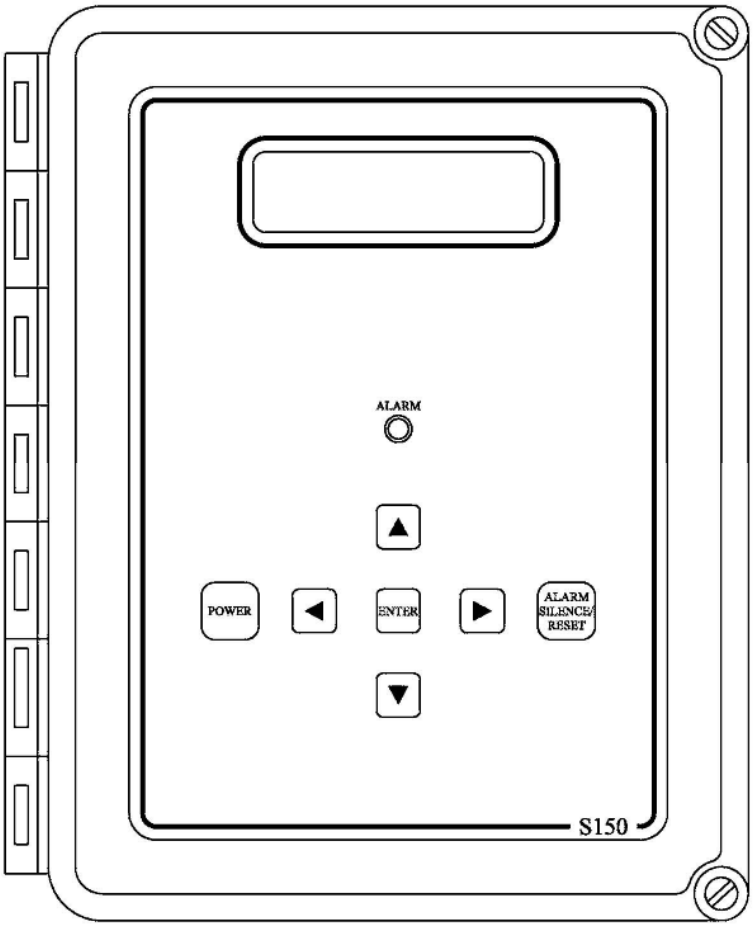
AmeriWater
The Water Purification Specialists



UPGRADE AN MRO FOR USE WITH HEATSAN

98-0177A

02/16/2015

CONTENTS PAGE

1 DOCUMENT HISTORY

Issue	Date of Change	Description of Change
A	17/02/15	Initial Release

2 CONTACT DETAILS

For all service, spares and consumables enquiries contact:

AmeriWater
1303 Stanley Ave
Dayton, Ohio 45404
Tel No. 800-535-5585

(Or your local authorized **AmeriWater** dealer)

Useful Telephone Nos.

