Instruction **Manual**

- MICRO-M2

CONDUCTIVITY/TDS METER & CONTROLLER

Supplied by:

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Note: On-going product development at Convergent Water Controls may lead to changes in the specifications of this product.

Warranty: This product is guaranteed for a period of 12 months from installation date. The warranty applies to manufacturing or component defects which may cause the unit to malfunction under specified conditions. The guarantee does not cover damage due to abuse, tampering or improper installation.

Disclaimer: Convergent Water Controls will not be held liable for any consequential damage or loss arising resulting from product malfunction.

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1. INTRODUCTION

Ideally suited for water treatment, the MICRO-M2 electronic controller has a conductivity range of 1 to 10 000 microsiemens and can control the conductivity to a value anywhere in this range.

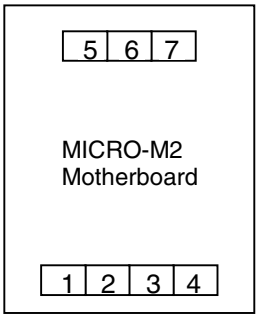
1.1 Features

- Simultaneous conductivity and setpoint readout on a dot matrix LCD display - instant comparison can be made.
- Display in either µS or TDS (selectable).
- Simple 3-button programming. Setting up is simple, easy and accurate!
- Output can be tested at the push of a button - even without connection of the probe.
- Inhibitor dosing control - Inhibitor pump can be connected to the internal screw connectors to operate on bleed.
- Intelligent electronic probe maintenance - cleans probe after it has been exposed to air.
- Mains 240VAC powered. All programmed parameters are stored in non-volatile memory (EEPROM).

2. INSTALLATION

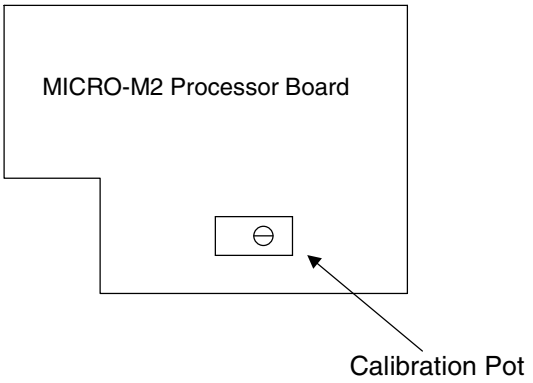
2.1 Electrical Wiring Information

The diagrams below show the Motherboard of the controller (in the base of the box) and the Processor Board of the controller (in the lid of the box).



1. Active 240VAC supply
2. Neutral 240VAC supply
3. Active for Solenoid
4. Neutral for Solenoid

5. Probe PR+ (brown wire)
6. Probe PR- (yellow wire)
7. Probe CM+ (blue wire)



2.2 Probe Installation & Maintenance

The probe is supplied screwed into a Tee such that the electrode tips are submerged in the water flowing through the Tee.

The probe's electrodes should periodically be cleaned to maintain accurate TDS measurements. The frequency of cleaning required will vary from one application to another. In a new installation, it is recommended that the probe be cleaned after 2 weeks of service.

To clean the probe, first unplug the probe lead and unscrew the probe from the Tee. The probe can normally be cleaned using a cloth or paper towel. Occasionally the probe's carbon electrodes may be coated with certain substances which requires more vigorous cleaning (this coating may not always be visible). To clean a coated electrode, use a fine grit abrasive, such as emery paper.

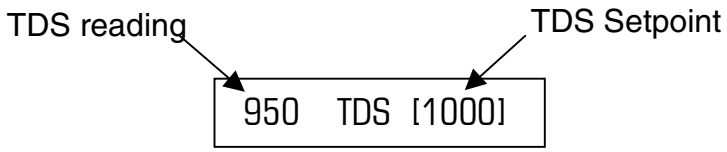
After cleaning, apply more Teflon® tape to the probe thread and screw back into the Tee.

The controller should always be calibrated after probe cleaning.

3. COMMISSIONING AND PROGRAMMING SETPOINT

3.1 Start-Up

After power-up, the MICRO-M2 controller is ready to perform conductivity (TDS or µS) indication and control. All the relevant information is displayed on the LCD display as explained below.



Status	Display
Normal operation:	**Measured TDS** & **TDS Setpoint**, as shown above
Programming mode:	Programming information (eg. "Setpoint")

3.2 Select Displayed Units (ie. TDS or μS)

Conductivity can be displayed in either:

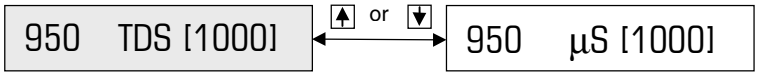
TDS (ie. Total Dissolved Solids), or
μS (ie. microsiemens)

At any stage during normal operation the ▲ or ▼ pushbutton can be pressed momentarily to alternate between displaying the conductivity in TDS or **μS** (ie. microsiemens).

The displayed units, ie. either TDS or μS should be selected before performing calibration and before programming conductivity setpoint.

To leave the display in TDS, ie. factory default setting, proceed to section 3.3.

