Advantage Controls

Manual

WATRX

Water Quality Controller

Installation
Maintenance
Repair
Manual

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WATRX Water Quality Controller
Instruction & Maintenance Manual
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I. Introduction

The WATRX microprocessor-based controllers are programmable through a front panel touch screen and can be configured to control a wide range of digital and analog inputs. Your particular unit's functions can be determined by comparing the units model number to the Model Numbering table listed below.

Model Numbering

WATRX 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.

The model number starts with **WATR** followed by the code for each sensor and option position. Each position must have a selection. Example: **(WATR D J X - 1 A X X A A 1)**.

	Sensor 1 (X = No sensor)	**Range 1**	**Range 2**	**Max psi**	**Temp Range**	**Flow Rate**
A	pH - inline, 304SS body, CPVC tee	0-14.00 pH	none	100	40-140°F	0-10 gpm
B	pH/ORP - inline, 304SS body, CPVC tee	0-14.00 pH	±1,500mV	100	40-140°F	0-10 gpm
C	Conductivity - inline, CPVC body and tee	1 - 100,000 µS/cm	32-200°F	100	40-140°F	0-20 gpm
D	Conductivity - inline, 304SS body, CPVC tee	0 - 1,000 µS/cm	32-200°F	100	32-200°F	0-20 gpm
E	Chlorine/pH - clean water flow assembly	0-5 ppm	0-14.00 pH	30	40-140°F	0.25 gpm
F	Chlorine/pH - dirty water, brushing assembly	0-5 ppm	0-14.00 pH	30	40-140°F	0.25 gpm
G	ClO_2 /pH - clean water flow assembly	0-5 ppm	0-14.00 pH	30	40-140°F	0.25 gpm
H	Bromine/pH - clean water flow assembly	0-5 ppm	0-14.00 pH	30	40-140°F	0.25 gpm
J	Sulfite/pH - clean water flow assembly	0-5 ppm	0-14.00 pH	30	40-140°F	0.25 gpm
K	Turbidity - low range, inline, EPA 180.1 light	0.001-40.00 NTU	none	100	40-120°F	0-10 gpm
L	Turbidity - high range, submersible wiper	0-1,000 NTU	none	45	32-122°F	n/a
M	DO - optical, inline, 304SS body, CPVC tee	0-20 ppm or 0-200%	32-122°F	100	32-113°F	0-10 gpm
N	Chlorophyll-A - inline, CPVC body and tee	0-50 ppb	none	100	32-104°F	0-8 gpm
P	Hazen Color - inline, CPVC body and tee	0-30° plat-cobalt	none	100	32-104°F	0-8 gpm

Sensor 2 & 3 (X = No sensor)
Choose from Sensor 1 list above.

Digital Inputs
1 - (5) digital inputs with alarms
2 - (10) digital inputs

Relay Options
A - (5) powered control relays
B - (5) dry contact control relays
C - (10) powered control relays
D - (5) powered & (5) dry contact relays
E - (10) dry contact relays

Additional mA Options (X = None)
1 - (4) mA output control
2 - (8) mA output control
3 - (4) extra mA inputs and (4) mA outputs

Flow Meter (Pulse) Inputs (X = None)
A - (10) flow meter inputs

Communications Card Options
A - WebAdvantage only
B - Modbus via Ethernet and WebAdvantage
C - BACnet via Ethernet and WebAdvantage

Cellular Service Options (X = None; Delay is for 3 months max; V=Verizon™, A=AT&T™)
A - Internal router with 12 months (V)
B - External router with 12 months (V)
C - Internal router with no data
D - Internal router with 12 delayed (V)
E - Internal router with 12 months (A)
F - External router with 12 months (A)

Enclosure Cover
1 - Clear cover
2 - Black cover

Description of Unit
WATRX controllers can control single or multiple water quality processes or measurement systems and may have various features depending on the model number.

Control Functions
Each of these control functions are based on an analog input from a probe and will include user settable relay control settings along with a High and Low Alarm setting and Limit Timer. Each control function will include a control relay output. When the reading reaches the Set Point, the control relay is activated until the reading changes by the Differential amount.

II. Installation

Electrical Wiring
The MegaTron MT controller has an internal regulated fused power supply that will operate off of 90 to 250 VAC at 47 to 63 Hz on the incoming wiring. Each output relay is individually protected with a replaceable fuse. Relay outputs will equal incoming line voltage.

⚠ 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.
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.

NOTES:

1. **Liquid tight fittings and some labeled signal leads are provided for all signal (low voltage) connections for both pre-wired and conduit units.**
2. **Units should be ordered with the appropriate option to provide powered relays designed for the incoming/outgoing power.**

Pre-Wired

Pre-wired units are supplied with a 16 AWG cable with 3-wire grounded USA 120V plug for incoming power, along with 16 AWG grounded receptacle cords for each output control relay. One pre-wired power cable is supplied for each bank of five relays, and each power cable must be plugged in to provide power to the corresponding bank of relays.

Conduit

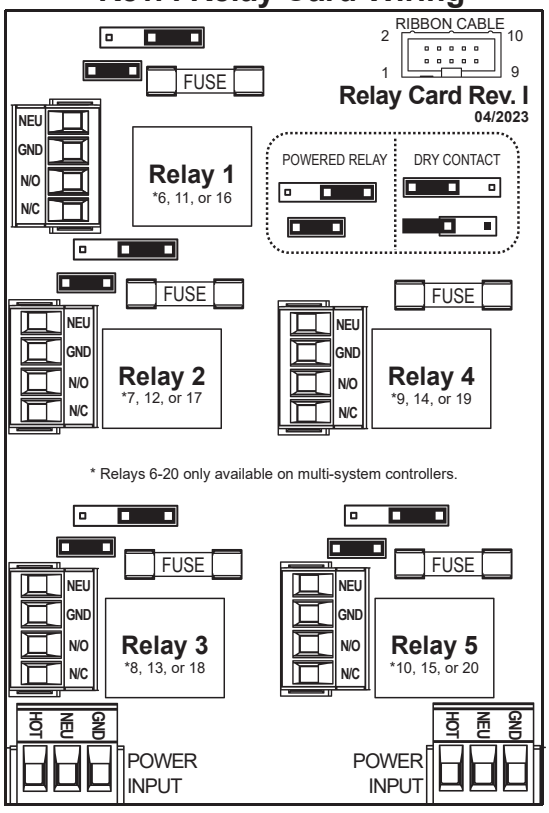
Conduit units are predrilled at the factory and supplied with conduit knockouts for easy hard wiring to supplied detachable connectors on the relay card(s) located in the lower section of the controller. Remove the screws of the lower panel for access.

NOTES:

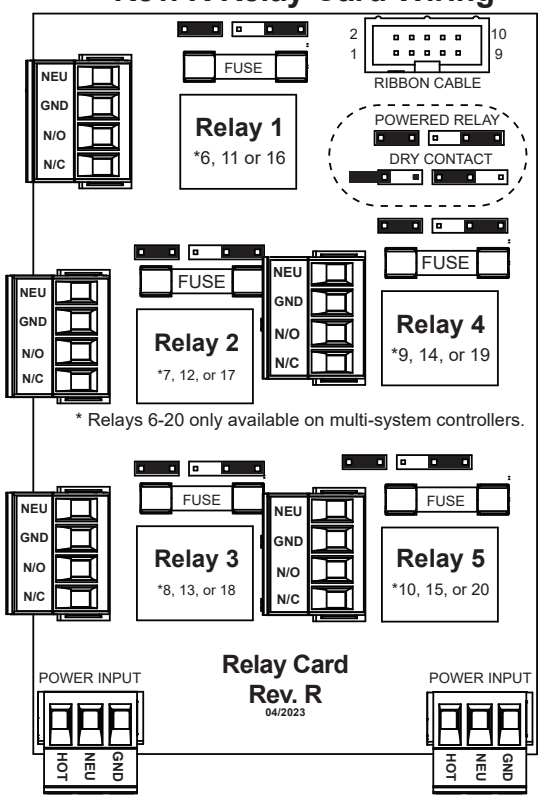
1. **Do not drill holes in upper section of enclosure.**
2. All relays provide a dry contact (N.O. or N.C.) or powered option output.
3. The control function that activates each relay output is pre-configured at the factory based on the options selected. To change relay activation, see on page 30.
4. See page 34 for common bleed / blowdown valve wiring.
5. Refer to label inside lower panel cover for specific relay board configuration supplied.
6. Relays configured as “dry contact” should only have D.C. voltage ran through them. The GND connection point replaces the NEU when configured for dry contact. (Example: Use GND and N.O. for a normally open dry contact relay output.)

⚠ **WARNING:** If jumpers are not configured for dry contact, line voltage will be supplied.

