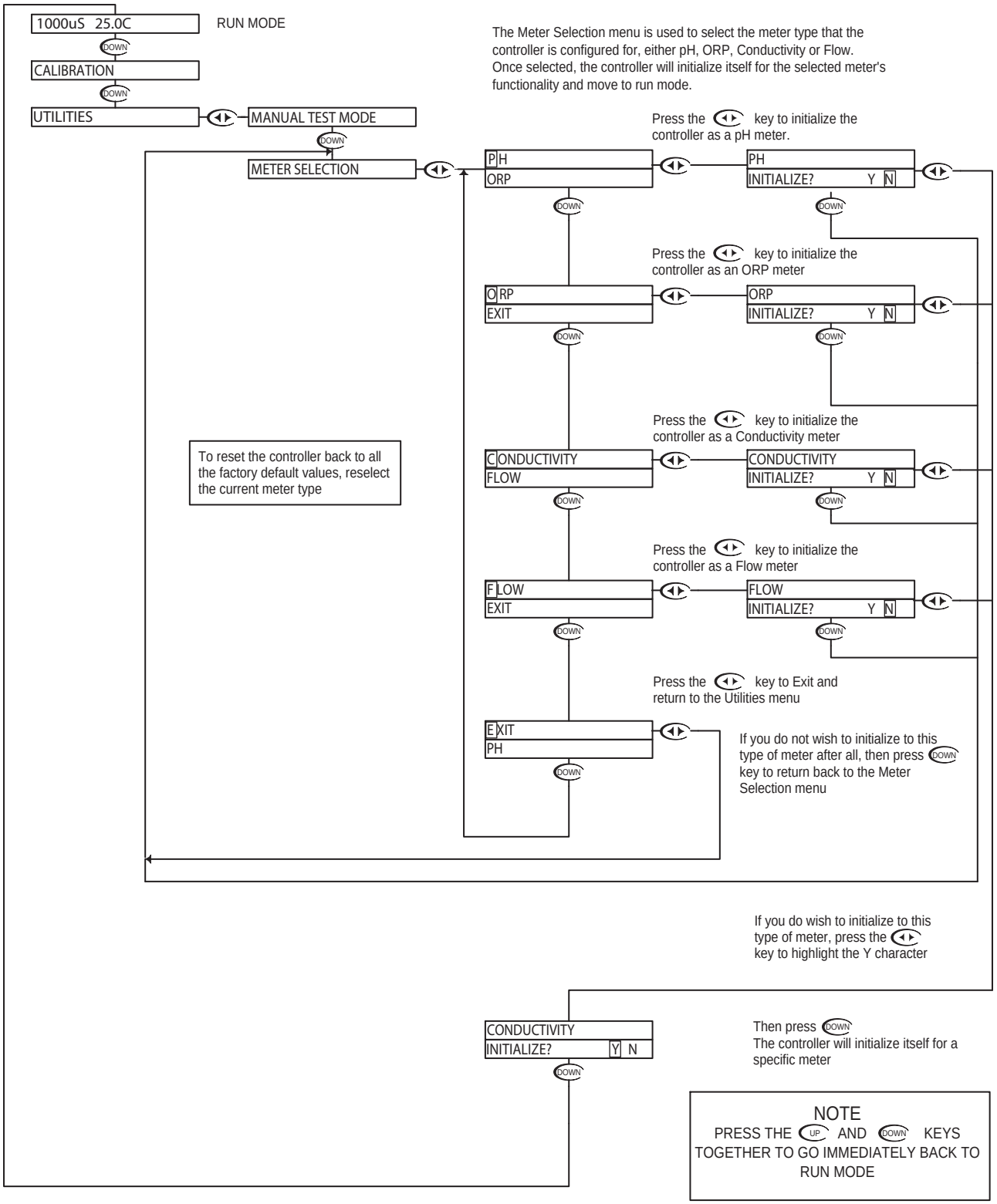
NOTE

PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

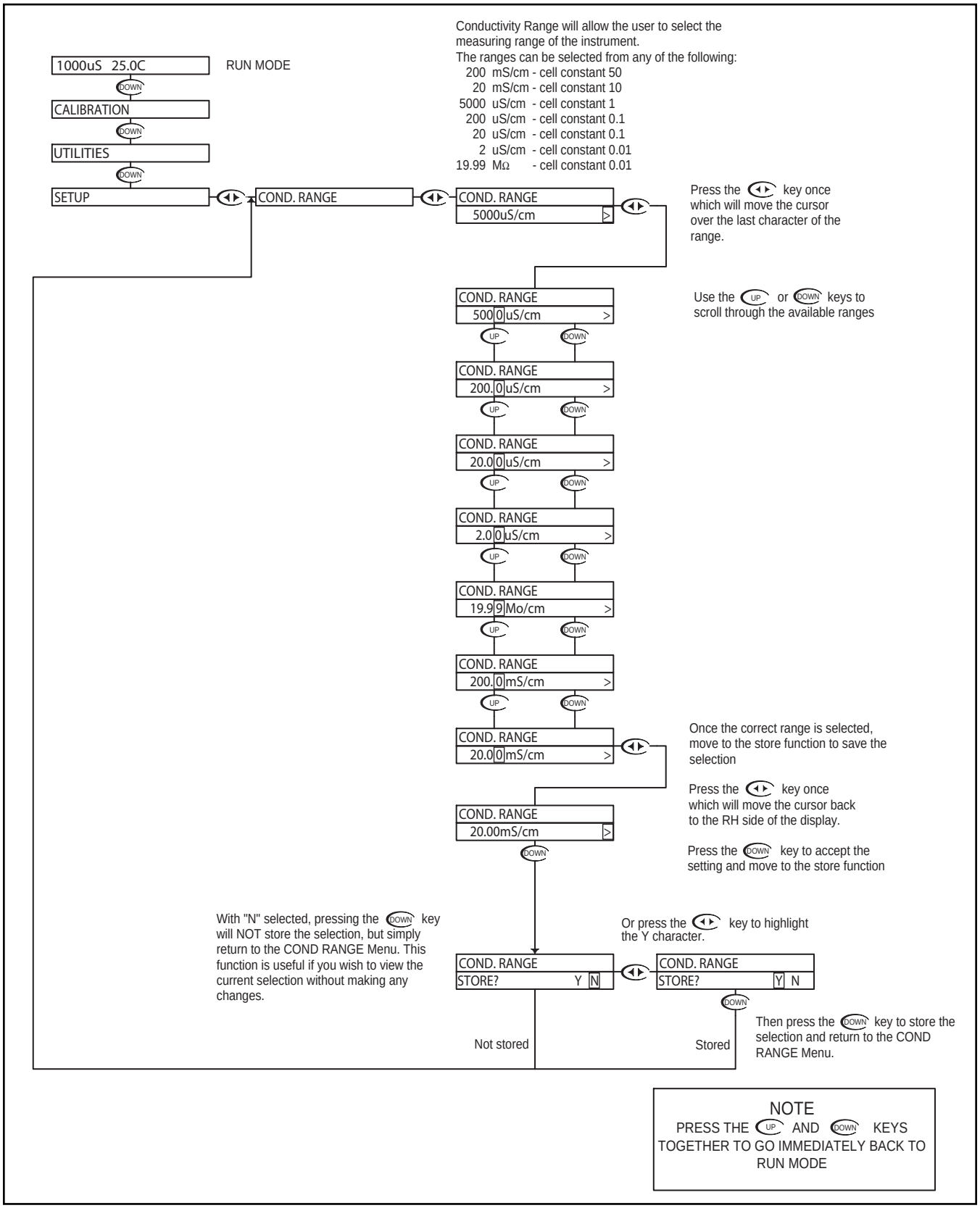
Conductivity - Utilities Menu - Manual Test Mode 6.4



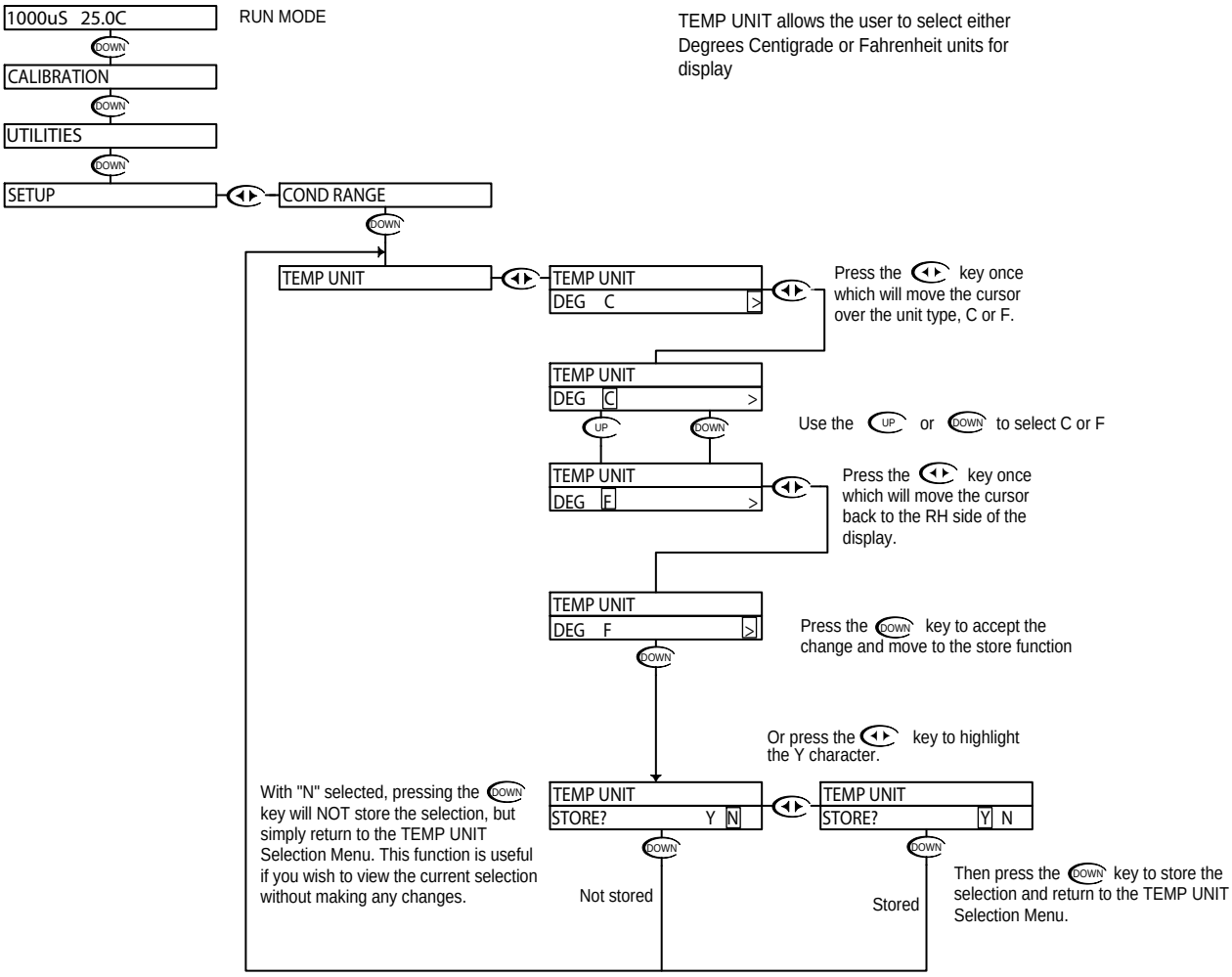
Conductivity - Utilities Menu - Meter Selection 6.5