Example:
Changing the factory default of TDS to μS



3.3 Calibration

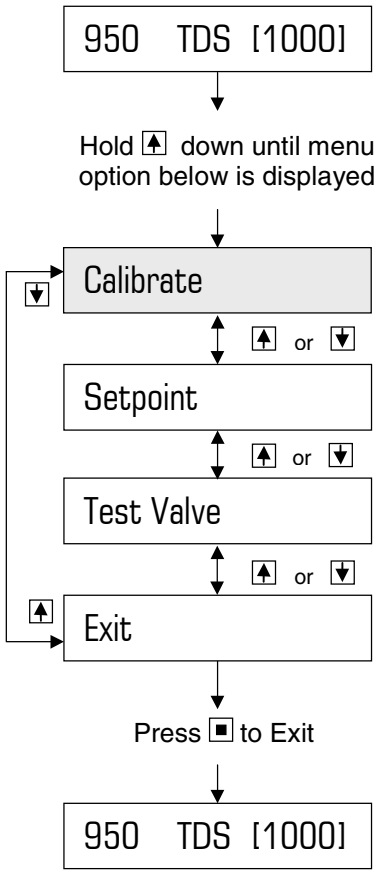
Take a sample of water and measure the TDS with a hand-held conductivity meter. Should the TDS readout on the display differ from the sample taken, calibrate the controller as follows:

<u>Option 1</u>: The displayed TDS requires a large adjustment.

(For optimum performance, this should be performed on first installation. Thereafter, option 2 should be sufficient).

The following can be performed, BUT only by a qualified technician.

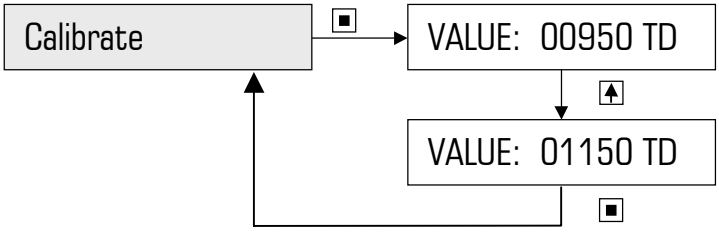
IMPORTANT: AS THE UNIT NEEDS TO BE POWERED, BE VERY CAREFUL NOT TO TOUCH ANY COMPONENTS OR WIRING IN THE BASE OF THE BOX, AS THE SCREW TERMINALS OR THE CIRCUIT BOARD MAY BE LIVE, AND CAN RESULT IN ELECTRIC SHOCK, OR EVEN DEATH.



1. Remove the lid of the controller.
2. Locate the trim potentiometer on the underside of the lid.
3. Slowly turn the potentiometer with an insulated miniature screwdriver until the desired reading is obtained.
4. Replace the lid of the controller, ensuring that the seal is in place and no wires are trapped between the lid and the base.

<u>Option 2</u>: The displayed TDS requires a small adjustment

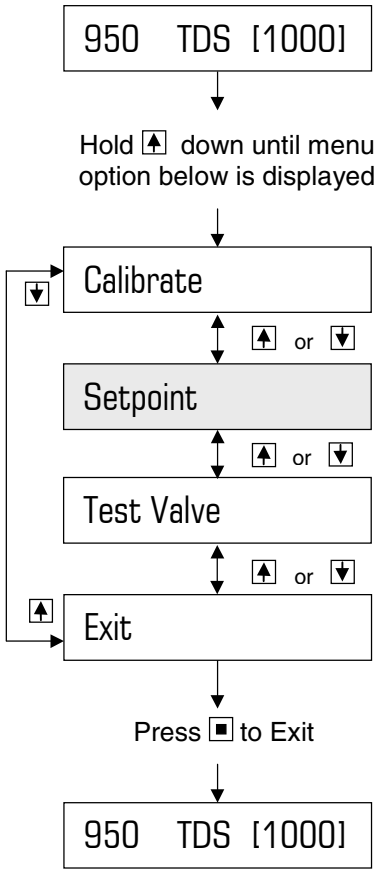
Example:
Changing the TDS reading of 950 to 1150



Item flashing on display:

▲ Press to Scroll Up
▼ Press to Scroll Down
■ Press to Select/Enter

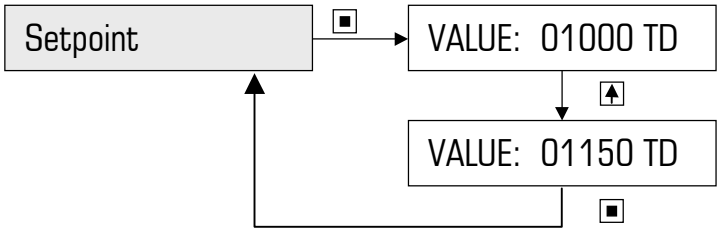
3.4 Set Conductivity Setpoint



The main function of the MICRO-M2 is conductivity bleed control, ie. the solenoid opens (ie. bleeds) when the TDS rises above the setpoint. When this occurs, the system water is flushed to drain and fresh make-up water dilutes the system, thus lowering the conductivity of the cooling tower water.