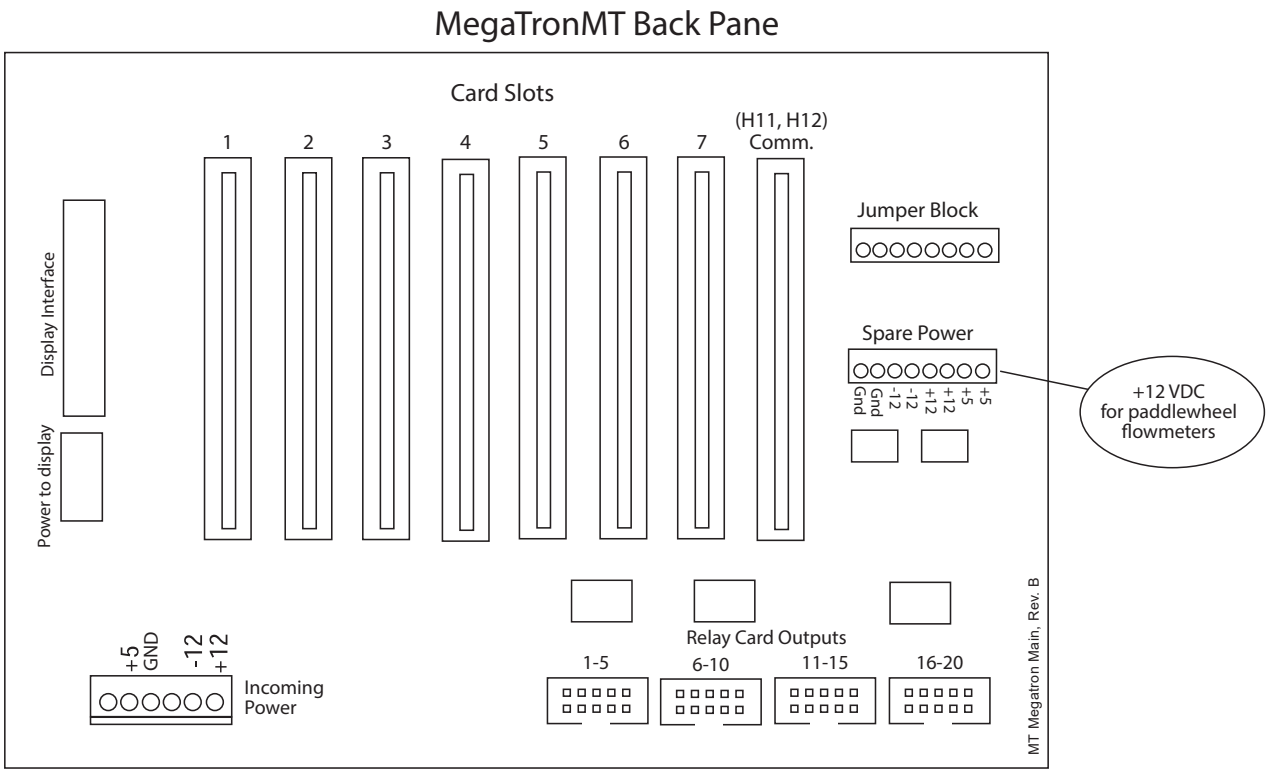
Rev. I Relay Card Wiring



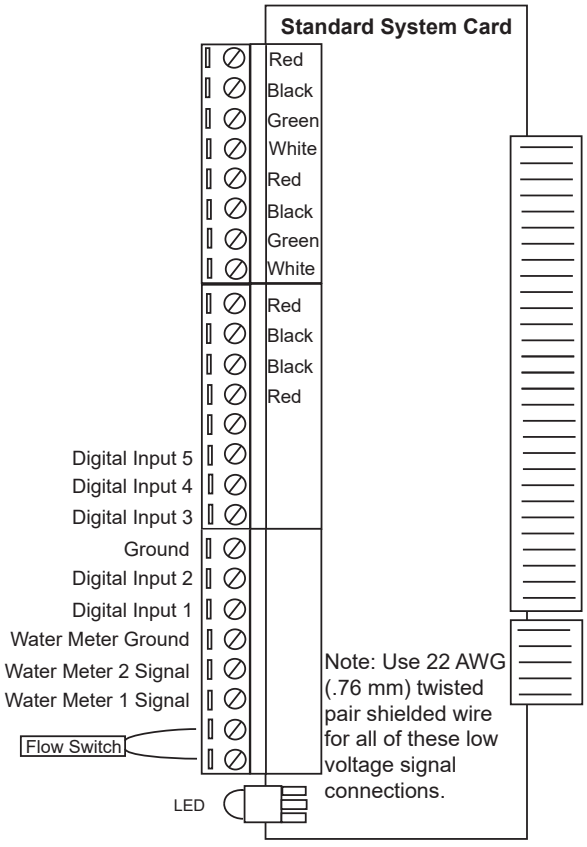
Rev. R Relay Card Wiring



Back Pane Connections



System Card Connections



4-20mA Output Card Wiring

A. Isolated Configuration

For isolated 4-20mA outputs an external power source for the loop must be supplied. JP4 and JP5 on the board must be jumpered for isolated, with an external power source supplied to the external VDC input. The external power source must not exceed 24 volts DC.

B. Non-isolated Configuration

For non-isolated 4-20mA outputs the controller will supply the power for the loop. JP4 and JP5 must be jumpered for non-isolated, and no connections are made to the external VDC points.

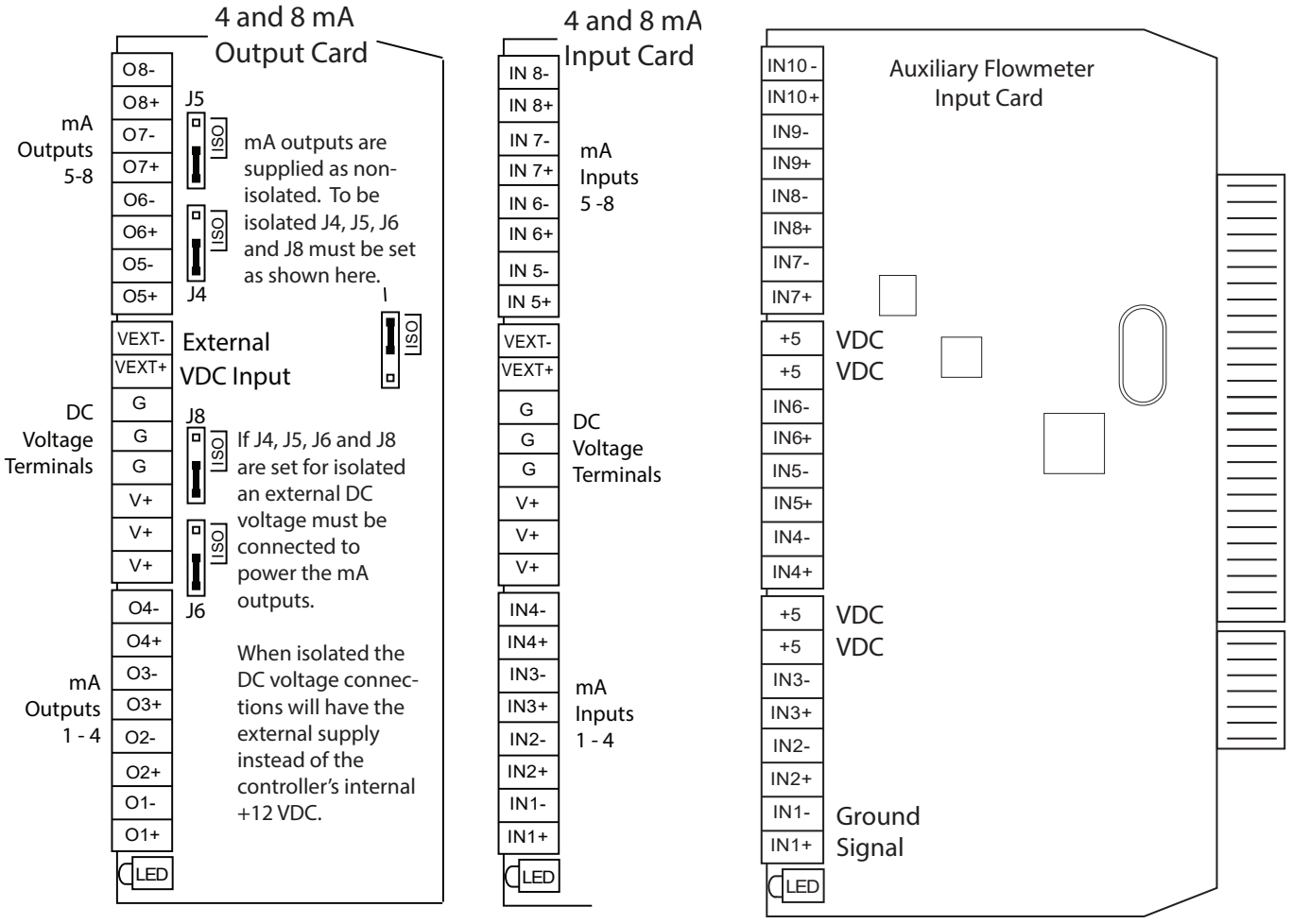
NOTE: The power for the mA output loop is always provided by the controller with either isolated or non-isolated configuration.

4-20mA Input Card Wiring

The 4-20mA input card requires that the external device sending the 4-20mA input signal(s) supply the power for the loop. The external power source must not exceed 24 volts DC.

Auxiliary Flow Meter/Water Meter Input Card Wiring

The optional auxiliary flow meter input card provides ten auxiliary flow meter inputs. Each input has (+) signal and (-) ground connection. If the auxiliary flow meter can be powered with 5 volts DC, it is also available on the card.

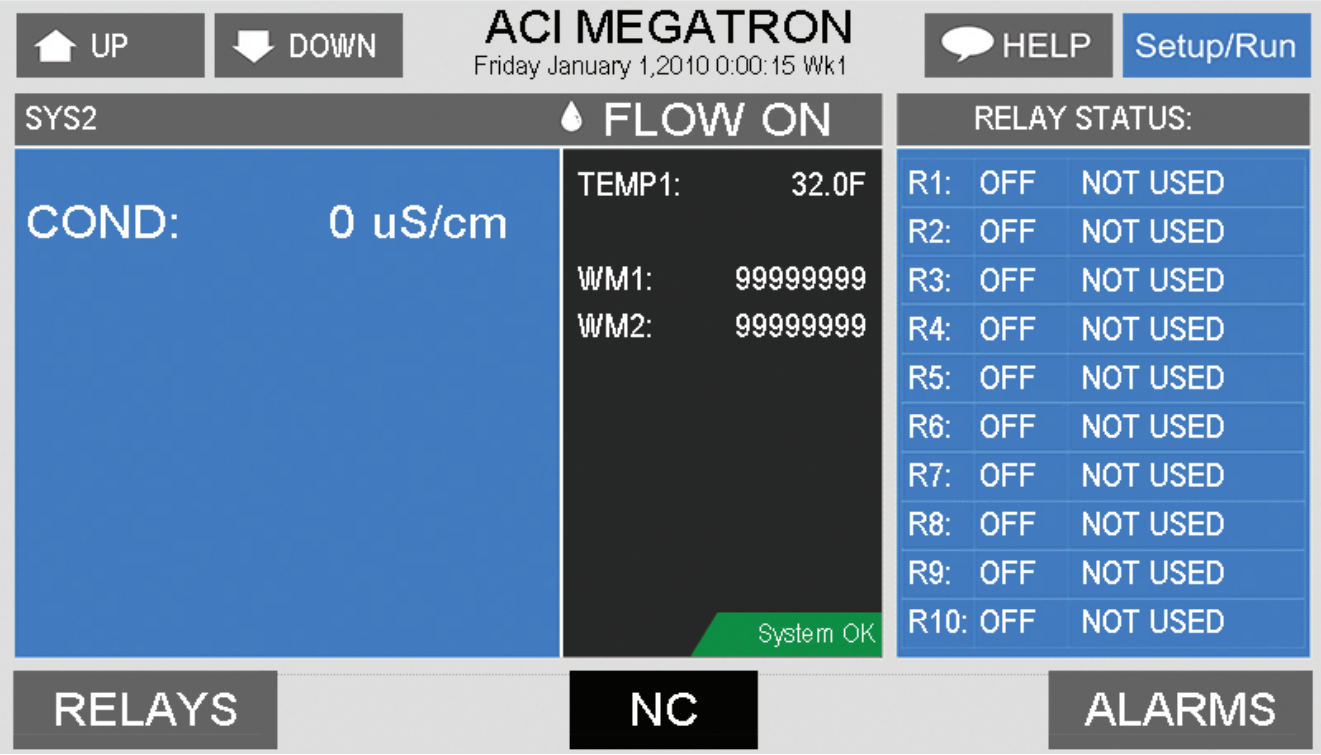


NOTE: Blue versions supply +12 and -12 VDC instead of ground on the "G" postions, if not configured for isolated voltage.