Conductivity - Setup Menu - Conductivity Range 6.6

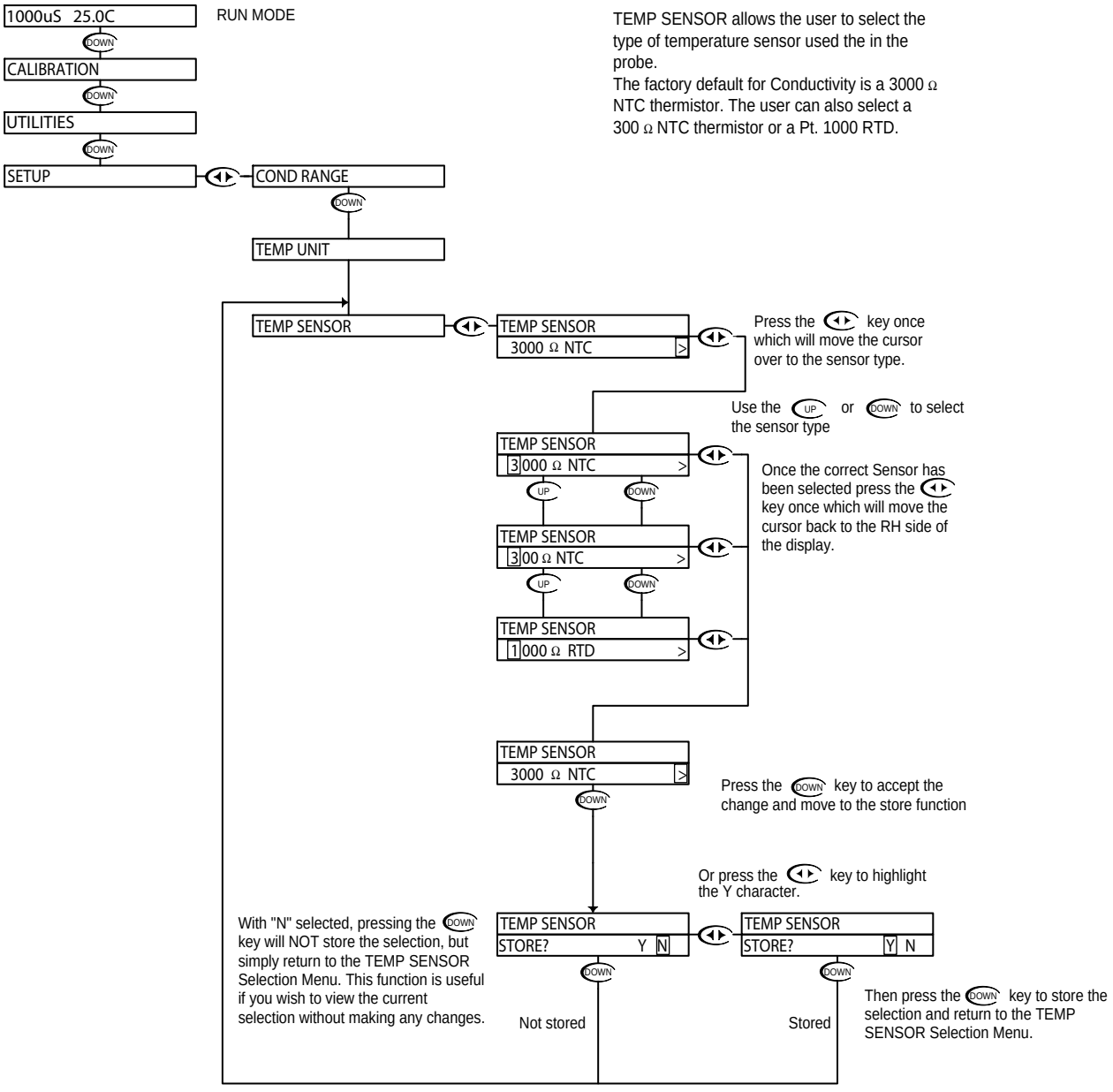


Conductivity - Setup Menu - Temp. Unit 6.7



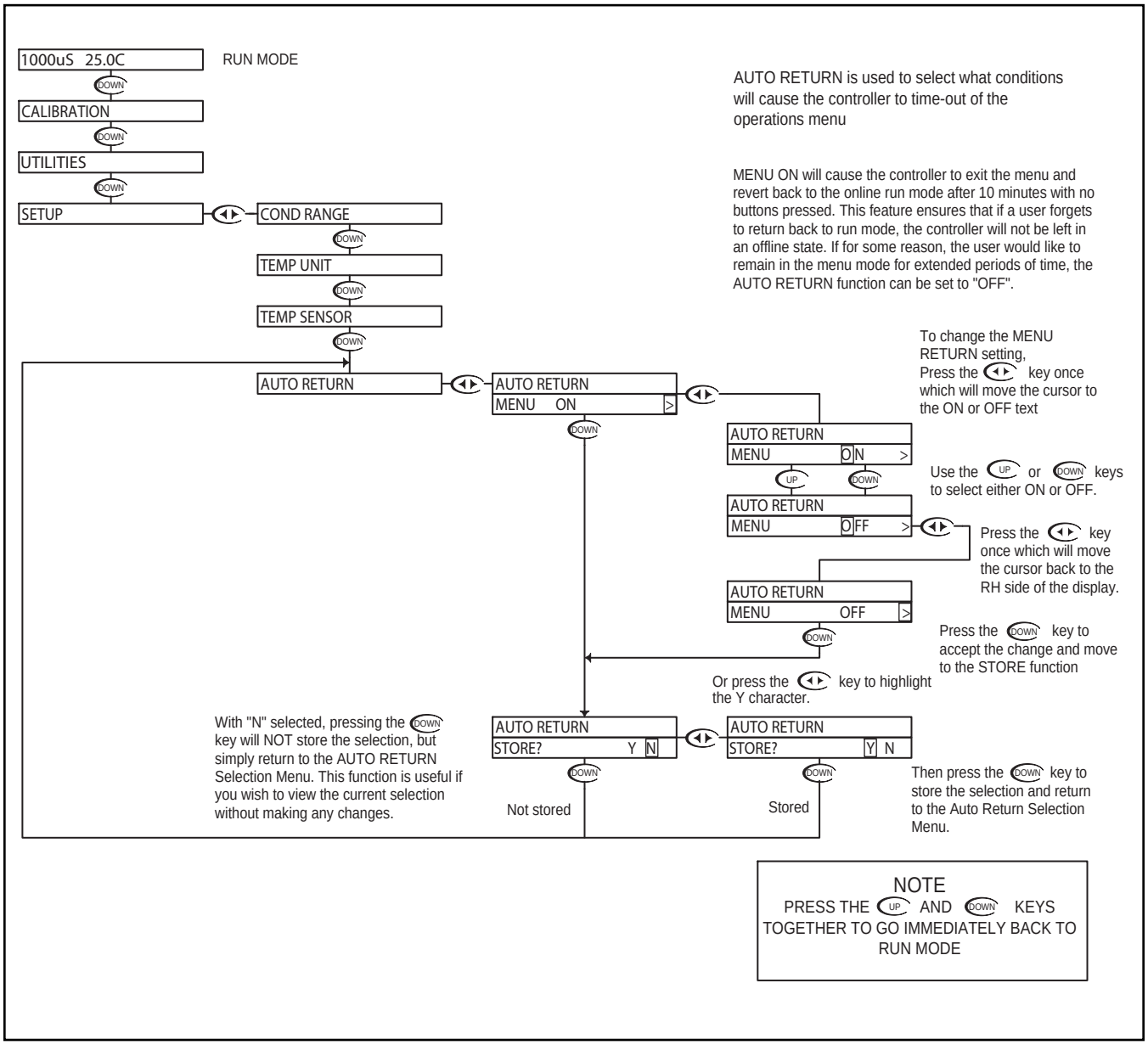
NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

Conductivity - Setup Menu - Temp. Sensor 6.8

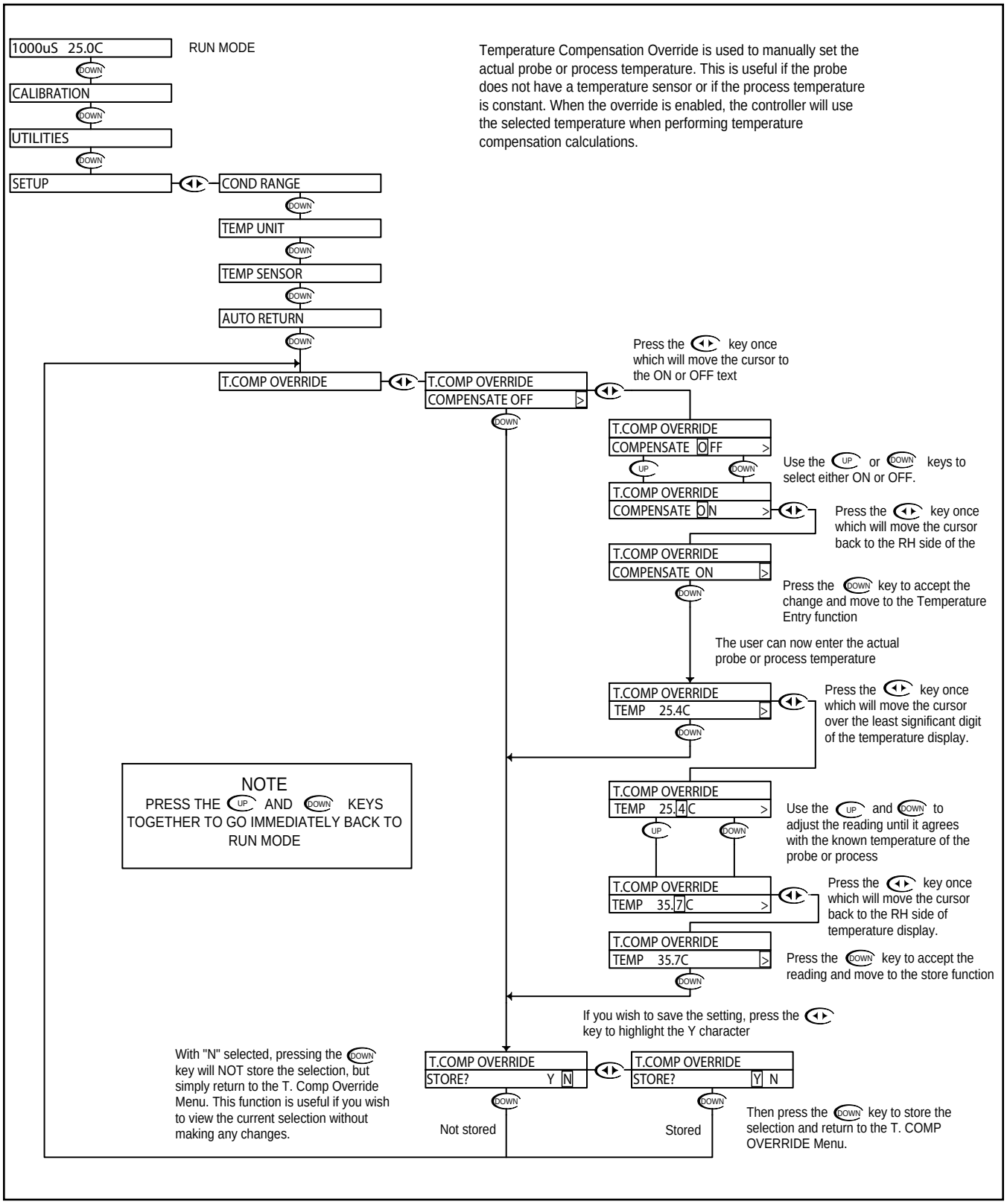


NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

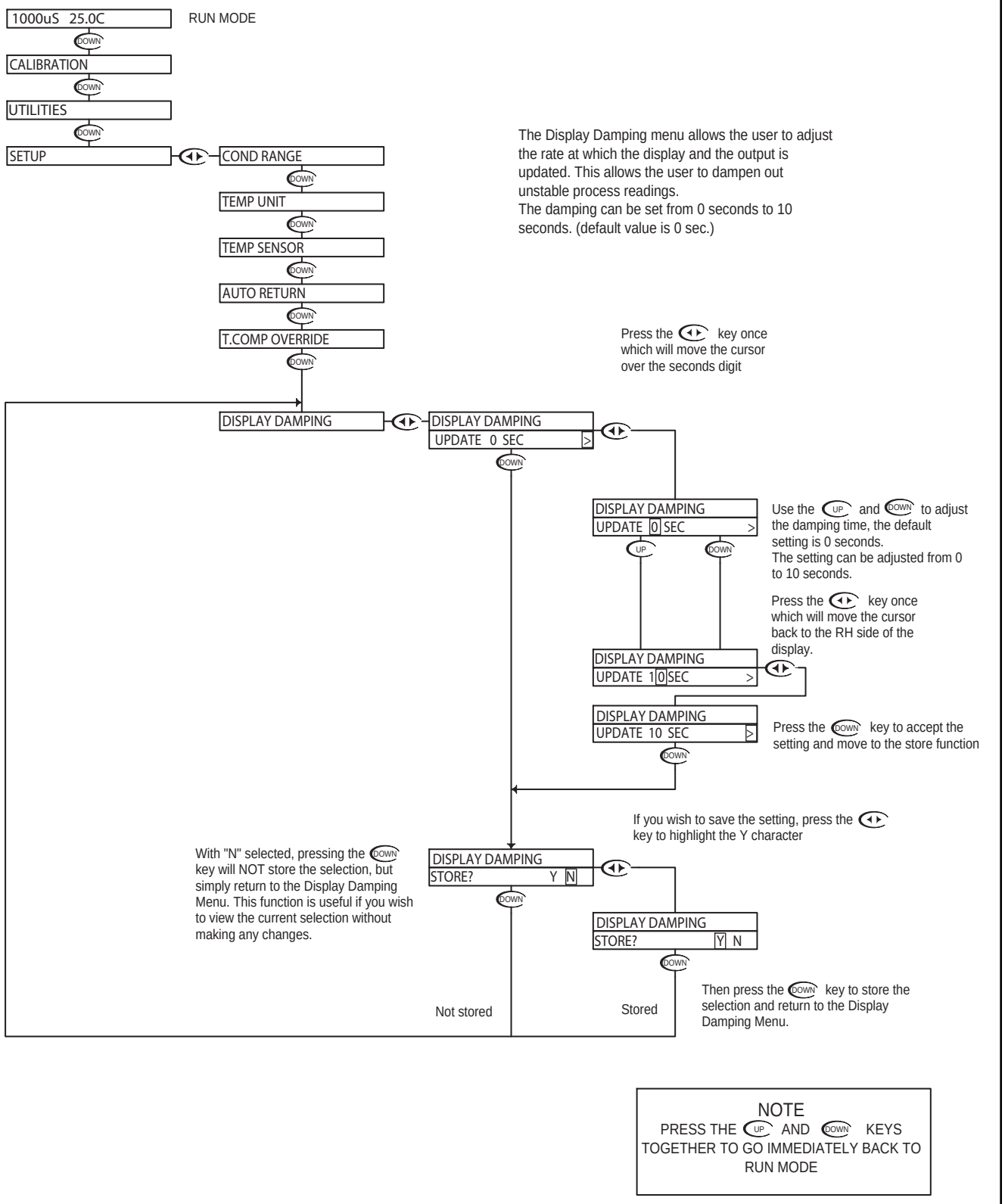
Conductivity - Setup Menu - Auto Return 6.9



