SF1000 SALT CONDUCTIVITY METER

1. Overview

The salt conductivity meter software has been modified in an effort to provide a more reliable and repeatable salt timing device.

The salt detector has two input probes, START and STOP. The START probe starts the clock on salt detection; the STOP probe stops the clock on salt detection. Throughout this document and on the LCD display these probes are referred to as P1 for START and P2 for STOP.

2. Measure Display

Assuming the trigger levels have been set, press START to start the salt measuring process.

TRIGGER LEVELS

The trigger levels are unitless numbers that vary in relation to the conductivity of the fluid.

PRE P1 SALT TRIGGER

Providing salt hasn't been detected at P1, the display shows the following data:

P1:*VALUE* is the current "mean average" value measured at P1, this value will update live while waiting for salt to come through the line.

Trg: *VALUE* is the threshold level at which the "Raw" P1 value has to fall below before the clock is started. Note; this level is referenced against the mean value at probe 1. If the line conditions change slowly then both 'P1' and the 'Trg' value will drift. A trigger will only happen when a rapid change in P1 value occurs.

P2: *VALUE* is the current "mean average" value measured at P2, this value will update live while waiting for salt to come through the line.

Trg: *VALUE* is the threshold level at which the "Raw" P2 value has to fall below before the clock is started. This level is referenced against the mean value at P2. If

the line conditions change slowly then both P2 and the Trg value will drift. A trigger will only happen when a rapid change in P2 value occurs.

This values will disappear once salt has been detected at P1. The value of P2 is shown to assess the background trigger value during the test.

POST P1 SALT TRIGGER

Providing salt hasn't been detected at P2, the display shows the following values:

P2: *VALUE* is the current "mean average" value reading measured at P2, this value will update live while waiting for salt to come through the line.

Trg: *VALUE* is the threshold level at which the "Raw" P2 value has to fall below before the clock is started. Note; this level is referenced against the mean value at probe 2. If the line conditions change slowly then both 'P2' and the 'Trg' value will drift. A trigger will only happen when a rapid change in P2 value occurs.

Seconds: *VALUE* is the live time between the start trigger at P1, this will continue counting until a trigger at P2 has occurred

POST P2 SALT TRIGGER

FINISHED This will be displayed when both probes have detected salt.

Seconds: This is the time between triggers. This value will be stored in the log history.

Note: It is possible to exit the measure cycle by pressing the ESC key.

3. Set-up Menu

From Start-up press ENTER to enter the set-up menu. Displayed are the following:

Results History

History is stored showing the most recent results first.

T-0, Is the last reading taken followed by the time in seconds for salt to be detected.

Use the down arrow to review the historical results. If the screen displays T-1 this is read *time minus 1*, indicating it is the last but one result taken.

Note: The SF1000 stores the last 50 results.

Battery Level

The battery level is indicated as a percentage of useful battery remaining. At 100% the battery is 6.0 Volts or greater, at 50% the battery measures 5.5 V, and at 0% the battery measures 5.0 V.

Range Select

After viewing the battery status, press ENTER again to see the current output signal range. The range is indicated as either LOW, MEDIUM or HIGH, where a series resister is placed in series with the signal generator.

Modifying the range is required to allow the unit to detect salt with water with different levels of conductance.

The table below indicates the series resistor value and the corresponding range setting:

Range	**Series Resistor**
LOW CONDUCTANCE	10 kΩ
MEDIUM CONDUCTANCE	1 kΩ
HIGH CONDUCTANCE	100 Ω

P1 Setup

P1 = *VALUE* is the current “mean average” data reading measured at probe 1, this value will update live while waiting for salt to come through the line.

T = *VALUE* is the trigger level to be modified. The value represents the probe level threshold difference required to cause a trigger, the lower the percentage, the easier a trigger will occur.

RNG = L or M or H

This is an indication of the base conductivity of the liquid at the probes

L = Low = low conductivity (10 kΩ series resistor)

M = Medium = medium conductivity (1kΩ series resistor)

H = High = high conductivity (100 Ω series resistor)

For each range, a series resistor is switched automatically in line with the probe, this allows the device to scale its input for a greater range of base conductivity.

Trip = *VALUE* is the actual threshold value that P1 needs to fall below to generate a trigger event.

The value is dependent on the current range setting. If RNG = L then the trigger percentage is divided by 10, if RNG = M then the trigger level is one-to-one, if RNG = M then the trigger level is multiplied by 10.

This automatic scaling should reduce the need to adjust the trigger percentage for different base levels of conductivity.

Note: If a trigger occurs during set-up, the display indicates “TRIP WARNING”. It may only flash momentarily and may be used as an indication of the noise threshold, indicating that the trigger level may be set a little low.

P2 Setup

After setting up the required percentage trigger for P1 press ENTER to set up the percentage trigger for P2 as done for P1.

Trigger Tracking Control

The trigger level is set as a percentage of the mean signal level for a given probe.

With tracking enabled, if the conductance drifts once a test has been started, the trigger level will track, at the given percentage provided during set-up. The trigger will only occur if the rate of change of conductance is faster than the rolling mean value.

With tracking disabled, the trigger level is taken from the measured mean at the point the start button is pressed, and not updated until the next test is started. This may provide a more repeatable test environment.

If the conductance drifts once a test has been started, a false trigger may occur or a delayed trigger may occur depending on the direction of the conductance drift. However, the system will be more sensitive to slower changes in conductance.