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 for grounded electrical connections, the needed sample line plumbing, and should be on a stable vertical surface.

III. Front Panel Description



SET UP/RUN - System initializes into RUN mode. Press this key to put the controller in SET UP Mode and see HOME menu page.

HOME - Used to go back to the HOME menu page.

HELP - Used to access help screens.

BACK - Used to go back to last menu screen viewed or clear values keyed in that are not wanted.

The default is the RELAY status menu, but this can be changed by navigating to the desired screen and pressing the HELP button. Follow the on-screen instructions to set the new hot key location.

IV. System Operation Overview

Operation

WATRX controllers have two modes of operation, RUN and SET-UP.

RUN - This mode is for normal operation. In the RUN mode the display will show each system's parameters. If an alarm is present, the ALARM box will flash how many alarms are activated. No settings may be entered or changed in the RUN mode. Readings are updated every 6 seconds on the screen while in the RUN mode.

SET-UP - This mode is used to make adjustments to settings and readings on the controller. To access the SET UP mode from the RUN screen, press the SETUP/RUN key.

Typical Start Up Instruction

Complete all installation steps before beginning this procedure. Ensure that all controlled devices (pumps, valves, etc.) are operational and connected to the controller. Open the isolation valves to allow water to pass through the sample stream assembly. Before beginning the startup procedure, familiarize yourself with the programming and operation of the system by reviewing the menus available. Use the keys of the controller to skim through all your options.

A. Calibration

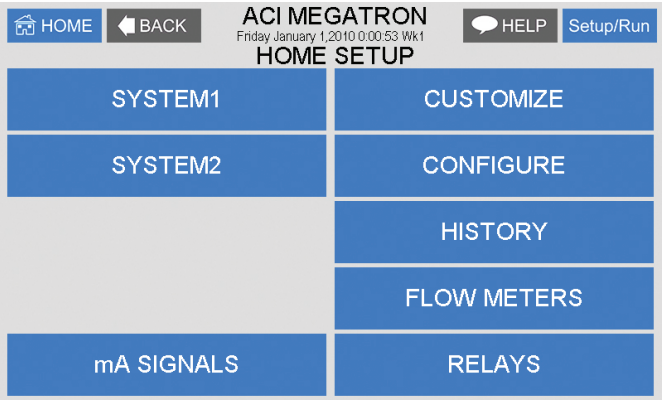
All WATRX controllers are factory calibrated. All units are shipped with the date preset, and the clock set to your current time. These readings and settings should be verified for accuracy, and adjusted as per the instructions listed below.

V. Menu Navigation

To access the menus, press the Set Up / Run key on the front panel. This takes you to the Home menu. WATRX controller's menus are easily navigated by pressing the associated number key next to a menu box on the screen. Once you have stepped through the sub menus to reach a point at which a value or selection is made, a Pop-up window will appear prompting you to enter a desired value or selection.

NOTE: When entering new numeric values, enter all available digits (characters).

1. Home Menu

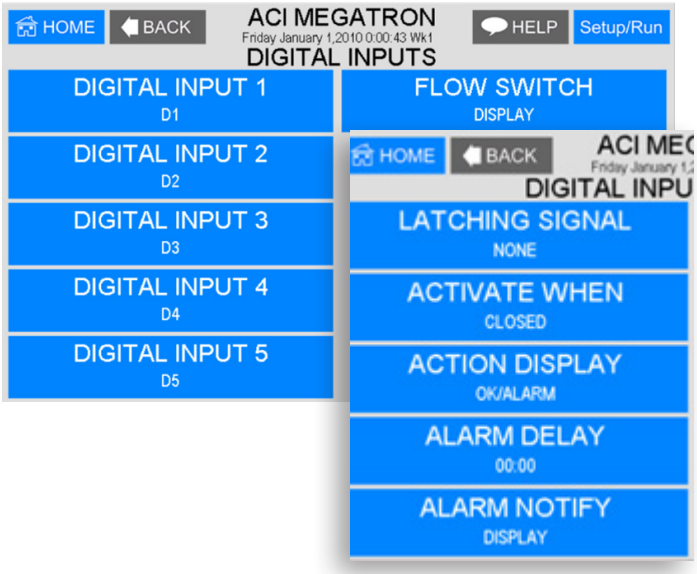


From the **HOME** menu select the desired menu. The menu name explains what parameters can be programmed in the menu.

SYSTEM1 - Setting control of digital inputs.
SYSTEM2 - Setting control of digital inputs..
CUSTOMIZE - Giving the controller, each system, mA input, and all relays a user-defined name.
mA SIGNALS - Menus for setting mA inputs and outputs calibration and control settings.
CONFIGURE - Menus for configuring passwords, relay activations, setting history interval, flow switch, contrast, temperature scale.
HISTORY - Allows for view history on board in a graph form.
FLOW METERS - Menu for configuring flow meter totalizing.
RELAYS - Menu for resetting accumulated "ON" times and manual relay activation.

2.5. Aux Inputs

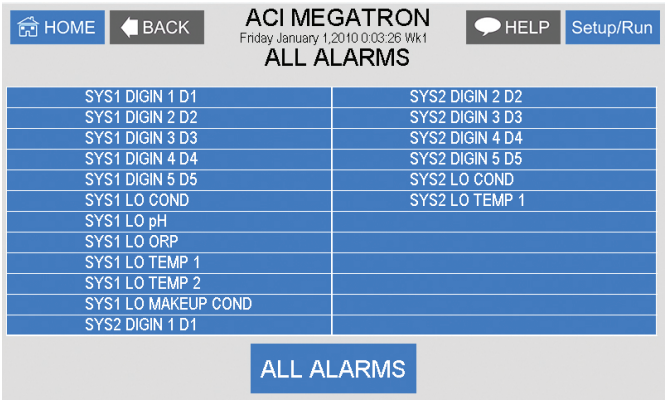
Auxiliary inputs are the digital inputs for optional flow switch and other digital inputs, such as low drum level alarms. From these menus, alarms, notification, action, and latching settings can be made.



LATCHING SIGNAL - Allows a digital input to stay Active until a second latched input becomes active.
ACTIVE WHEN - Set if input is active seeing closed or open.
ACTION DISPLAY - Set if the input is being set as alarm or just On/Off.
ALARM DELAY - How long input must be in open/ closed before registering.
ALARM NOTIFY - Set the alarm notification.

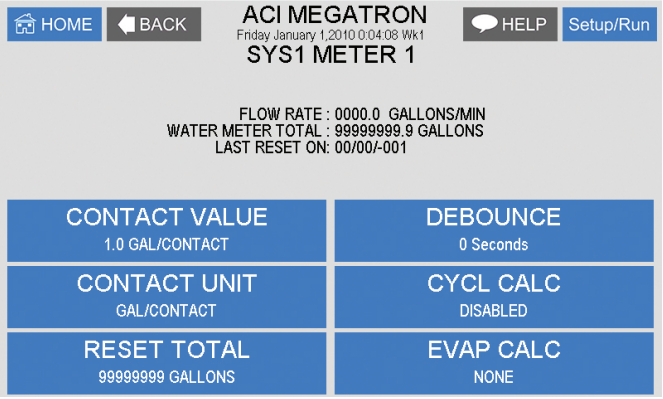
2.8. Alarms

ALARMS - Shows any current alarms. Accessible from the Setup/Run screen.



2.9. Water Meters / Totalizers

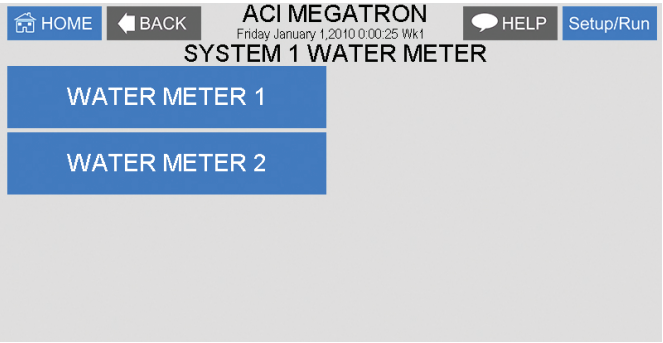
Each system with a timer on it will have 2 water meter inputs. Each of these can have the incoming contact defined, allowing the controller to keep track of water usage if desired.



CONTACT VALUE - Defines the numerical value for a contact; i.e. 10.
CONTACT UNIT - Defines the units of measurement for a contact; i.e. Gallons / Contact. If there is a mA input set for a gpm or lpm reading, that mA input can be selected in the Contact Units as the source for the meter input to total flow rate.
RESET TOTAL - Resets the totalizer count.
EVAP CALC - Defines which way to subtract the two water meter inputs for an evaporation value.
DEBOUNCE - An additional amount of time the input will wait before accepting another water meter contact to reduce false contacts from a chattering read switch.