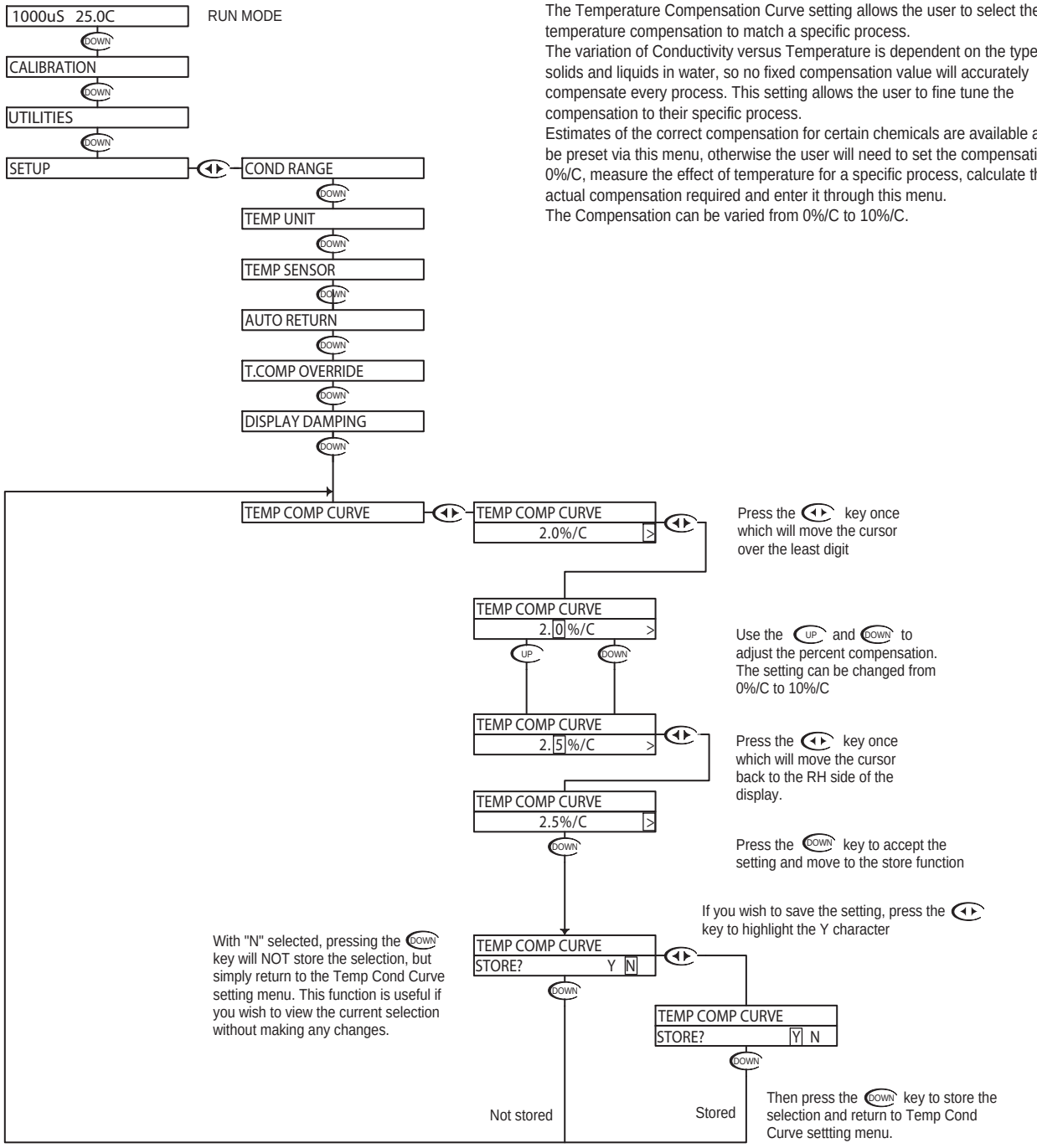
Conductivity - Setup Menu - T. Comp Override 6.10



Conductivity - Setup Menu - Display Damping 6.11

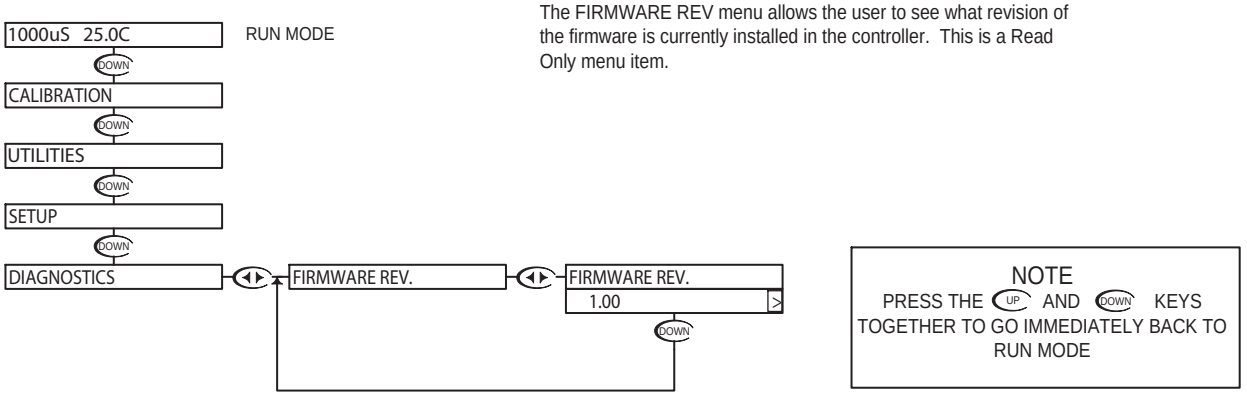


Conductivity - Setup Menu - Temp. Comp. Curve 6.12



NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

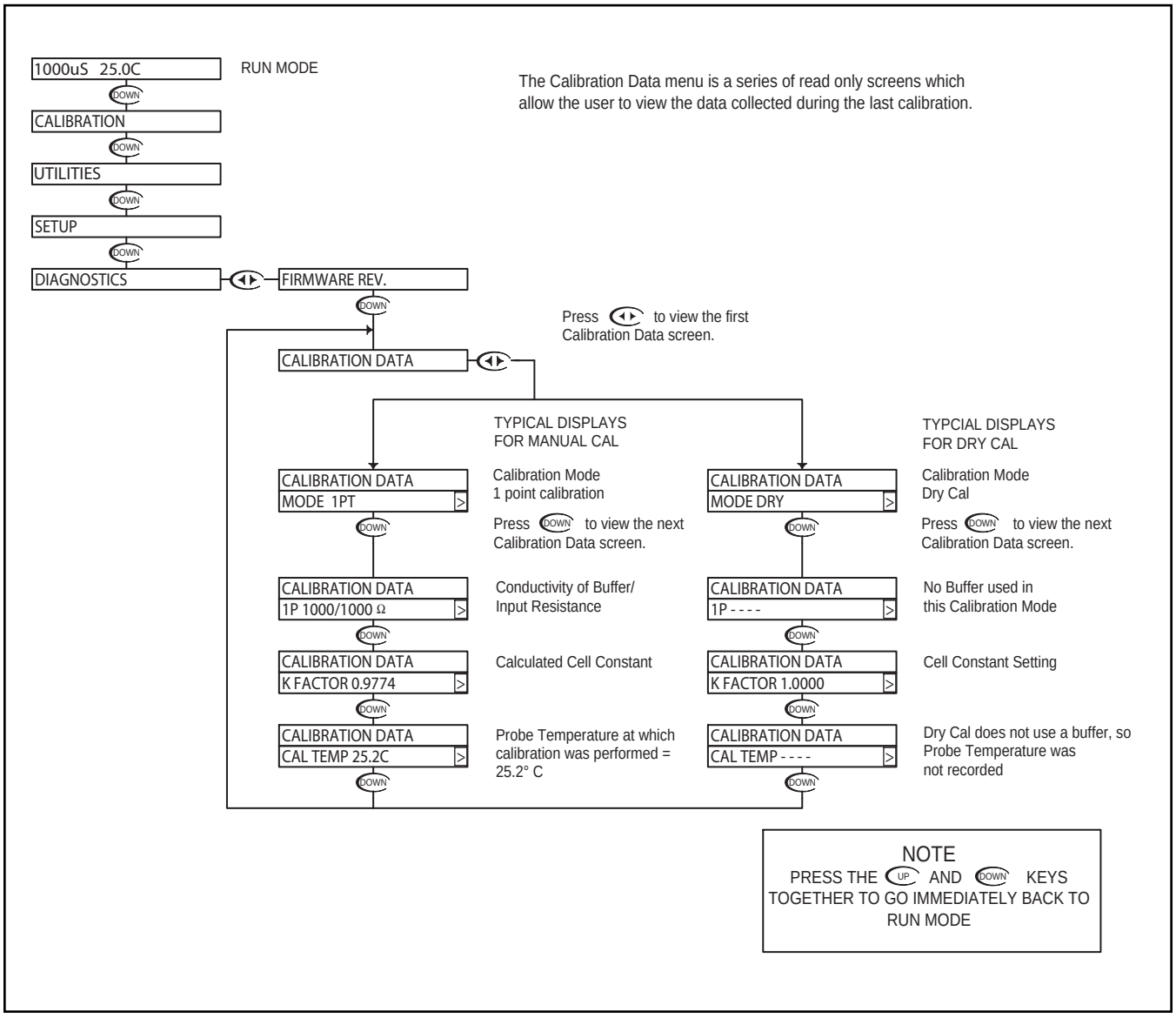
Conductivity - Diagnostics Menu - Firmware Rev. 6.13



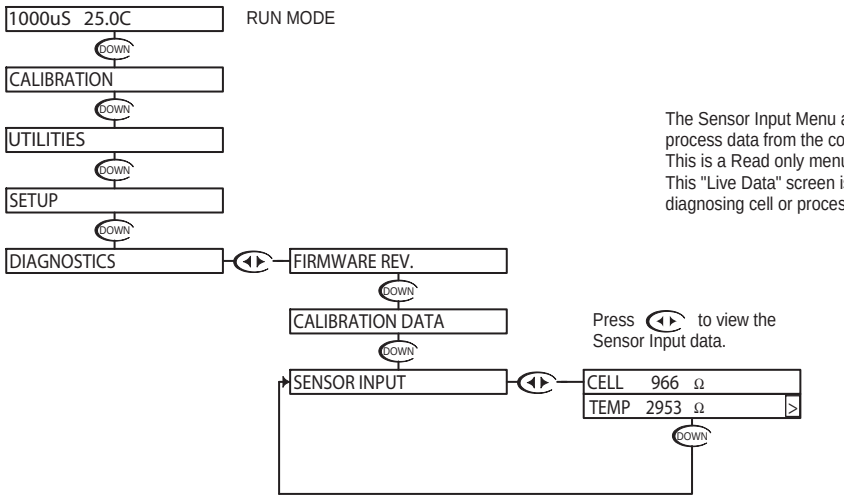
The FIRMWARE REV menu allows the user to see what revision of the firmware is currently installed in the controller. This is a Read Only menu item.

NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

Conductivity - Diagnostics Menu - Calibration Data 6.14



Conductivity - Diagnostics Menu - Sensor Input 6.15



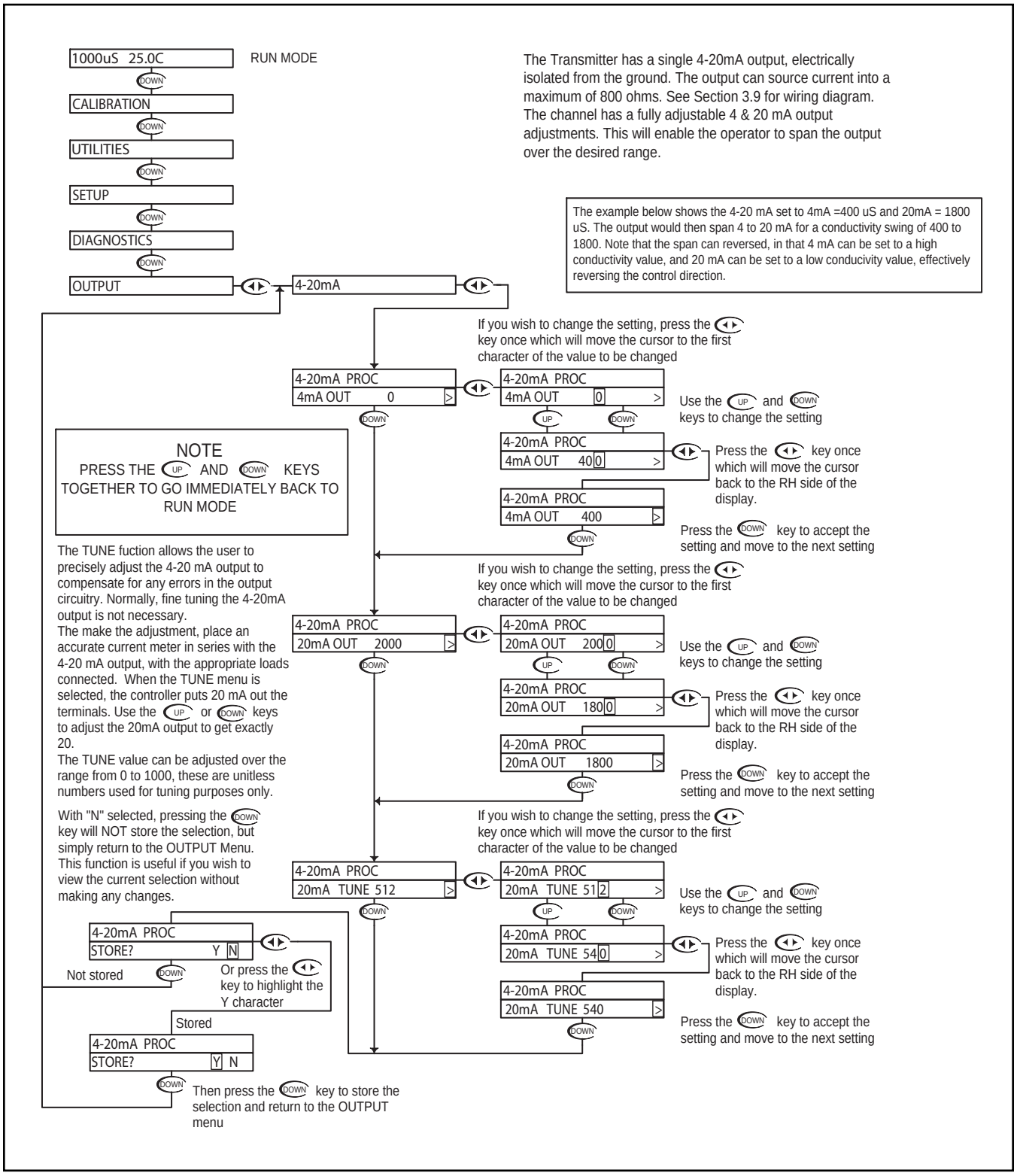
The Sensor Input Menu allows the user to view real time, uncompensated process data from the conductivity cell.
This is a Read only menu item.
This "Live Data" screen is useful for trouble shooting purposes when diagnosing cell or process problems.

Press ◄► to view the Sensor Input data.

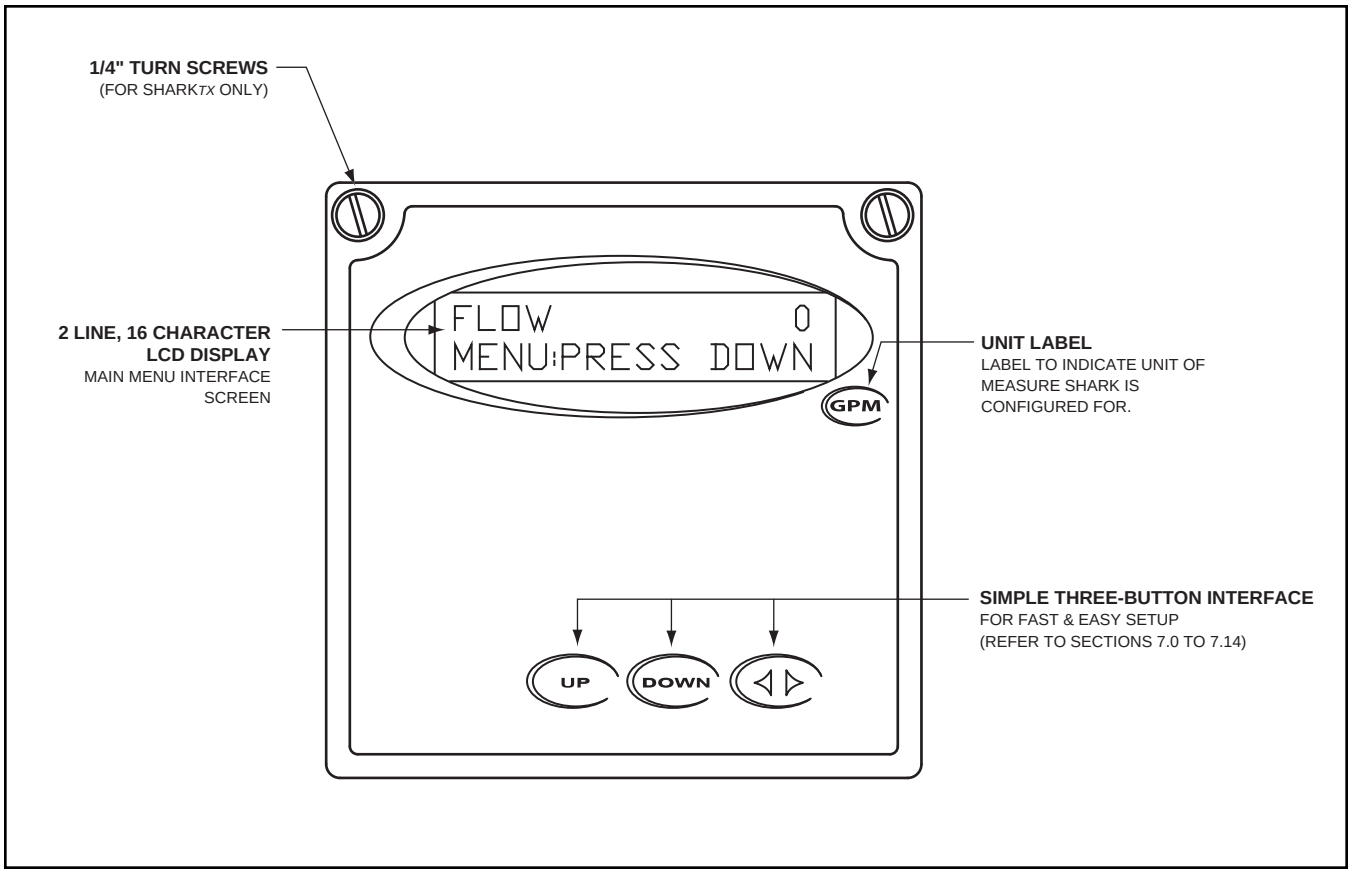
The top line shows the resistance of the cell,
The bottom line shows the actual value of the temperature sensor in ohms.

NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

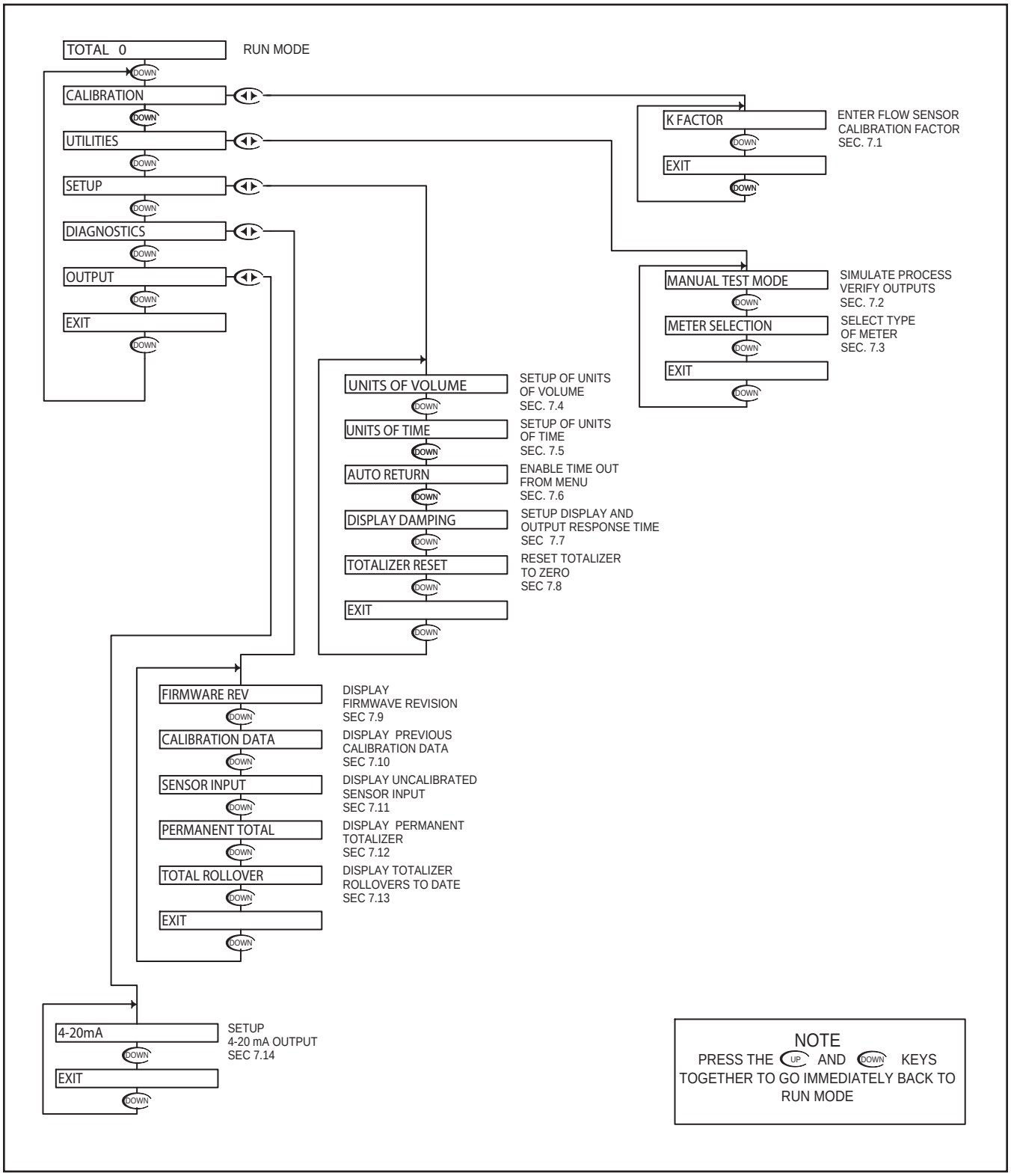
Conductivity - Output Menu - 4-20mA Output 6.16