Tel No……Contact Name:……

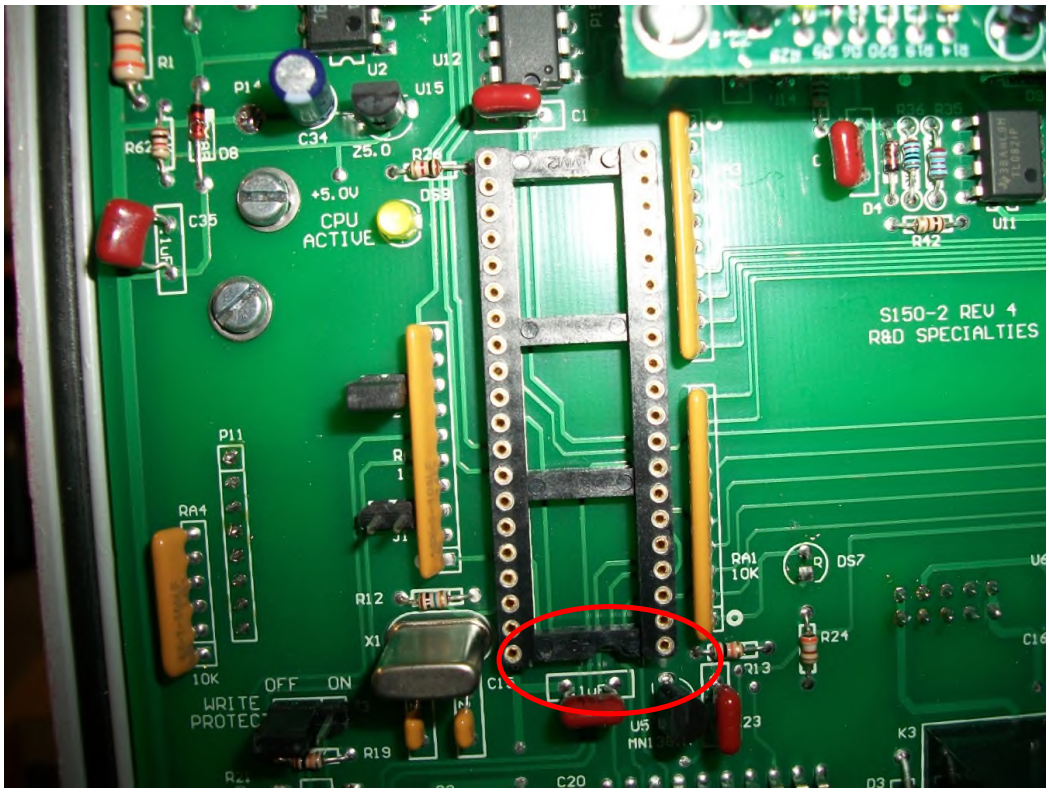
Tel No……Contact Name:……

3 PREPARATION

Prepare to upgrade the existing MRO by first removing the device from power. This needs to be done for the power to the control as well as the power to the pump. Once the power has been removed, it is recommended to lock this out until the upgrade is complete.

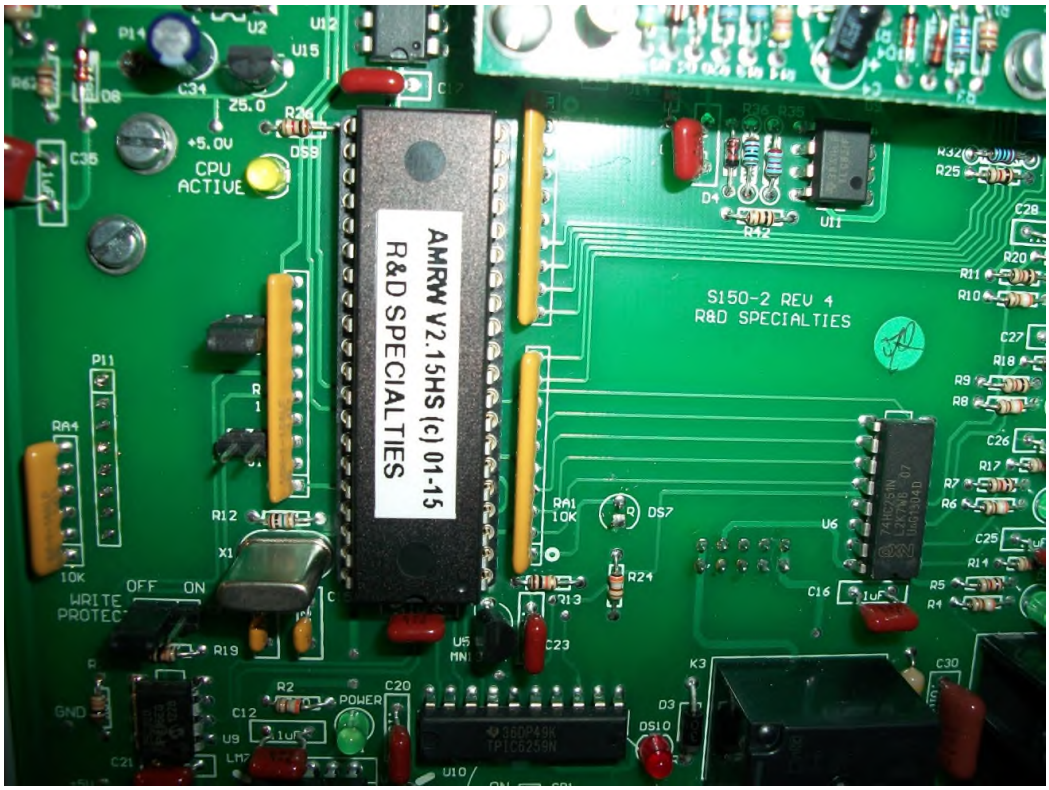
Loosen the 2 retaining screws on the front of the control panel to gain access to the CPU.