The setpoint is entered as an actual number (eg. 1000 TDS), in 50 μS/TDS increments.

Example:
Increasing factory default setpoint of 1000 TDS to a new setting of 1150 TDS



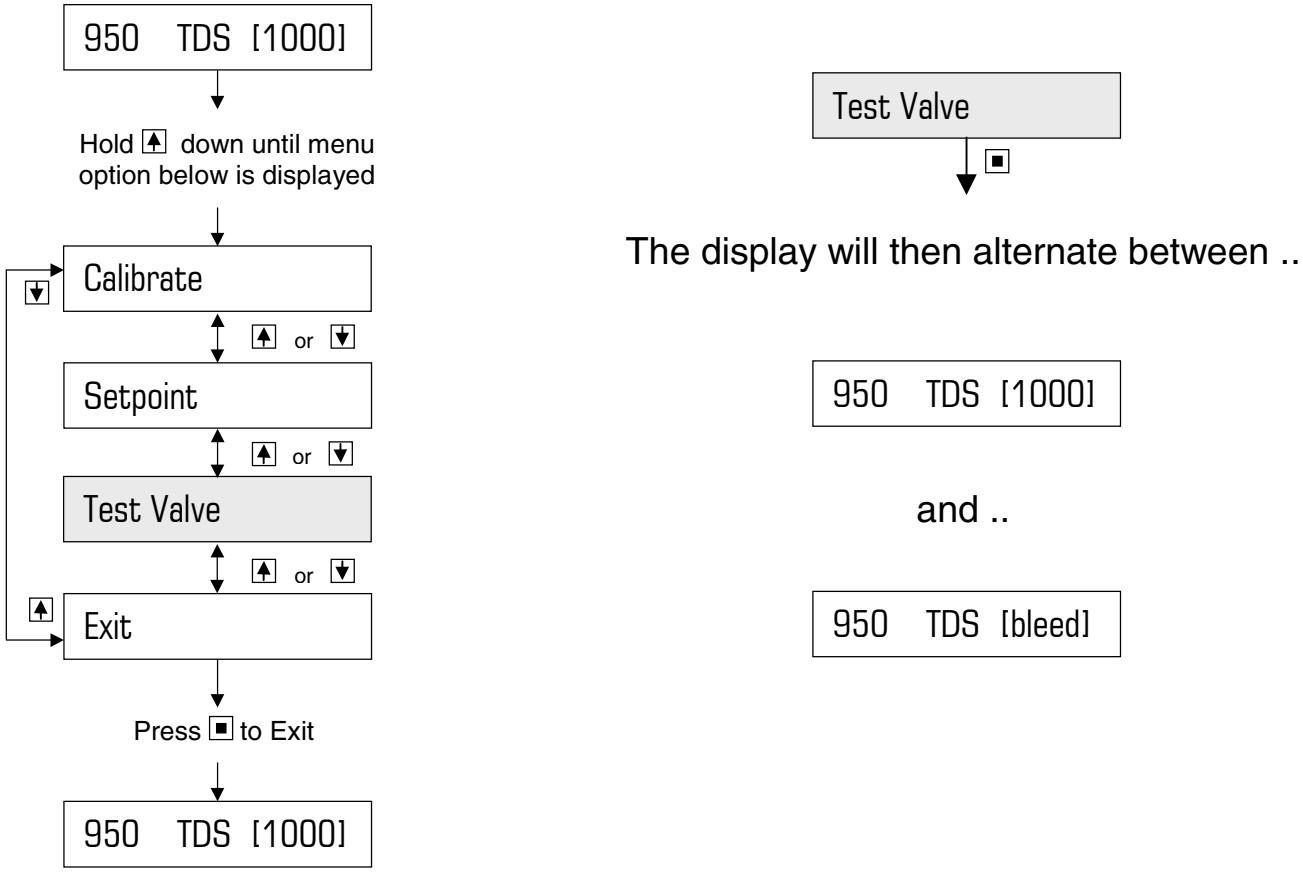
Item flashing on display:

- ▲ Press to Scroll Up
- ▼ Press to Scroll Down
- ■ Press to Select/Enter

3.5 Testing the Output

The output can be manually operated to test its operation.

Once in test mode, the Output switches on and remains on for 2 minutes or until test mode is cancelled by pressing ▲ or ▼.



Item flashing on display:

▲ Press to Scroll Up
▼ Press to Scroll Down
■ Press to Select/Enter

4. FACTORY SETTINGS / PROGRAMMABLE OPTIONS

Item	Factory Setting	Option	Note
Setpoint	1000 TDS	50 – 9,950 µS / TDS (in 50 µS / TDS increments)	Determine the desired system µS / TDS

5. SPECIFICATIONS

Power Supply:	220 – 240 VAC
Inputs:	Conductivity Probe – model DCON-P10AT
Outputs:	240VAC applied to the Bleed Output – 5 Amp rated. Potential Free contact supplied on request
Resolution of measured conductivity:	1 µS / TDS
Hysteresis:	8 sec on delay / 8 sec off delay
Controller Enclosure rating:	IP55 (ie. completely weatherproof)
Operating Temperature:	0 - 50°C