Section 7 - Using the Transmitter in Flow Mode

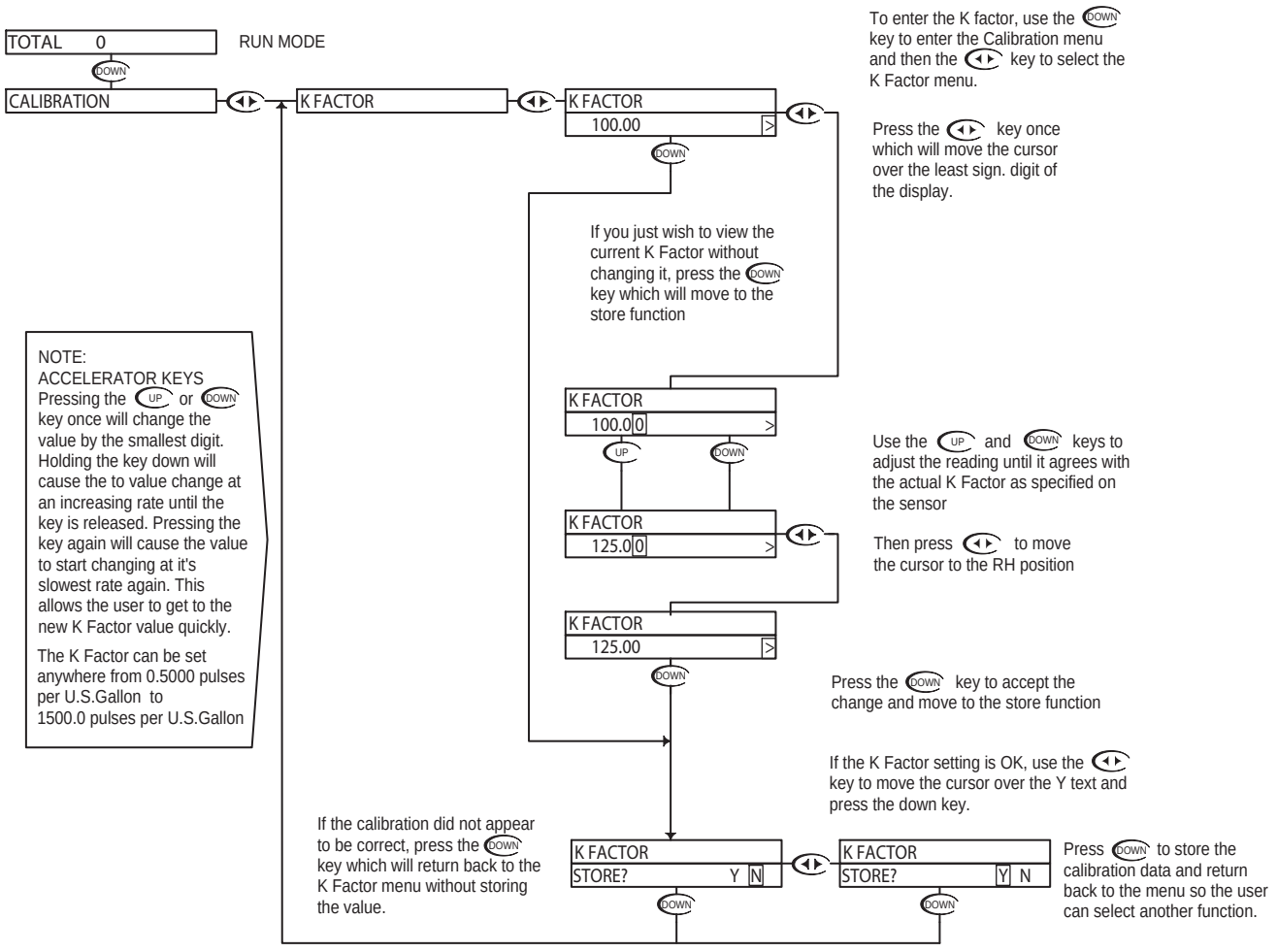


Flow - Menu Overview 7.0



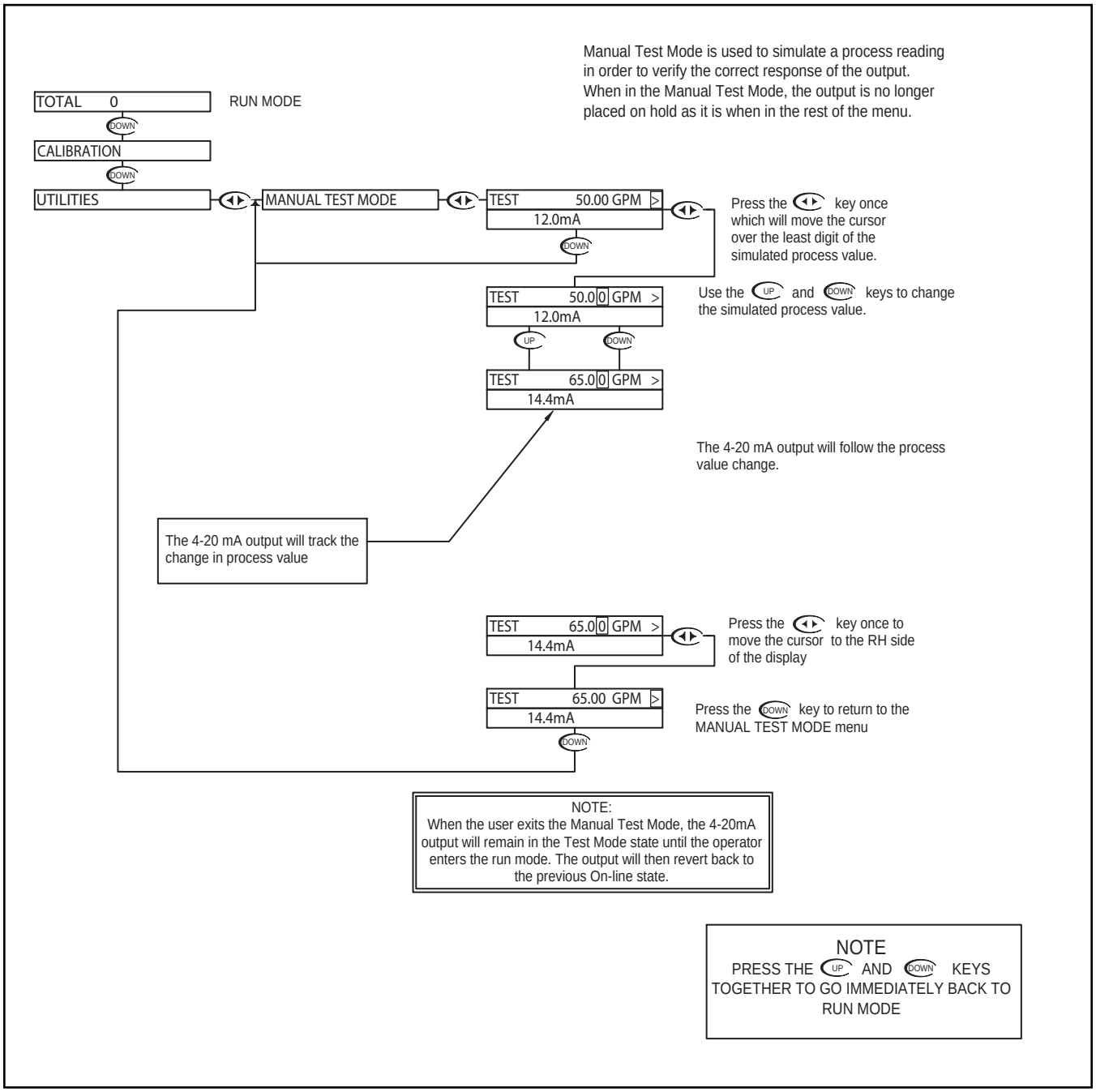
Flow - Calibration Menu - K Factor 7.1

The K Factor menu is used to enter the flow sensor calibration factor. The K Factor represents the number of pulses per U.S. Gallon, generated by the combination of sensor and flow fitting.
It is normally stamped on the flow fitting or attached to a tag on the cable. Typical K factors range between 0.5000 to 1500.0.

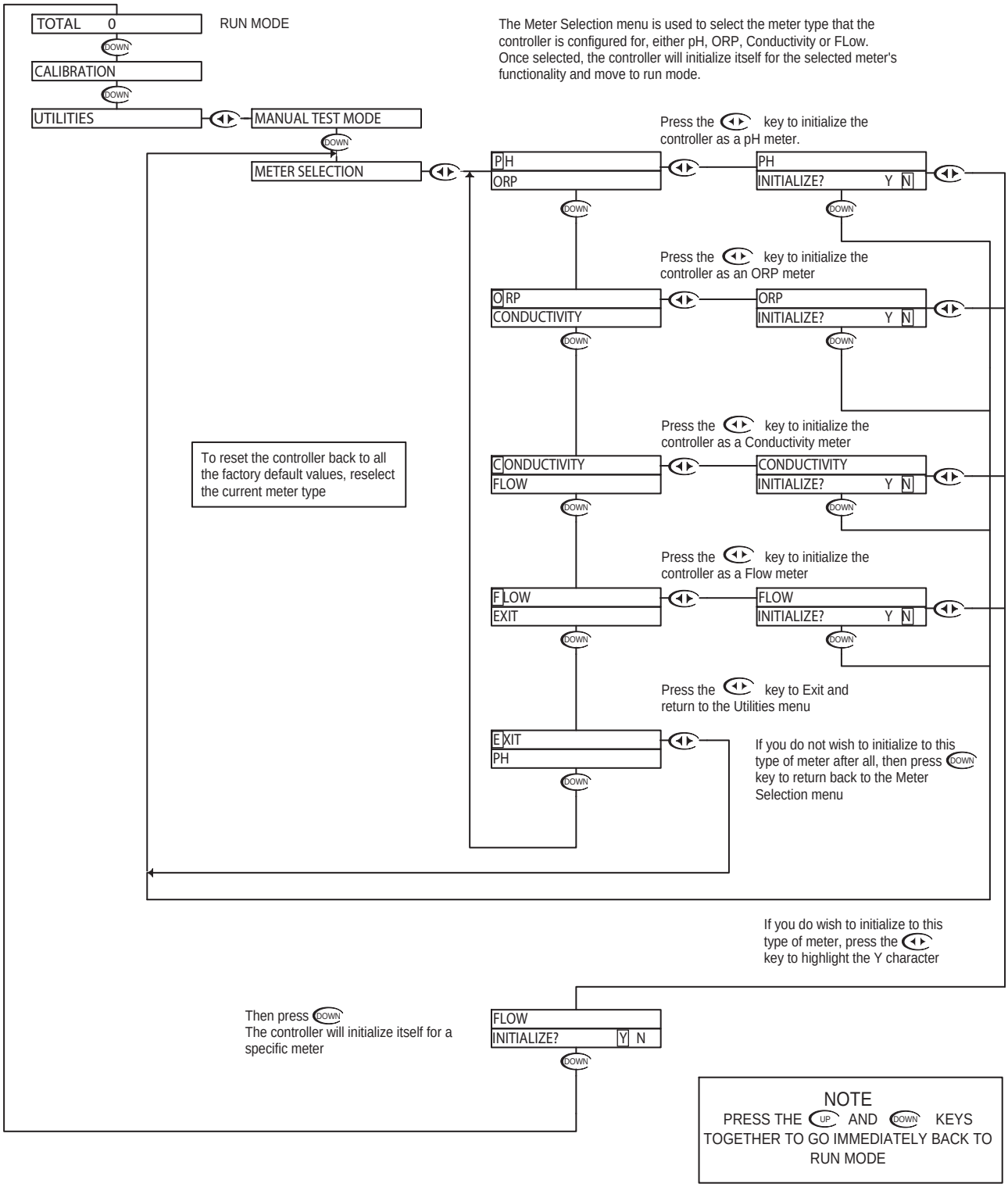


NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

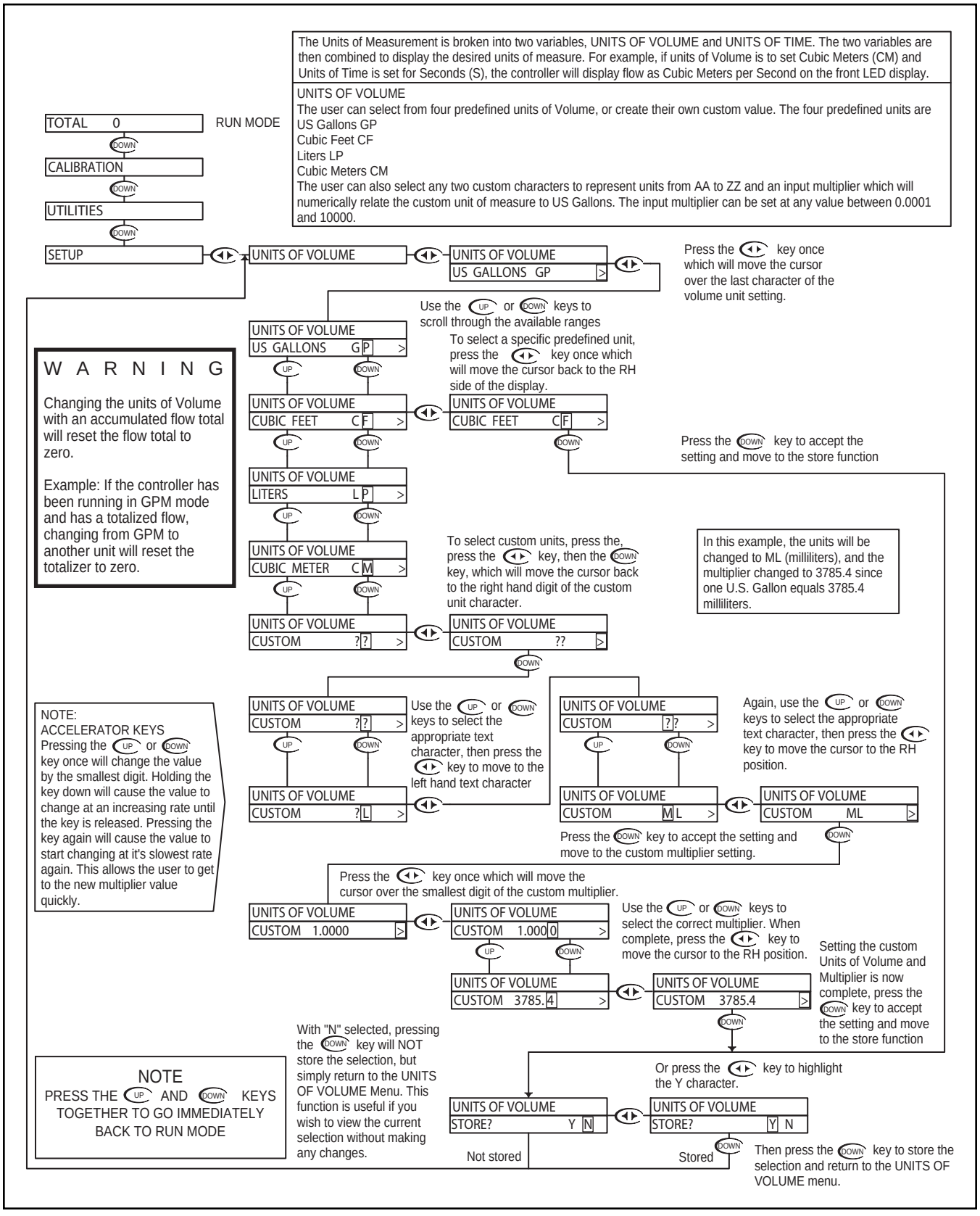
Flow - Utilities Menu - Manual Test Mode 7.2