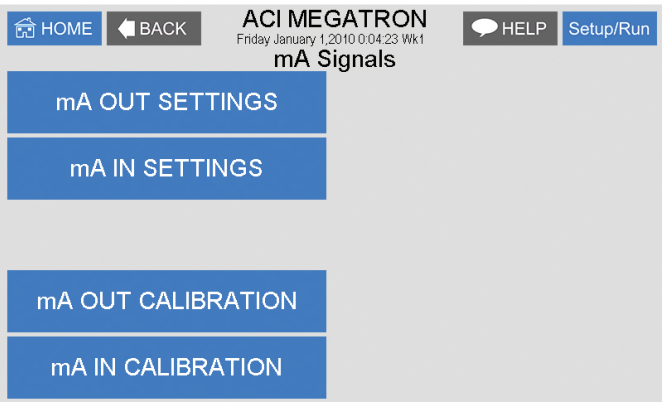
2.9.a. Option W Totalizers

MegaTron MT controllers with “W” option may have 10 flowmeter inputs. These additional inputs are for tracking various flow meter devices (additional water meters or flowmeters in a metering pump’s discharge tubing). They can also be linked to a system’s water meter input for additional tracking and alarm capabilities, including flow/no flow, exceeding too much flow in a 12- or 24-hour period. Units with Auxiliary Flow meter inputs have a Home menu selection for Totalizers. The Totalizer menu has selections for each of the System Water Meters, plus one named Aux Meters.



Select the system water meter to set up or go to Aux Meters to set-up the auxiliary flow meters.

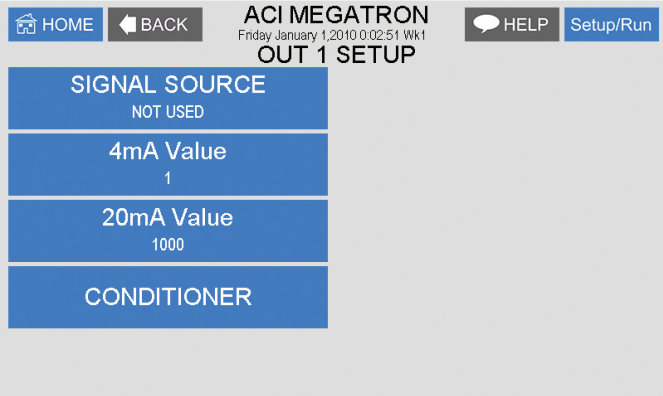
3. mA Signals



mA OUT SETTINGS - Selecting source and range of outputs.
mA IN SETTINGS - Setting control and alarms for inputs
mA OUT CALIBRATION - Calibrating outputs.
mA IN CALIBRATION - Calibrating inputs and displayed range.

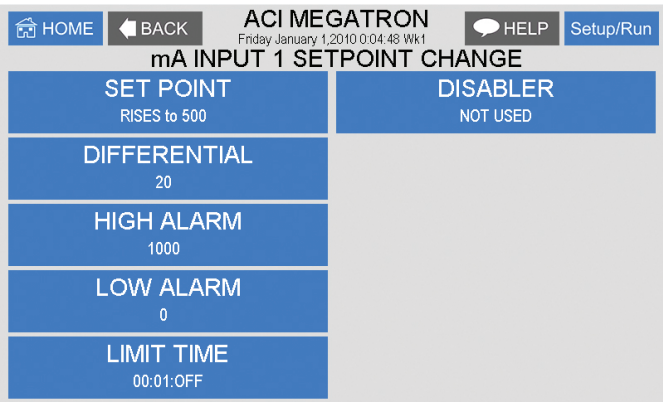
3.1. 4-20mA Out Settings

Units with a 4-20mA output option will have a menu for setting up the 4-20mA output. The 4mA and 20mA values can be defined by giving the output proportioning capability. i.e. 4mA = a pH of 6.0 and 20mA = a pH of 8.0.



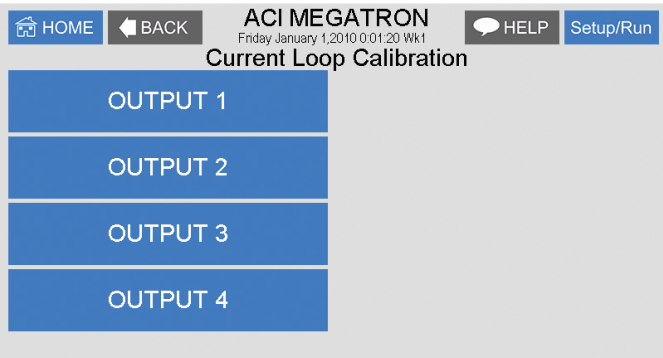
SIGNAL SOURCE - Select which probe reading the mA will use as its reading source.
4 mA VALUE - What the 4mA signal equals
20mA VALUE - What the 20mA signal equals on the assigned signal sources scale.
CONDITIONER - Select a second reading that can change or condition the original mA output.

3.2 4-20mA Input Settings

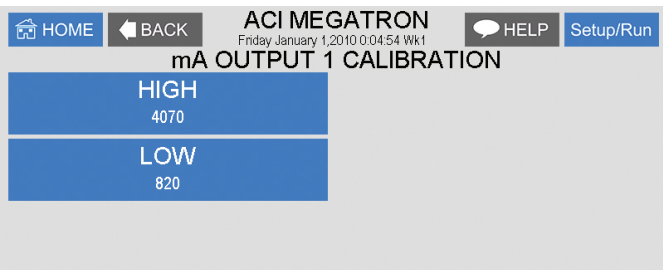


SET POINT - What reading turns the relay on
DIFFERENTIAL - Amount reading changes by before the relay is turned off.
HIGH ALARM - What reading generates a High alarm notification.
LOW ALARM - What reading generates a Low alarm notification.
DISABLER - Selected input will disable HIGH/LOW alarm notifications and a control relay being activated by the input's setpoint.

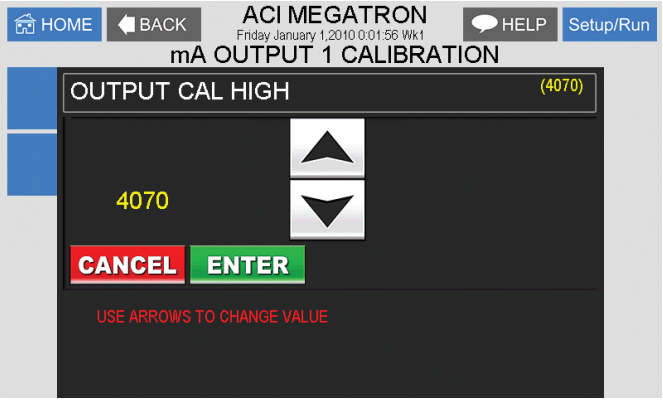
3.3 4-20mA Output Calibration



4-20mA outputs can be calibrated to ensure that the output generated by the controller and received by the external device match. With a voltmeter connected across the out and return wires (see page 7) of the 4-20mA output channel, to be calibrated, go into the output's Low or High calibration.

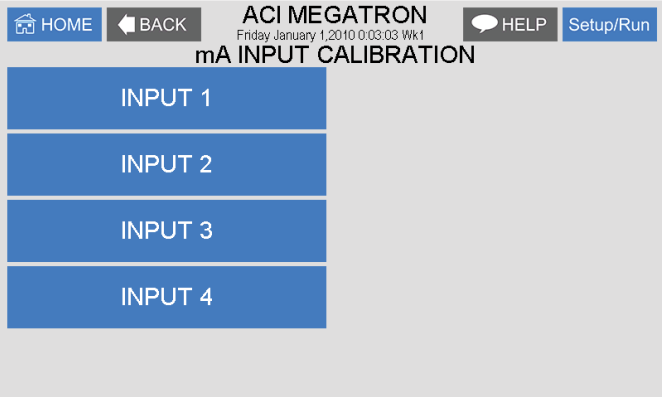


The number displayed in the Calibration dialog box can range from 0-4,095, with 800 equal to 0 mA output, and 4,030 equal to 20 mA. This number range of 0-4,095 is the raw digital-to-analog (D/A) values and is strictly used for reference. The D/A numbers that you get will vary based on your installation conditions.



While in the High or Low calibration pop-up screen use the up and down arrows to change the output value to the mA value that the multimeter is displaying. Adjust the High value for the 20-mA reading and the Low value for the 4-mA value.

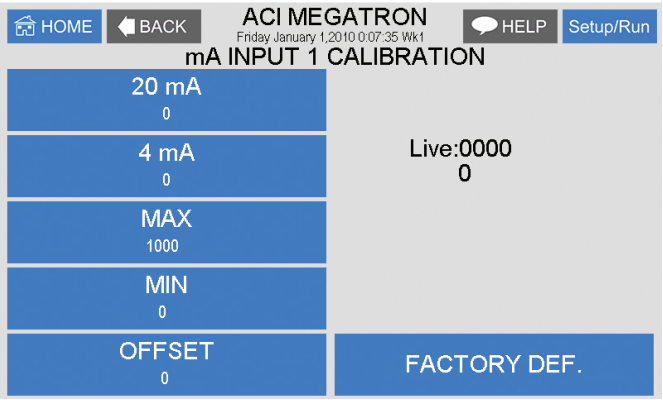
3.4 4-20mA Input Calibration



4-20mA inputs can be calibrated to ensure that the input seen by the controller from the external device match. It also allows for setting the 4-20mA input into a number range that relates to the value being read.

Select the Input to be calibrated.

Firmware version MT.16.03 and newer have logic that suspends any control logic if the mA received is 50% below the stored 4mA value. A # symbol will be placed in the RUN screen for any mA value in this invalid state.



The **20mA** and **4mA** values are where the controller's raw analog to digital value is adjusted to match a 20mA (full scale) and 4mA (bottom of scale) signal from the external device inputting the 4-20mA input. The external device must be connected to the controller and showing either full or bottom of scale when calibrating each. The number shown along with either the 20mA or 4mA while calibrating is the raw A/D value, and is only a reference. A 20mA input should be around 5,500, and 4mA around 1,100. If the A/D numbers are not in this range, check the input device.