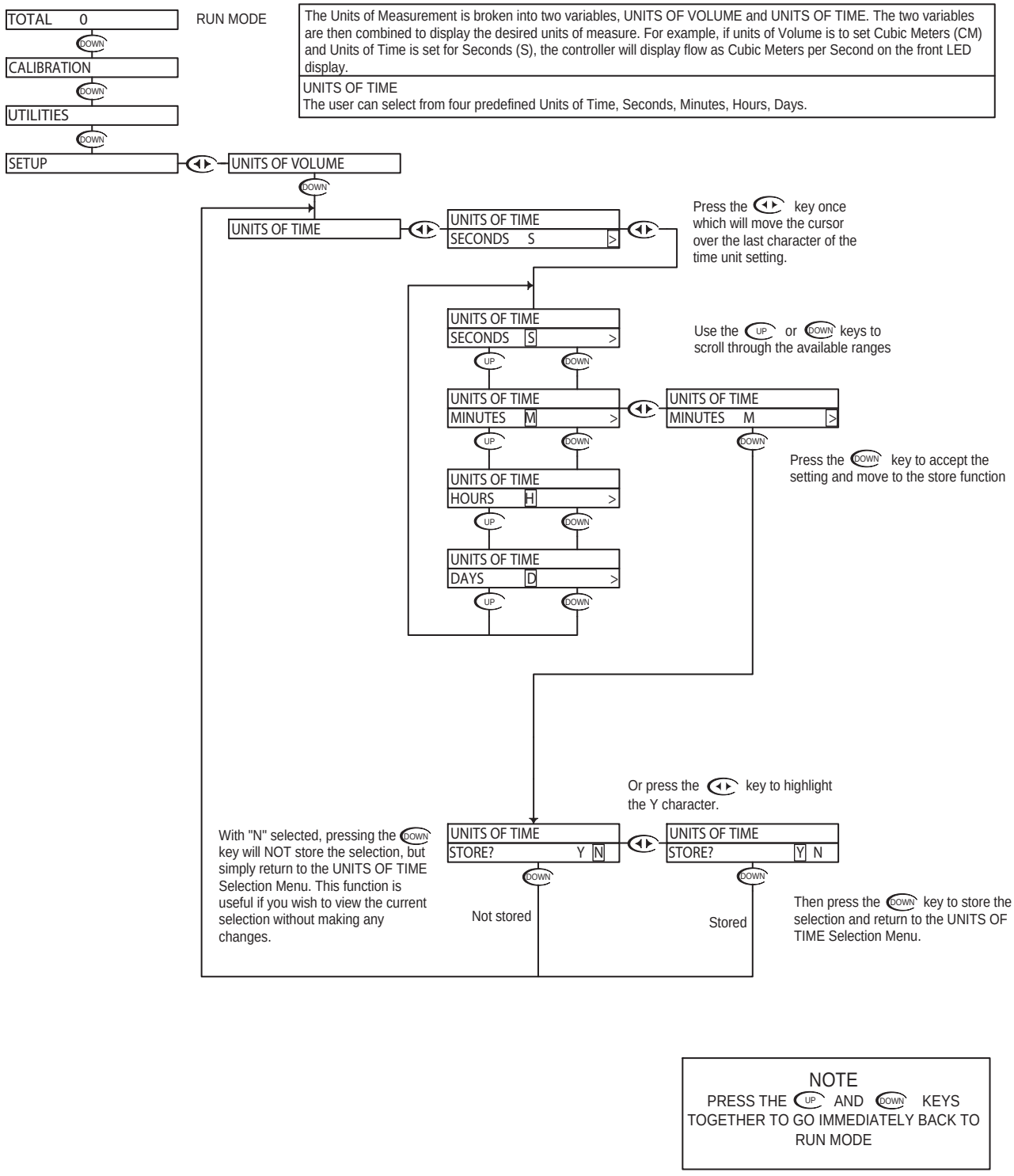
Flow - Utilities Menu - Meter Selection 7.3



Flow - Setup Menu - Units of Volume 7.4



Flow - Setup Menu - Units of Time 7.5

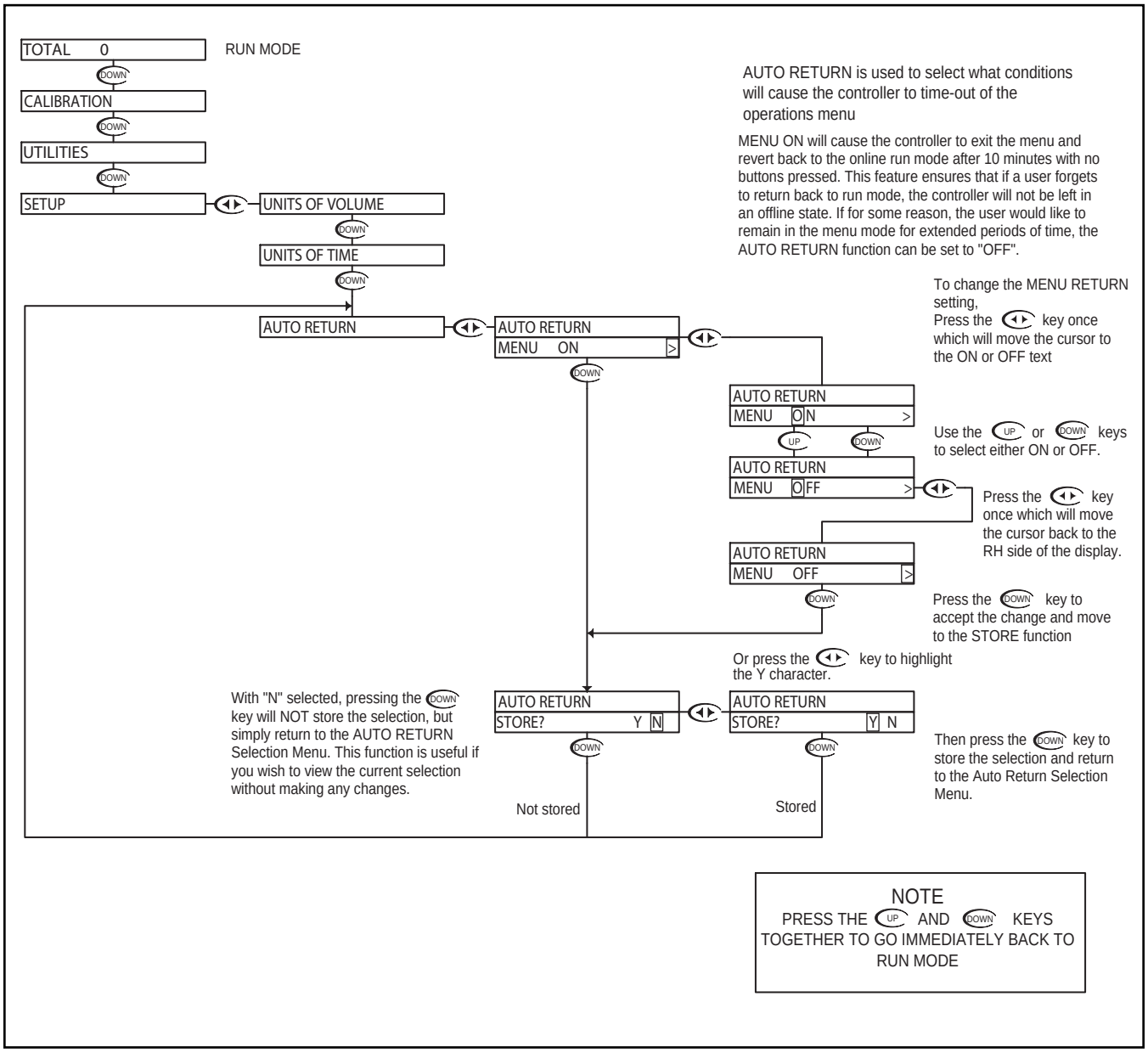


The Units of Measurement is broken into two variables, UNITS OF VOLUME and UNITS OF TIME. The two variables are then combined to display the desired units of measure. For example, if units of Volume is to set Cubic Meters (CM) and Units of Time is set for Seconds (S), the controller will display flow as Cubic Meters per Second on the front LED display.

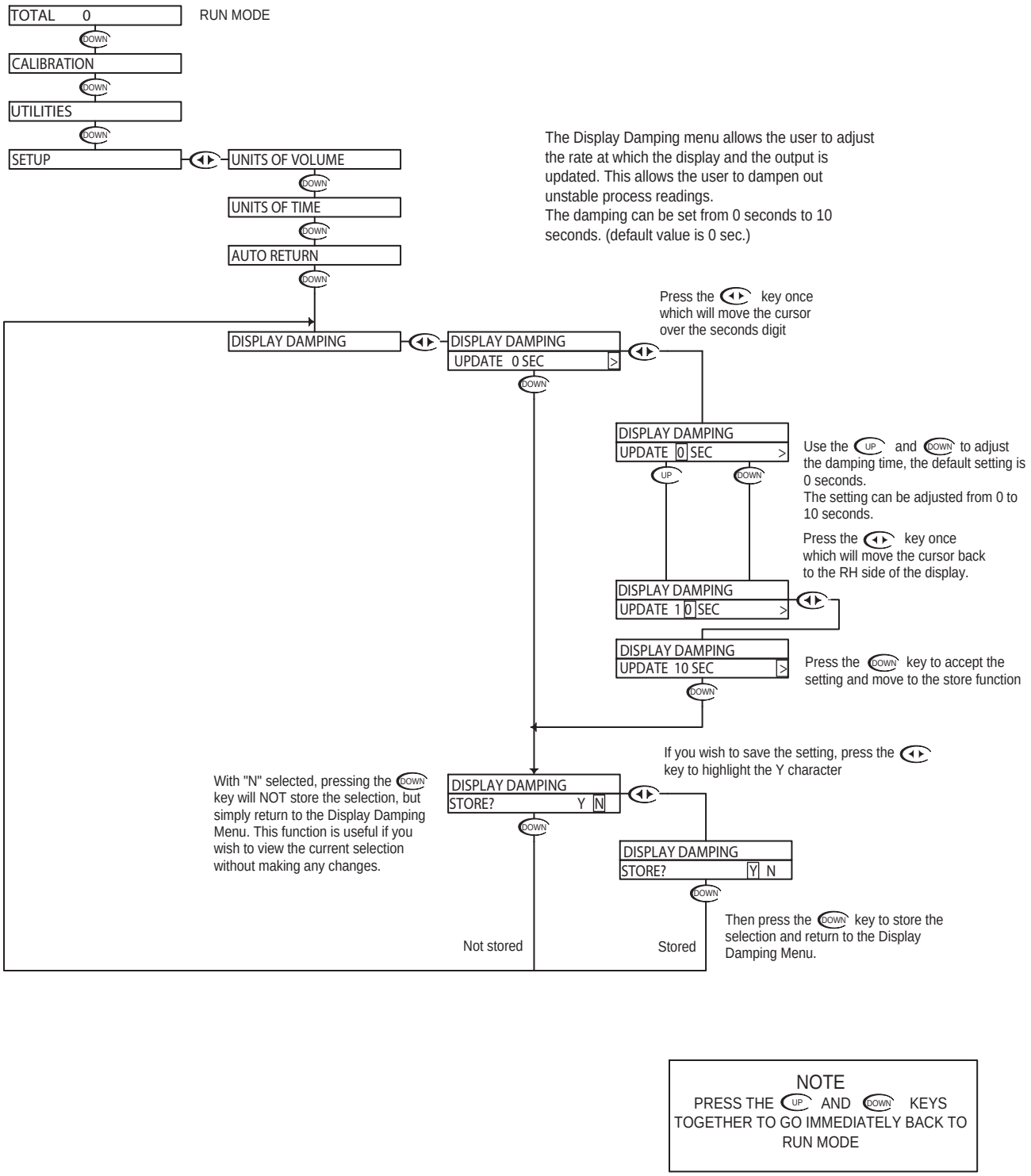
UNITS OF TIME
The user can select from four predefined Units of Time, Seconds, Minutes, Hours, Days.

NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

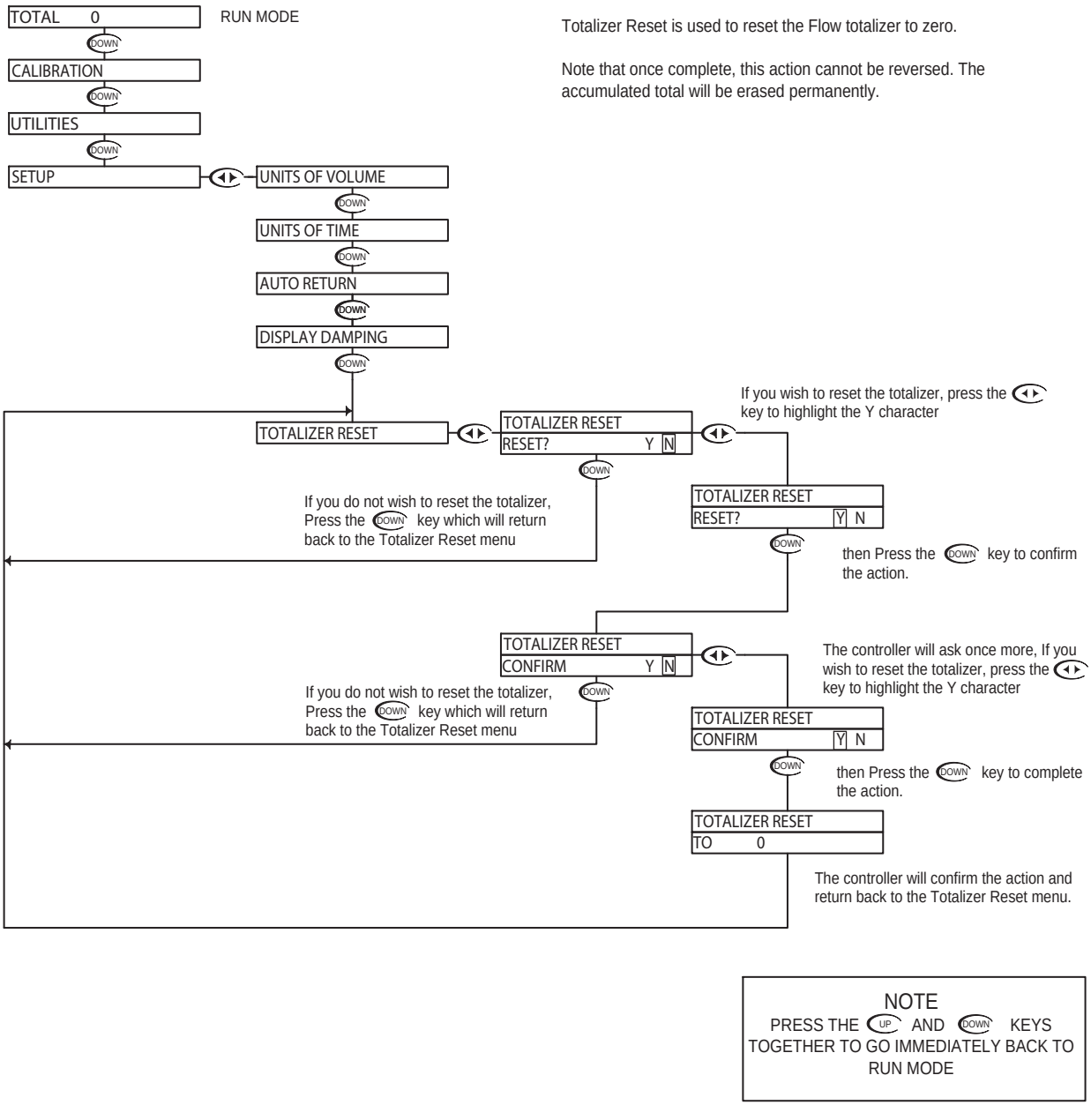
Flow - Setup Menu - Auto Return 7.6



Flow - Setup Menu - Display Damping 7.7



Flow - Setup Menu - Totalizer Reset 7.8

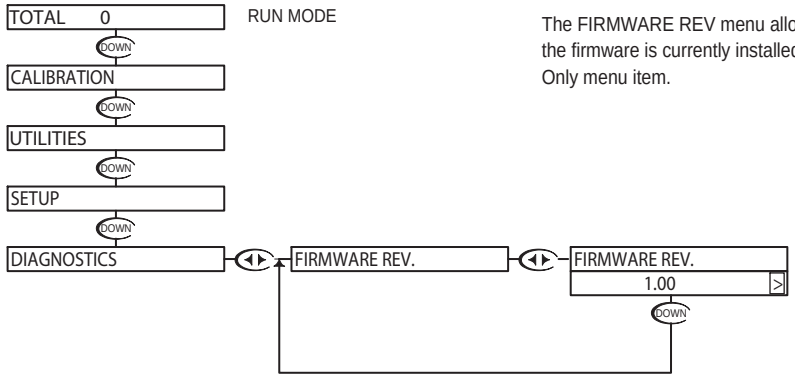


Totalizer Reset is used to reset the Flow totalizer to zero.

Note that once complete, this action cannot be reversed. The accumulated total will be erased permanently.

NOTE
PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

Flow - Diagnostics Menu - Firmware Rev 7.9

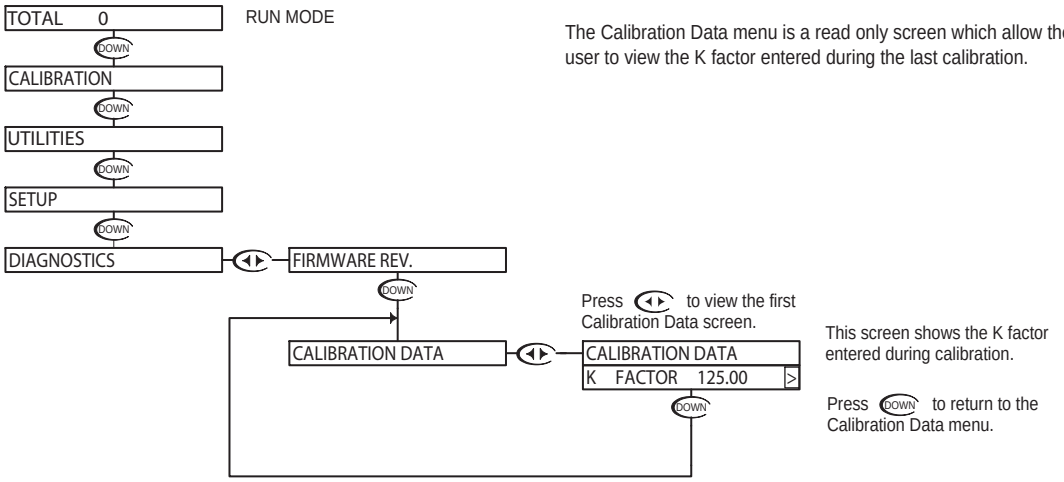


The FIRMWARE REV menu allows the user to see what revision of the firmware is currently installed in the controller. This is a Read Only menu item.

NOTE

PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

Flow - Diagnostics Menu - Calibration Data 7.10



The Calibration Data menu is a read only screen which allow the user to view the K factor entered during the last calibration.

Press ◄► to view the first Calibration Data screen.

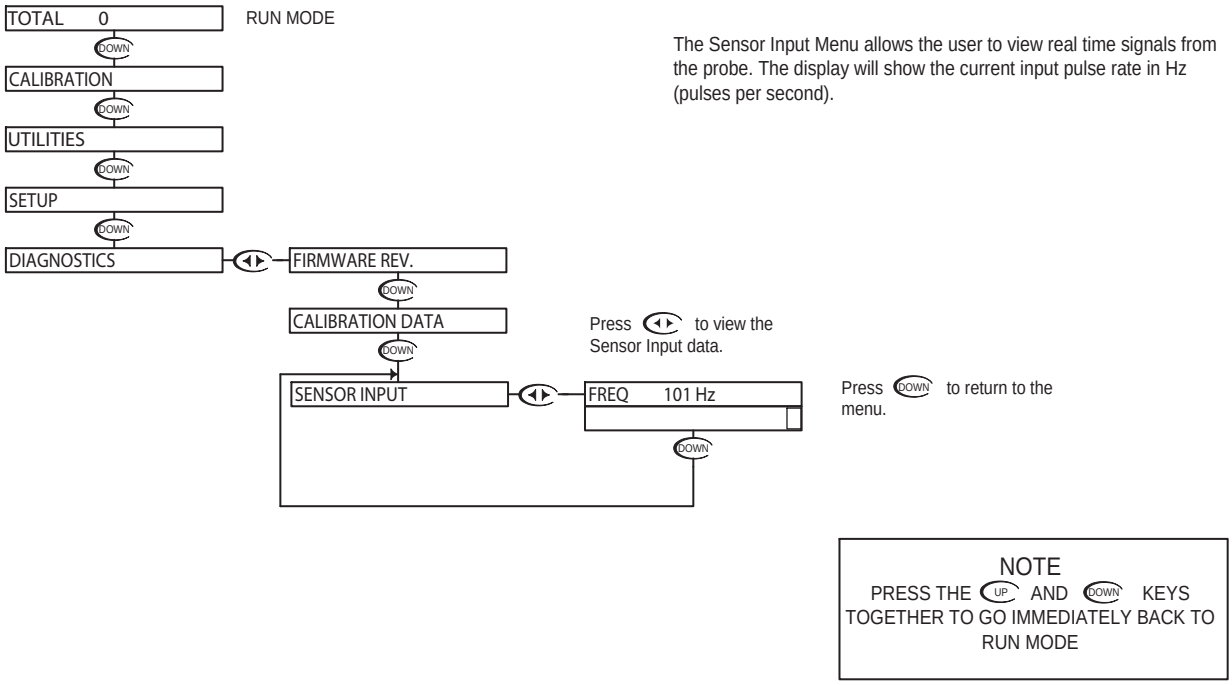
This screen shows the K factor entered during calibration.

Press DOWN to return to the Calibration Data menu.

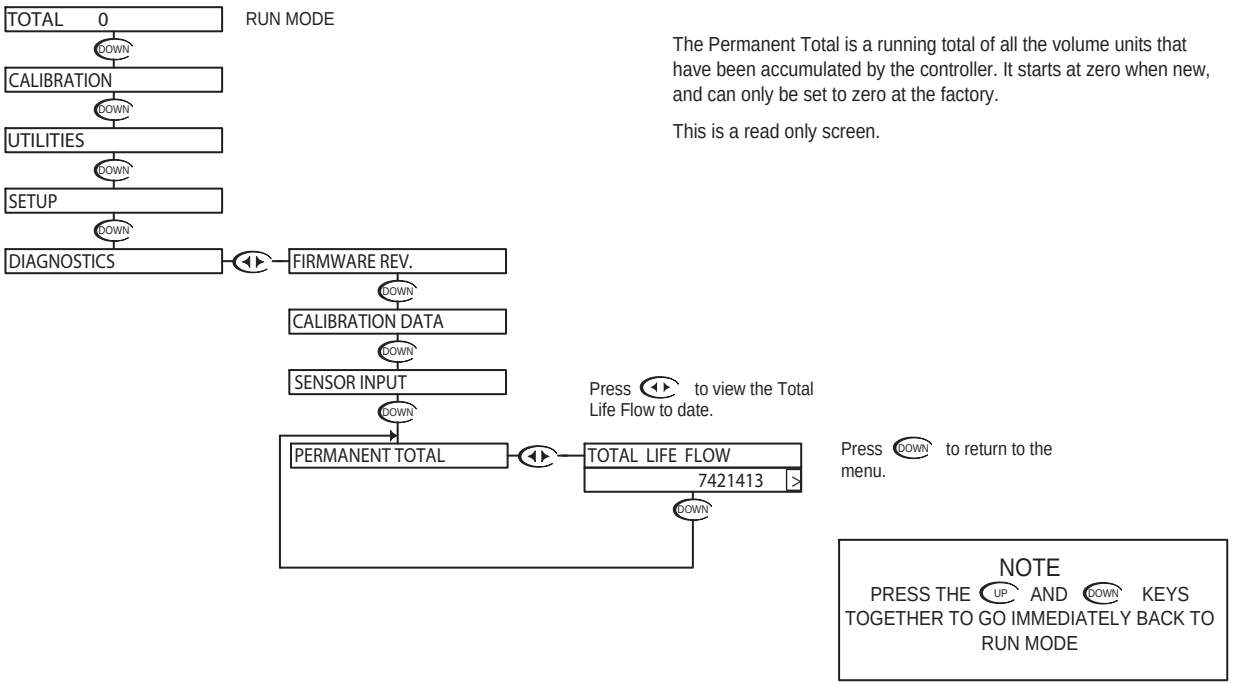
NOTE

PRESS THE UP AND DOWN KEYS TOGETHER TO GO IMMEDIATELY BACK TO RUN MODE

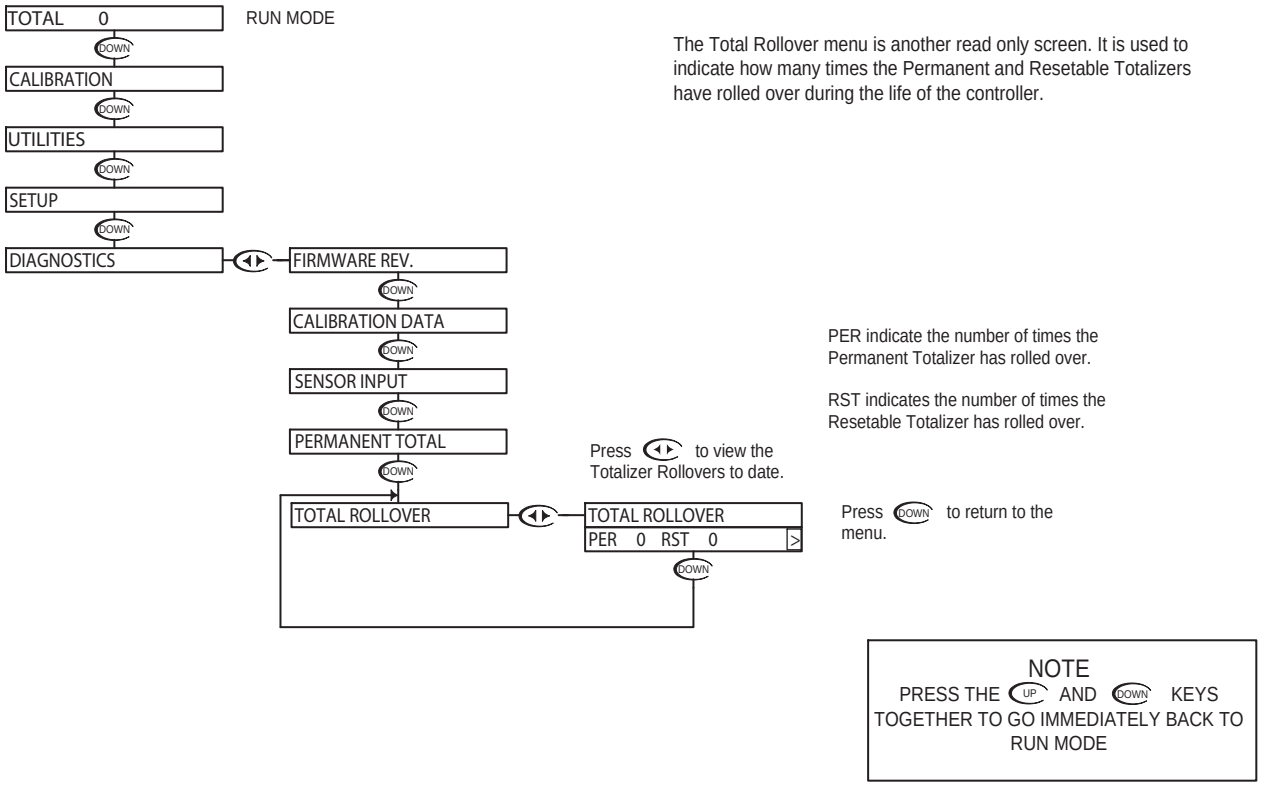
Flow - Diagnostics Menu - Sensor Input 7.11



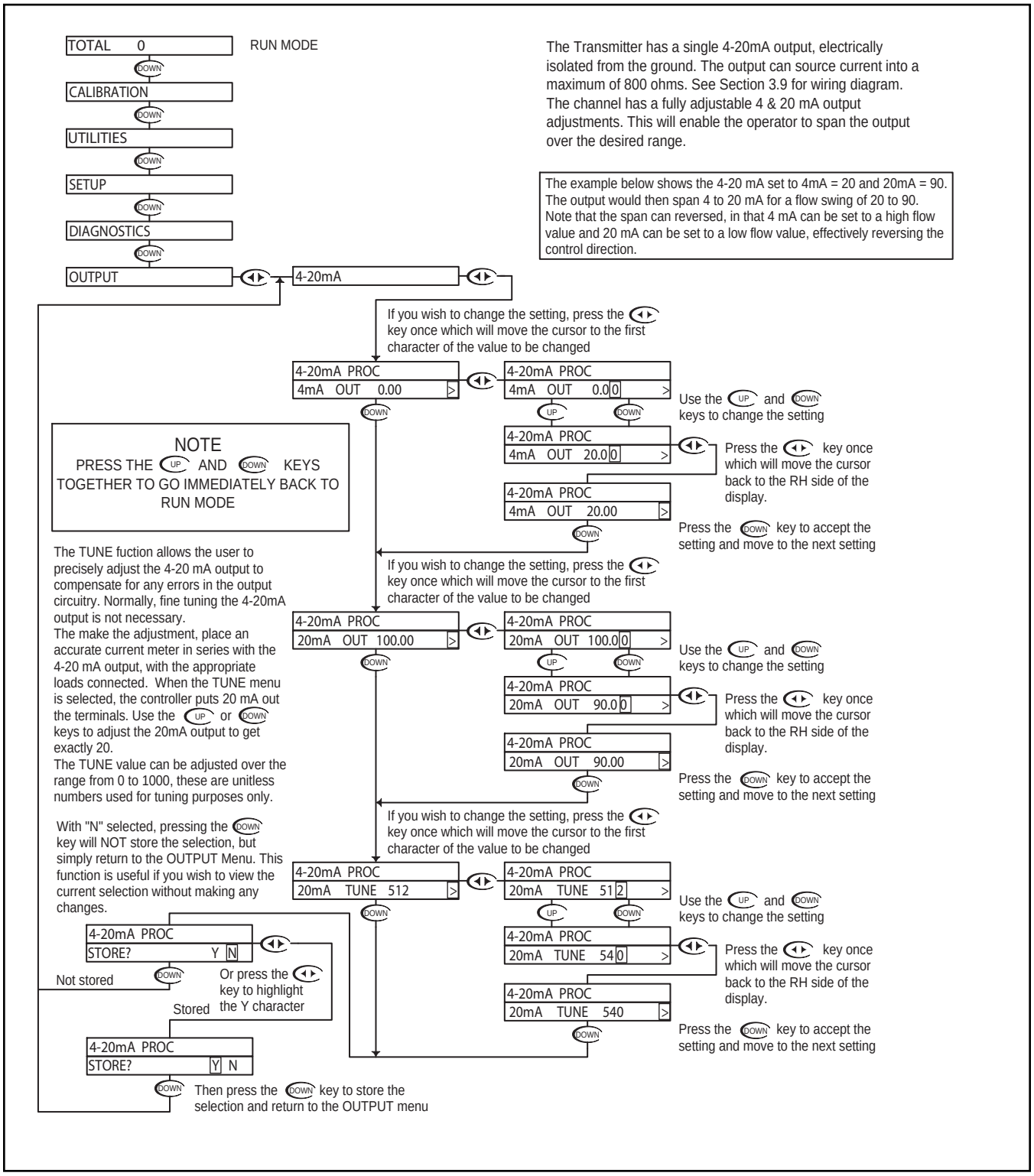
Flow - Diagnostics Menu - Permanent Total 7.12



Flow - Diagnostics Menu - Total Rollover 7.13



Flow - Output Menu - 4-20mA Output 7.14



Appendix A - Probe Configuration Table

Model#	Probe Select	Temp. Sensor
P60C-4	DIFFERENTIAL	300Ω
P60C-4-A	DIFFERENTIAL	300Ω
P60C-4-H	DIFFERENTIAL	300Ω
P60C-6	DIFFERENTIAL	300Ω
P60C-6-H	DIFFERENTIAL	300Ω
P60C-6-F	DIFFERENTIAL	300Ω
P60C-7	DIFFERENTIAL	300Ω
P60C-7-H	DIFFERENTIAL	300Ω
P60C-7-F	DIFFERENTIAL	300Ω
P60C-8	DIFFERENTIAL	300Ω
P60C-8-A	DIFFERENTIAL	300Ω
P60C-8-H	DIFFERENTIAL	300Ω
P60C-S	DIFFERENTIAL	300Ω
P60C-S-F	DIFFERENTIAL	300Ω
AM6010-PO	DIFFERENTIAL	300Ω
AM6070-PO	DIFFERENTIAL	300Ω
P525	COMBINATION	no. temp. sensor
P525-BNC	COMBINATION	no. temp. sensor
P575	COMBINATION	no. temp. sensor
P575K-1	COMBINATION	Pt. 1000 RTD
P575K-2	COMBINATION	300Ω
P575-BNC	COMBINATION	no. temp. sensor
P585	COMBINATION	no. temp. sensor
P585K-1	COMBINATION	Pt. 1000 RTD
P585K-2	COMBINATION	300Ω
P585-BNC	COMBINATION	no. temp. sensor
P565	COMBINATION	no. temp. sensor
P565L	COMBINATION	no. temp. sensor

Model#	Probe Select	Temp. Sensor
R60C-4	DIFFERENTIAL	300Ω
R60C-4-H	DIFFERENTIAL	300Ω
R60C-4-G	DIFFERENTIAL	300Ω
R60C-6	DIFFERENTIAL	300Ω
R60C-6-H	DIFFERENTIAL	300Ω
R60C-6-G	DIFFERENTIAL	300Ω
R60C-7	DIFFERENTIAL	300Ω
R60C-7-H	DIFFERENTIAL	300Ω
R60C-7-G	DIFFERENTIAL	300Ω
R60C-8	DIFFERENTIAL	300Ω
R60C-8-H	DIFFERENTIAL	300Ω
R60C-8-G	DIFFERENTIAL	300Ω
R60C-S	DIFFERENTIAL	300Ω
R60C-S-F	DIFFERENTIAL	300Ω
AM2010-RO	DIFFERENTIAL	300Ω
AM2070-RO	DIFFERENTIAL	300Ω
AM2010-R1	DIFFERENTIAL	300Ω
AM2070-R1	DIFFERENTIAL	300Ω
R525	COMBINATION	no. temp. sensor
R525-BNC	COMBINATION	no. temp. sensor
R575	COMBINATION	no. temp. sensor
R575-BNC	COMBINATION	no. temp. sensor
R585	COMBINATION	no. temp. sensor
R585-BNC	COMBINATION	no. temp. sensor
R565	COMBINATION	no. temp. sensor
R565L	COMBINATION	no. temp. sensor

Return Policy & Warranty Plan

AQUAMETRIX, INC. RETURN POLICY

1. Contact Aquametrix for a "Return Material Authorization" (RMA) form & number. This RMA number is required for all returns or they will not be accepted.
2. The RMA number must be written on the outside of the box for proper identification.
3. A copy of the RMA form along with a description of the problem, model & serial number must be attached with the returning item(s).
4. All C.O.D. & freight collect shipments will be refused unless authorized by AquaMetrix.
5. Shipping documents must indicate "RETURNING FOR REPAIR ONLY, NO COMMERCIAL VALUE".

12-MONTH AQUAMETRIX WARRANTY REPLACEMENT PLAN

AquaMetrix, Inc. will replace or repair any AquaMetrix SHARK*TX* or SHARK*TXP* transmitter that fails due to defects in material or workmanship for a period of up to 12 months from the date of shipment from our facility.

A warranty claim will not be honored if defects are not reported within the warranty period, or if AquaMetrix determines that defects or damages are due to normal wear, misapplication, lack of maintenance, abuse, improper installation, alteration, or abnormal conditions. AquaMetrix's obligation under this warranty shall be limited to, at its option, replacement or repair of this product. The product must be returned to AquaMetrix Inc, freight prepaid, for examination. The product must be accompanied with an MSDS for all the process chemicals used, must be thoroughly cleaned and any process chemicals removed before it will be accepted for replacement or repair. AquaMetrix liability shall not exceed the cost of the product. Under no circumstances will AquaMetrix be liable for any incidental or consequential damages, whether to person or property. AquaMetrix will not be liable for any other loss, damage or expense of any kind, including loss of profits, resulting from the installation, use, or inability to use this product.