If a mA Input is receiving an A/D value 50% below the stored value for 4mA, the reading is viewed as invalid, and control logic is suspended. This is represented on the RUN screen with a #.

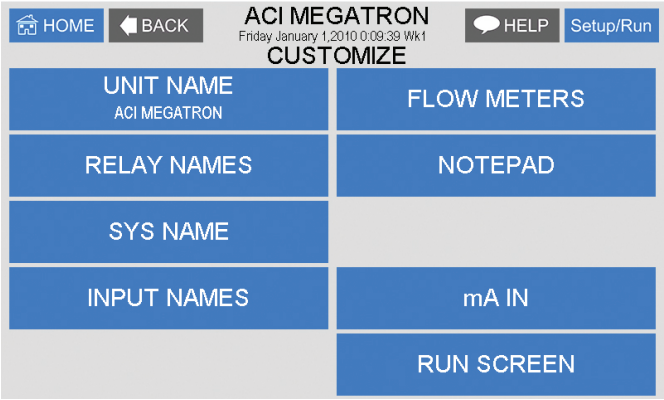
The **MAX** and **LOW** calibration inputs define what to display for a 20mA input and a 4mA input. For a drum level sensor on a 55-gallon drum, the value for **MAX** should be 55 and **MIN** should be 0. A number is automatically displayed between 55 and 0 based on the input value. The scale and units of measure (gallons for example) are set in the Customize menu from the Home page. If the decimal position is changed in Customize, all mA input settings and **MIN/MAX** will need to be reset.

OFFSET - Changes the current displayed value of the 4-20mA input reading to allow for a manual 1pt calibration of the displayed value.

FACTORY DEFAULT - If the 20mA or 4mA calibration has been incorrectly set (not at 4 or 20) this will reset the settings back to a factory value for 4 and 20.

4. Customize

This menu allows the user to define the on-screen name of the unit plus the name of each system and relay. The user can also set up the Notepad for each system and 4-20mA Input's name and unit of measurement.

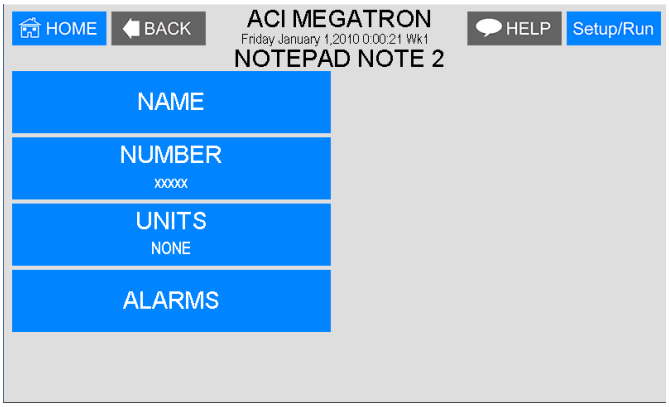


RUN SCREEN - Allows the user to select what will be shown on the screen while the controller is in the RUN mode, such as displaying temperature readings, water meter totals for a particular system, or the conductivity units of measure.

NOTE: When entering values for custom names use the numerical keys for numbers and the up / down arrows to scroll through all the characters of a keyboard. Press the right arrow to advance the curser after setting a desired value. Press the Help button to place the last entered character into the new cursor space to speed up the process. The Help button will also jump advance through the characters.

4.1 Notepad

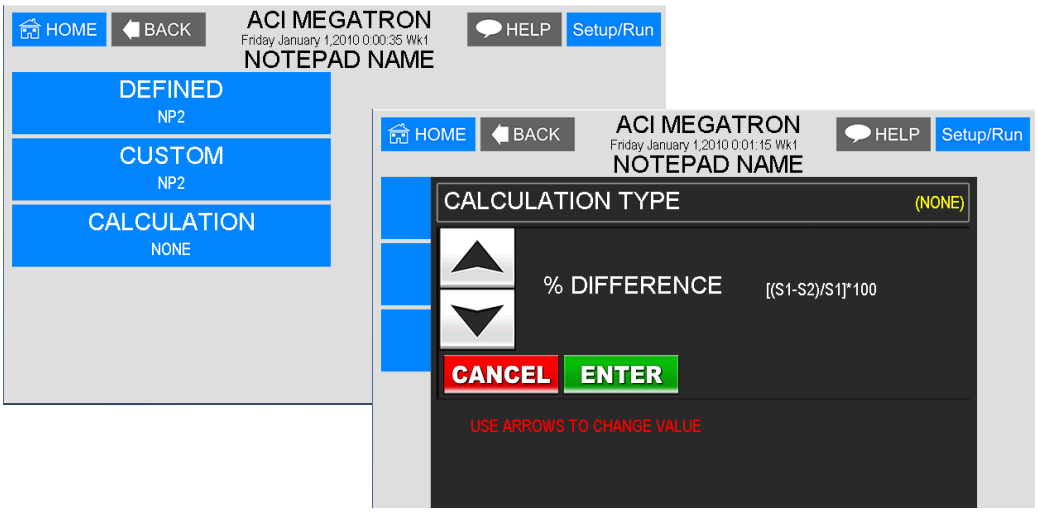
The Notepad function allows the user to set up and store manually entered data or perform simple calculations between two differernt sensor or notepad inputs. There are ten notepad fields per system card and each can be given a custom name, UOM and number range.



NAME - Pick from a list of defined names or customize your own or if you want the Notepad to be a Calculation.
NUMBER - Set the number range.
UNITS - Set the units of measurement.
ALARMS - Set Hi/Low alarm points and how frequently a new value is expected to be manually entered via the History menu.

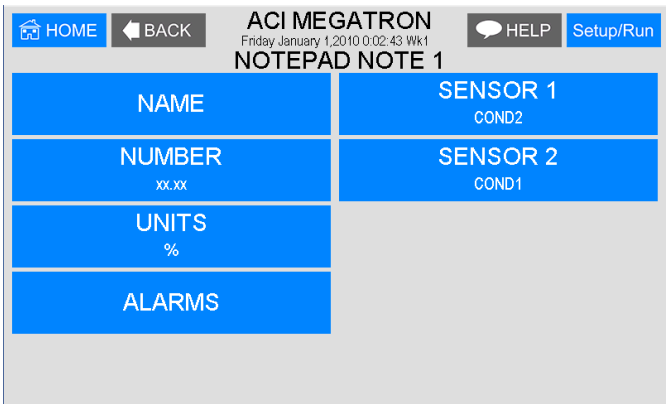
If the Notepad is a calculation no time alarm is defined and the calculation results are stored in history at the time stamp interval.

CALCULATION - If a Notepad is to be a calculation select the type of calcualation desired.



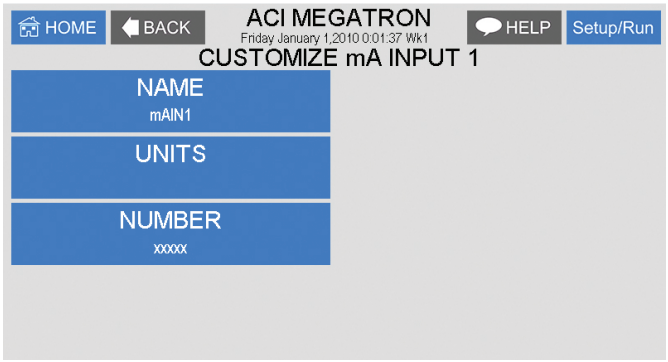
Calculation Types:

- None
- % Increase
- Product
- Total
- Ratio
- % Difference
- Difference



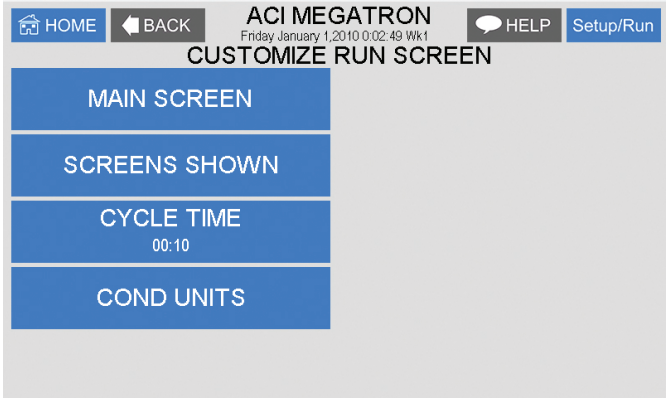
SENSOR 1 - The first sensor reading or Notepad value to be used in the calculation.
SENSOR 2 - The second sensor reading or Notepad value to be used in the calculation.

4.2 mA Inputs



NAME - Name the input.
UNITS - Set the units of measurement.
NUMBER - Set the number range.

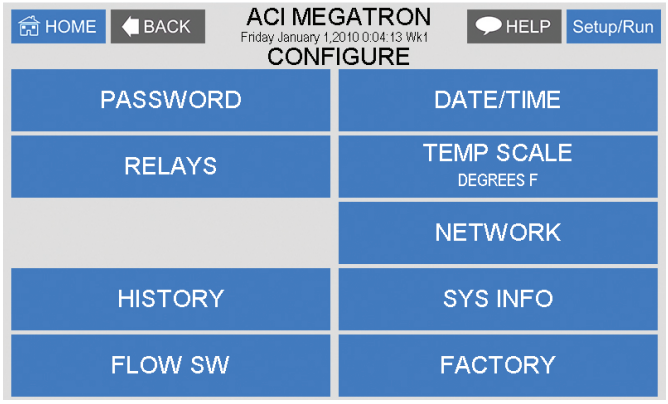
4.3 Run Screen



This lets you customize various aspects of the RUN screen.

MAIN SCREEN - Customize what is displayed on the RUN screen.
SCREENS SHOWN - Pick if the mA input & Aux Flow screens are scrolled.
CYCLE TIME - The amount of time between screen scrolls.
COND UNITS - Select the units of measure to be displayed with the conductivity reading.

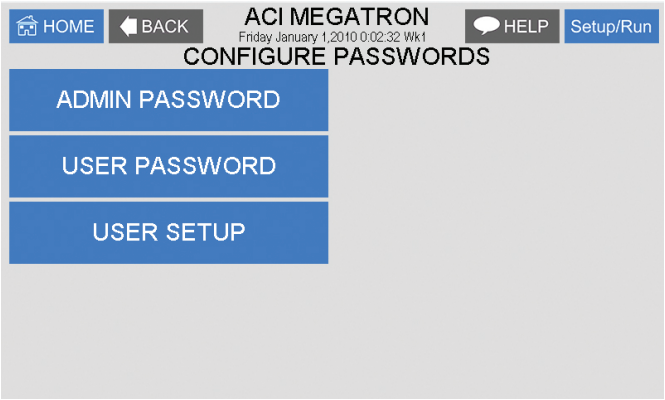
5. Configure



Provides access to menus to set-up passwords, relay activation, temp scale, display contrast, flow switch, inputs, history time stamps, factory set-up and system information.

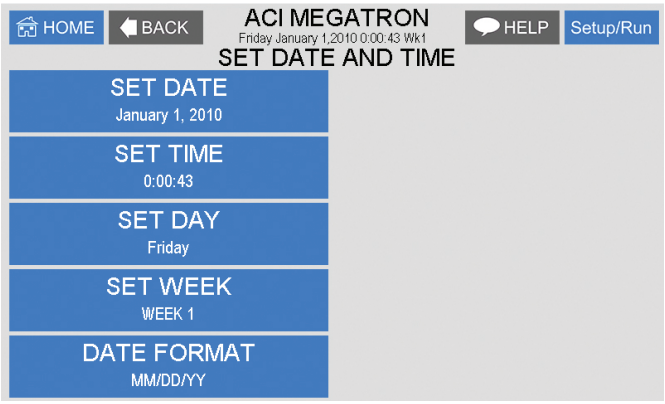
FLOW SW - Defines a flow switch to be open or closed with flow.
FACTORY - A factory only menu
TEMP SCALE - Set Celsius or Fahrenheit
HISTORY - Sets the history time stamp interval.
SYS INFO - Tells unit software specifics.

5.1 Password



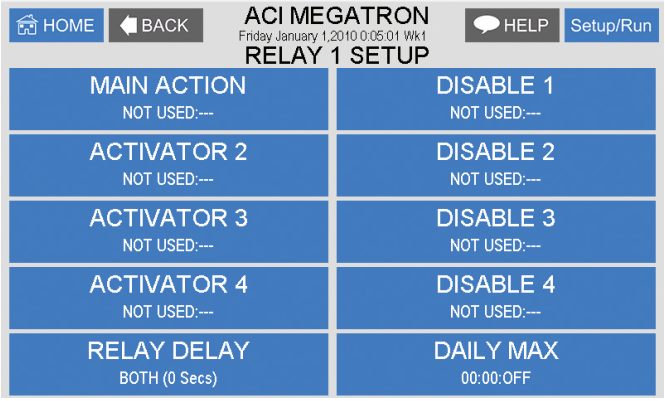
ADMIN PASSWORD - The administrator password gives access to all menus except factory set up.
USER PASSWORD - The user password allows the user to access HOME menus that are made available in USER SET UP.

5.2 Date and Time Set Up



DATE AND TIME - For setting the date, time, day, and week on the controller.

5.3 Relays



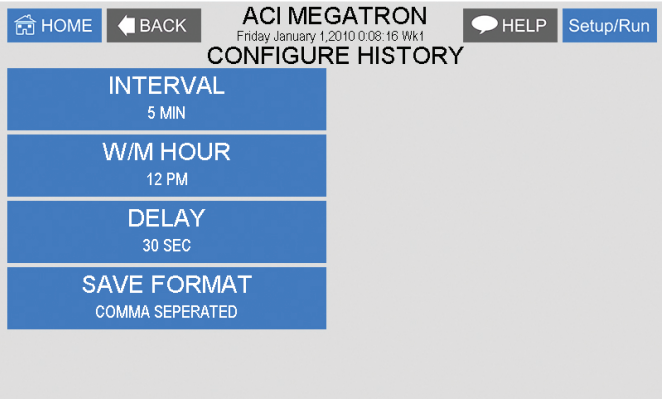
CONFIGURE RELAYS - This menu lets you choose a **Main Action** or function (timer 1, conductivity, alarms etc...) to activate a relay.

A pop-up screen appears with a list of all available activation functions to arrow through.

Additional relay logic is available with up to 3 additional **Activators** and up to 4 **Disablers** allowing multiple functions to activate the same relay and multiple functions to prevent the relay from coming on. There is also a Daily Max amount of time that a relay can be on. If a relay is on for the max amount, it does not let the relay come on anymore that day (a 24-hour clock is used for the day with midnight being the start of the day). The Delay setting is the amount of time a control function must come on before the relay will react and activate. This is to prevent a relay from chattering on/off if a reading is bouncing around the set point or alarm.

5.4 History

This menu is used to set the history “time stamp” interval, the water meter daily history starting hour, the alarm delay period and the USB history save format.



INTERVAL - The amount of time between each history time stamp for probe readings.
W/M HOUR - The time of day that the daily water meter history cycle is to start.
ALARM DELAY - The amount of time an alarm has to be on before it is recognized as an alarm.
SAVE FORMAT - The USB history save format.

5.5 Flow Switch

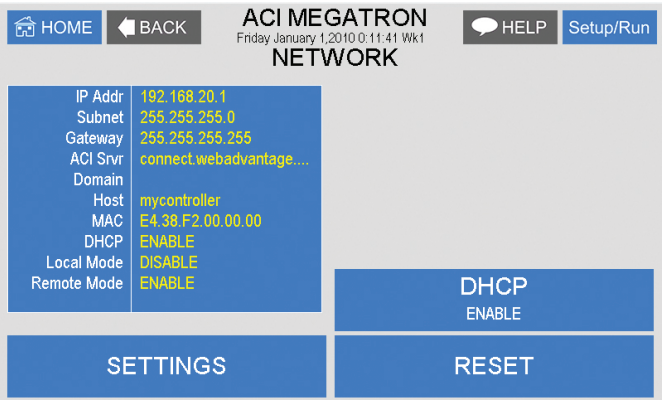
This menu allows the user to select if a flow switch signal will represent a flowing condition when a “closed” or “open” signal is seen for each systems flow switch input. Users can also select if timers can work always or only with flow.

5.6 Temperature Scale

This menu is used to select the type of temperature scale to display.

5.7 Network

The Network menu is used when a controller is being remotely communicated with either a local network connection or over the internet on the WebAdvantage server. IP Address, IP Mask, Gateway, and other information can be viewed from this menu.



SETTINGS - This menu is used for setting up the remote WebAdvantage communications and is covered in a separate manual.
http://www.advantagecontrols.com/downloads/pdf/M-WebAdvantage.pdf

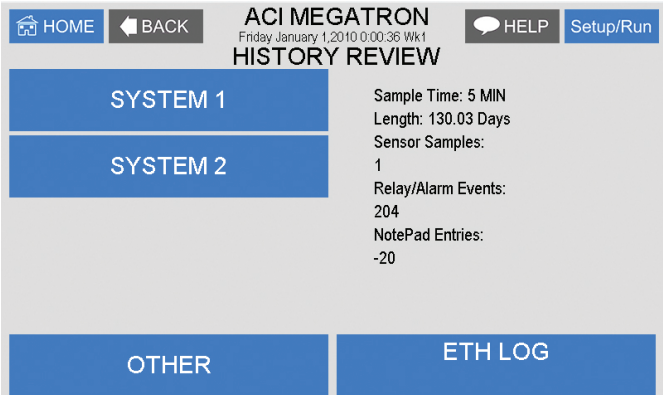
Note: The Network card must be RESET after making any changes to Network setting in order to save changes and reset communications.

5.8 System Information

System information will identify the version of firmware installed in the controller along with the controller’s serial number.

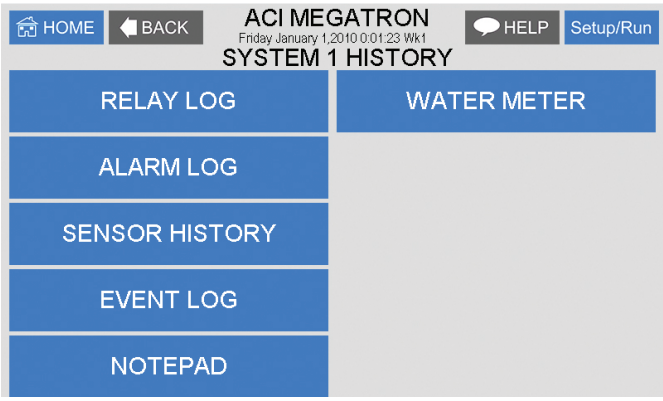
6. History

The onboard history allows for viewing the history of the probe readings, relay activations, key-pad activity, calibrations, water meter hourly and daily logs, and alarms for each system present. It is also where Notepad data is entered and reviewed. An initial overview page is displayed showing your current sample interval, the calculated number of days the unit can keep probe history for before losing the oldest. The number of sensor samples and relay/alarm events and Notepad entries currently stored is also displayed.



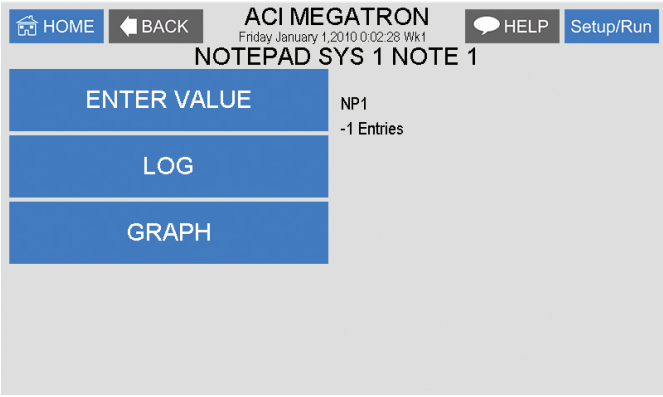
NOTE: The history can be reset by going to the configure menu and entering a different sample interval. After the new sample interval has been set, the onboard history is reset.

6.1 Viewing History



RELAY LOGS - Relay activations displayed in a log form. Arrow up to advance through the log.
ALARM LOG - Alarm activations in log form.
SENSOR HISTORY - For selecting the parameters and viewing of a given probe reading's history in log or graph form.
EVENT LOG - Displays various activities.

6.2 Notepad Entries

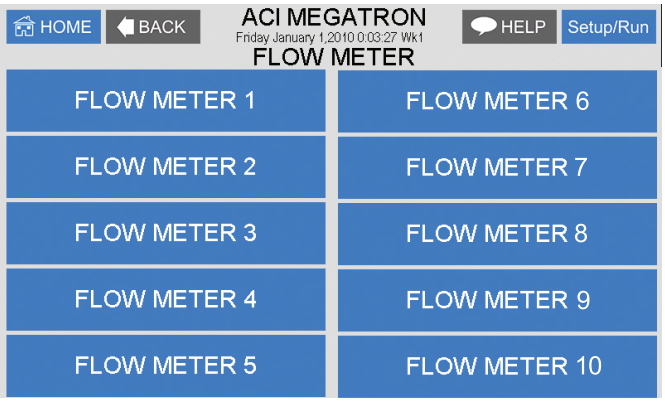


The Notepad section under History is where the user goes to enter new values for the customized notepad items. Each individual notepad item's manually entered entries are stored in the unit's history and can be reviewed in log or graph form after 4 or more values have been entered.

6.3 Water Meter History

The water meter history allows the user to review both water meter one and two of a particular system in both an hourly format (for the past 24 hours) or a daily format for the past 60 days. If an evaporation calculation is being kept, a daily history of this value is also available.

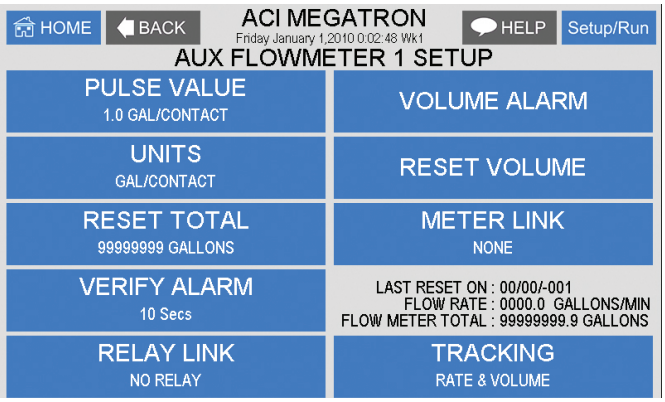
7. Flow Meters



A unit may have up to 10 option auxiliary flow meter inputs. These additional inputs are for tracking various flow meter devices like Advantage Controls' FloTracker in a metering pump's discharge tubing. They can also be linked to a system's water meter input for additional tracking and alarm capabilities.

Select the Aux Flow Meter to set-up or review.

7.1 Flow Meter Setup



The Flow Meter setup gives the user access to the various settings for the flow meter along with a review of the current settings.
PULSE VALUE - Defines the numerical value for a contact, i.e. 225.

UNITS - Defines the units of measure for a contact, i.e. Pulses / Ounce.

RESET TOTAL - Resets the totalized count of the meter.

VERIFY ALARM - If a flow meter is linked to a control relay, the controller will give an alarm if it does not receive a contact or pulse from the aux meter within the amount of time defined, or if it gets a contact when the relay is not on.

RELAY LINK - The relay link informs the Aux meter input is relevant to the control function that the selected relay is being driven by. For example, if the Aux flow meter is a metering pump's FloTracker then it should be linked to the relay that is driven by the feed timer that pump will be controlled by. If the Aux meter is going to be linked to a water meter in a bleed-off line then it should be linked to the relay that is controlling the bleed off valve.

VOLUME ALARM - If FloTracker has been selected as the Tracking method, an alarm will occur when the defined VOLUME USED has passed through the flow device.

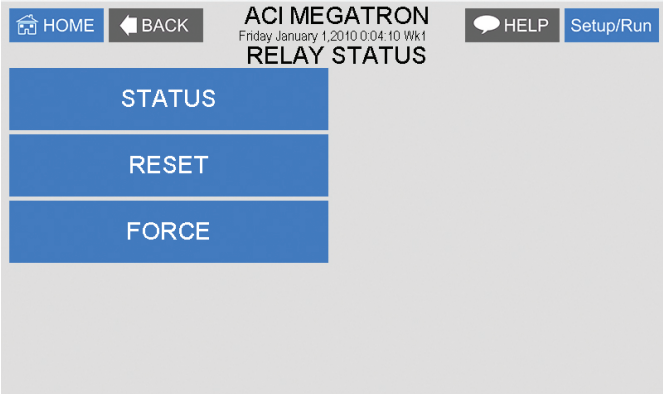
Note: If Rate and Volume tracking has been selected an alarm will occur if the defined MAX VOLUME amount is measured within the defined TIME CYCLE which can be a 12- or 24-hour period.

RESET VOLUME - Resets the Volume Alarm totalizer.

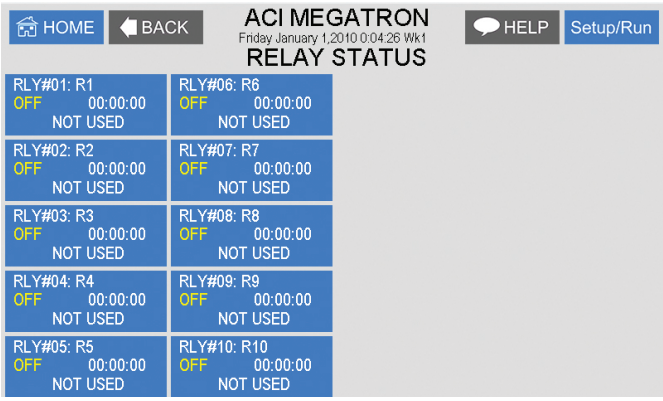
METER LINK – This selection only shows if the tracking method is Rate and Volume and tells the auxiliary flowmeter input to get its signals from one of the system water meters already wired to the controller's water meter inputs. If this is selected, no wiring to the auxiliary input is required and the PULSE VALUE and UNITS settings are auto populated from the water meter's settings.

TRACKING - Provides a pop-up screen to select either FloTracker or Rate and Volume tracking.

8. Relays



STATUS - Allows for viewing accumulated relay ON times, temporary forcing relays ON or OFF or seeing which relay is on.
RESET - Allows the accumulated run time of a particular relay to be reset to zero.
FORCE - Allows a relay to be manually forced ON or OFF for a single event from 0-999 minutes. When the event is over the relay goes back to its normal automatic control.



In the STATUS view the accumulated ON time is shown along with the main activator, custom name and current status:
ON = Relay on by relay activators
OFF = Relay off by normal logic
OFF-T = Relay off for daily max
OFF-D = Relay off for relay disabler
ON-A = Relay activated by activator other than main action
H-ON = Relay manually forced on
H-OFF = Relay manually forced off

VI. Advantage Controls' Product Warranty

Advantage Controls warrants control systems of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 24 months from the 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 by its products caused 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 expenses 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 controller malfunctions, call 1-918-686-6211, provide our technician with Model and Serial Number information. If they are unable to diagnose and solve your problem over the phone, a fully warranted replacement will be shipped, usually within 48 hours, on a 30-Day Billing Memo.

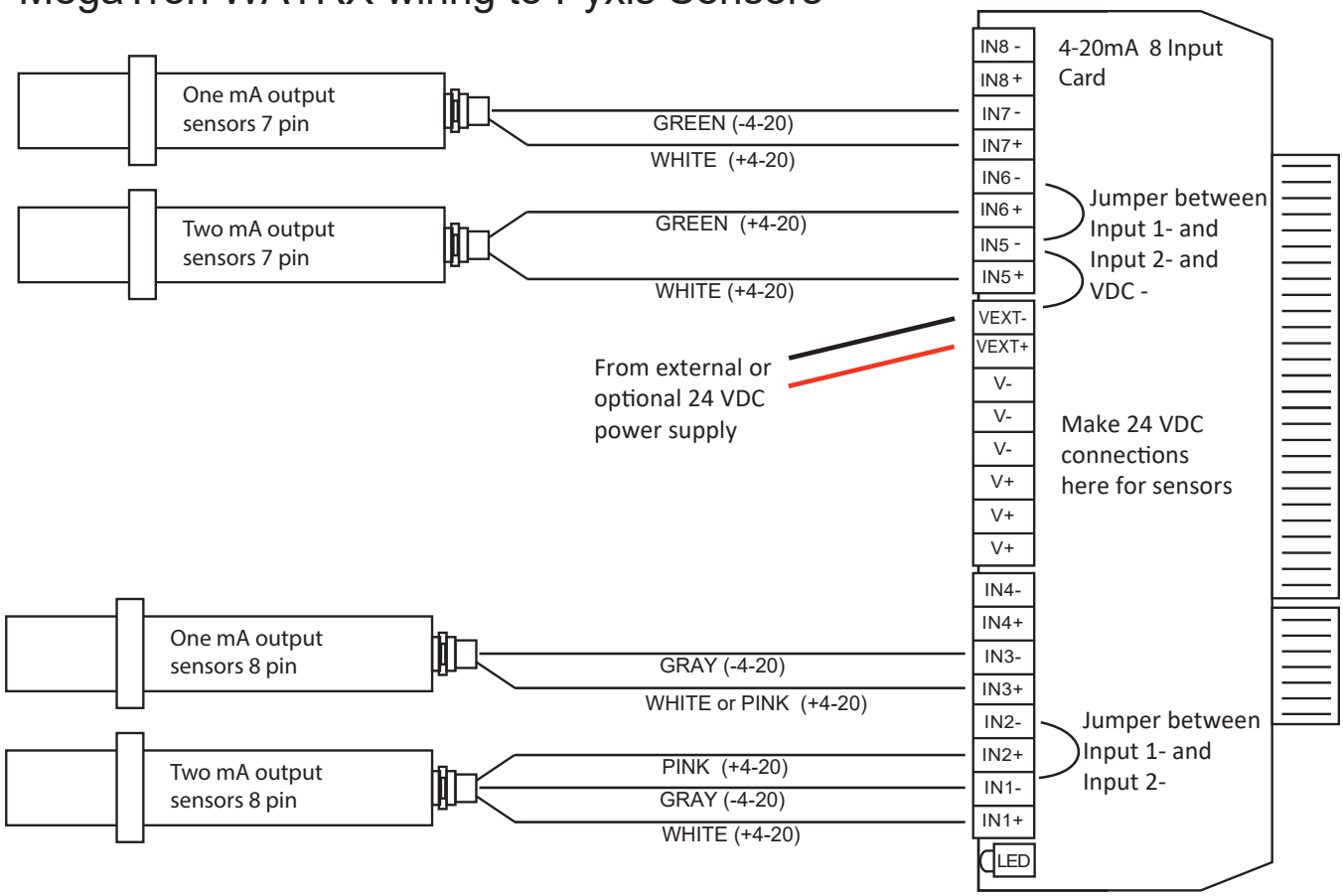
This service requires a purchase order, and the replacement is billed to your regular account for payment.

The replacement will be billed at the current list price for that model less any applicable resale discount. Upon return of your old panel, credit will be issued to your account at either 100% if your unit is in warranty or at 50% if your unit was out of warranty. The exchange covers only the panel. Electrode and enclosure are not included.

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See 47 CFR Sec. 15.19(3).

MegaTron WATRX wiring to Pyxis Sensors



Controller Wiring for 8 Pin Cable Sensors

Wire Color	pH STA-710	ORP STA-711	pH & ORP STA-712	Conductivity STA-724	DO 772T	Turbidity LTA-632	Low Turb LTA-739
Red	24 VDC +	24 VDC +	24 VDC +	24 VDC +	24 VDC +	24 VDC +	24 VDC +
Brown	VDC - gnd	VDC - gnd	VDC - gnd	VDC - gnd	VDC - gnd	VDC - gnd	VDC - gnd
White	4-20mA+	Not used	pH 4-20mA+	Cond 4-20mA+	DO 4-20mA+	4-20mA+	4-20mA+
Pink	Not used	4-20mA+	ORP 4-20mA+	Temp 4-20mA+	Temp 4-20mA+	Not used	Not used
Gray*	4-20mA -	4-20mA -	4-20mA -	4-20mA -	4-20mA -	4-20mA -	4-20mA -
Blue	RS-485 A	RS-485 A	RS-485 A	RS-485 A	RS-485 A	RS-485 A	RS-485 A
Yellow	RS-485 B	RS-485 B	RS-485 B	RS-485 B	RS-485 B	RS-485 B	RS-485 B
Green	Not used	Not used	Not used	Not used	Not used	Not used	Not used

More 8 Pin Cable Sensors

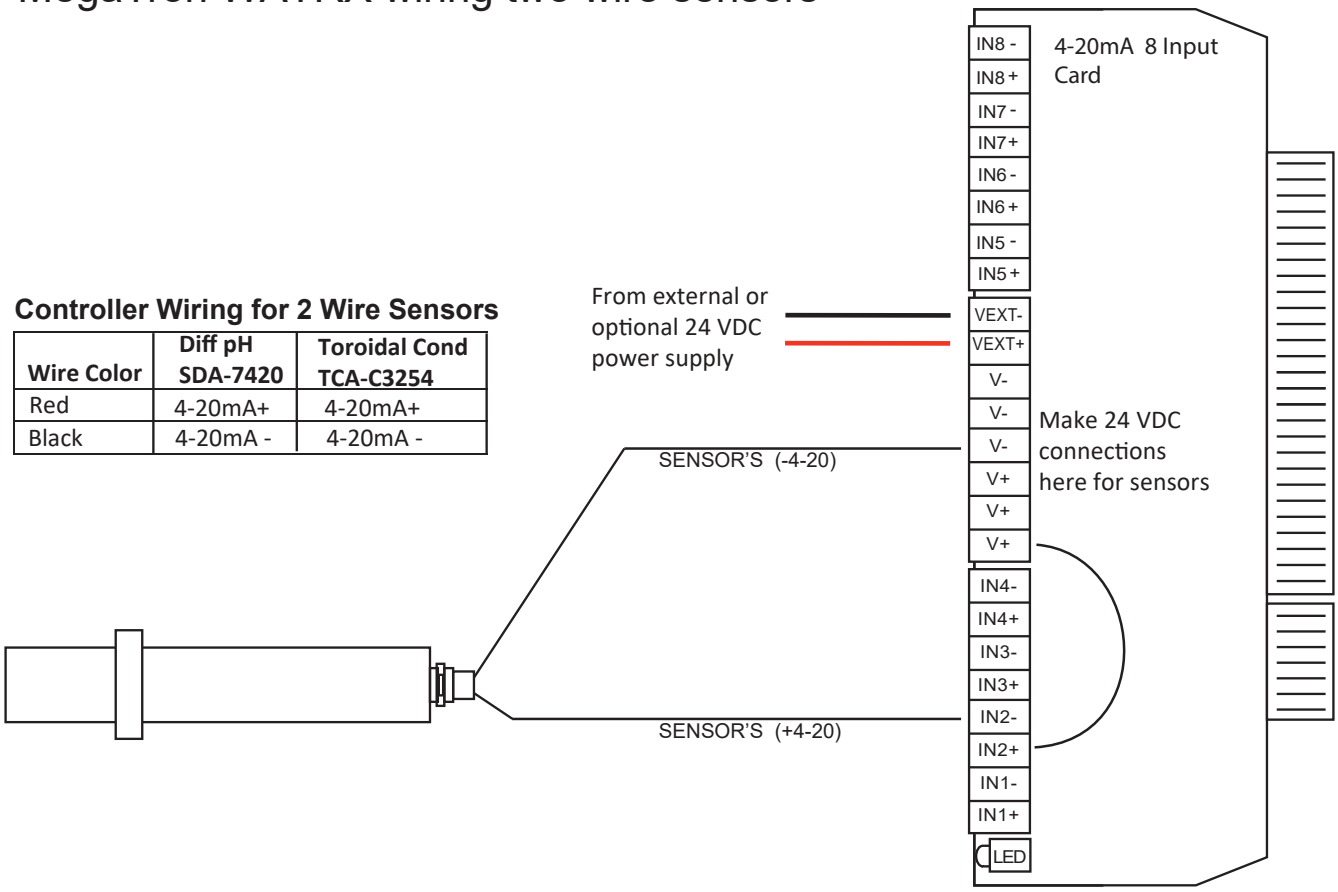
Wire Color	FCL, CLO2, Bromine, Sulfite STA-FCL,CLO,BRO,SUL
Red	24 VDC +
Brown	VDC - gnd
White	Oxidizer 4-20mA+
Pink	pH 4-20mA+
Gray*	4-20mA -
Blue	RS-485 A
Yellow	RS-485 B
Green	Not used

*Internally connected to power ground

Controller Wiring for 7 Pin Cable Sensors

Wire Color	DO STA-773	Turbidity STA-730B	COND STA-720
Red	24 VDC +	24 VDC +	24 VDC +
Black	VDC - gnd	VDC - gnd	VDC - gnd & mA -
Green	4-20mA -	4-20mA -	Temp 4-20mA+
White	4-20mA+	4-20mA+	Cond 4-20mA+
Blue	RS-485 A	RS-485 A	RS-485 A
Yellow	RS-485 B	RS-485 B	RS-485 B
Silver	Not used	Not used	Not used

MegaTron WATRX wiring two wire sensors



Controller Wiring for 2 Wire Sensors

Wire Color	Diff pH SDA-7420	Toroidal Cond TCA-C3254
Red	4-20mA+	4-20mA+
Black	4-20mA -	4-20mA -

Controller Customization Settings for Sensors

Sensor	Option	Name	Units	#-Units	MIN	MAX
STA-710	A	pH	pH	XX.XX	00.00	14.00
STA-711 mA1	B	pH	pH	XX.XX	00.00	14.00
STA-711 mA2	B	ORP	mV	XXXX.X	-1500.0	1500.0
STA-720 mA1	C	Cond	uS/cm	XXXXX	00000	99999
STA-720 mA2	C	Temp	F	XXXX.X	0000.0	0120.0
STA-724 mA1	D	Cond	uS/cm	XXXX.X	0000.0	1000.0
STA-724 mA2	D	Temp	F	XXXX.X	0000.0	0120.0
STA-FCL mA1	E & F	FCL	PPM	X.XXX	0.000	5.000
STA-FCL mA2	E & F	pH	pH	XX.XX	00.00	14.00
STA-CLO mA1	G	CLO2	PPM	X.XXX	0.000	5.000
STA-CLO mA2	G	pH	pH	XX.XX	00.00	14.00
STA-BRO mA1	H	BROM	PPM	X.XXX	0.000	5.000
STA-BRO mA2	H	pH	pH	XX.XX	00.00	14.00
STA-SUL mA1	J	SUL	PPM	X.XXX	0.000	5.000
STA-SUL mA2	J	pH	pH	XX.XX	00.00	14.00
LTA-739	K	TURB	NTU	XX.XX	00.00	40.00
LTA-632	L	TURB	NTU	XXXX.X	0000.0	1000.0
STA-772T mA1	M	DO	PPM	XX.XX	00.00	20.00
STA-772T mA2	M	Temp	F	XXXX.X	0000.0	0120.0

Get the Advantage in Water Treatment Equipment

Advantage Controls can give you the *Advantage* in products, knowledge, and support for all of your water treatment equipment needs.

- Cooling Tower Controllers
- Boiler Blow Down Controllers
- Blow Down Valve Packages
- Solenoid Valves
- Water Meters
- Chemical Metering Pumps
- Corrosion Coupon Racks
- Chemical Solution Tanks
- Solid Feed Systems
- Feed Timers
- Filter Equipment
- Glycol Feed Systems
- Pre-Fabricated Systems