Gently pry the CPU out of the socket, being careful not to break any of the pins. Discard the old CPU.



The empty socket is shown above. Note the orientation of the notch at the bottom of the socket. The replacement chip will have a notch to ensure that the CPU is keyed properly to allow proper operation**. FAILURE TO ORIENT THESE IN THE SAME DIRECTION WILL LEAD TO DAMAGE TO THE CONTROLLER.**

The picture above shows the notch on the CPU towards the right.



Verify that the pins on the replacement chip are aligned with the openings in the socket and gently press this into place. Ensure that the chip is fully seated in the socket.

Return all power to the device.

Move the write protect jumper to the “OFF” position.

Power on the RO and access the program screen labelled as “DIRECT FEED”. Ensure that this has a value of “1” in the field and press “ENTER”.

Replace the write protect jumper in the “ON” position and close the access door.

Toggle the RO to operate and verify that the unit operates as intended.

4 CONTROLLER OPERATION

The RO will operate largely as indicated in the operation and maintenance manual that was provided with the device. There will be an additional setting available once the CPU is installed. See Direct Feed below.

Operating Status Messages

The operating status of the unit is shown on the top line of the display. The following list describes the items shown for the operating status.

STANDBY - The unit is in the STANDBY mode.

DELAY 99 - The unit is in the RO start delay. The number is the seconds remaining before the RO pump starts.

OPERATING - The RO unit is operating.

TANK FULL - The unit is shut down due to a tank full condition.

TANK FULL 99 - The unit is shut down due to a tank full condition. If the number is blinking, the tank full high switch has cleared, but the tank full low switch is still active. If the number is on steady, both tank level switches have cleared and the delay is counting down.

PRETREAT - The unit is shut down due to a pretreat lockout condition.

PRESS FAULT - The unit is shut down due to a pressure fault condition.

MEMB FLUSH 99 – Membrane Flush is active. The number is the minutes remaining in the flush cycle.

HEATSAN OPERATION – This message is displayed when the unit is paired with a Heatsan disinfection system and set to run when water is called for by the Heatsan disinfection system.

Conductivity

The Conductivity is shown on the top line after the unit operating status. When the unit is in STANDBY, because of a shut down condition, the reading is replaced with '----'. If the reading is over range, the reading is shown as '^^^^' when in the OPERATE mode.

Operating Hours

The current operating hours are shown on the bottom line.

Temperature

The current water temperature is shown on the bottom line to the right of operating hours. When the unit is in STANDBY due to a shut down condition, the reading is replaced with '---'.

Warning Messages

Warning messages are also shown on the second line. If any warnings are active, the active warnings will alternate with the normal displays for the bottom line. The following lists the warning messages.

HI COND - The Conductivity reading has exceeded the programmed limit.

Tank Full Operation

The unit can be operated with 1 or 2 level switches. With 1 level switch, the switch is connected to the tank full high input. When this switch has been active for 5 seconds, the unit will shut down on tank full. TANK FULL will show on the display. When the tank full condition clears, the display will show TANK FULL 99. The number is the tank full restart time and the unit will restart when this delay times out.

For 2 level switch operation, the upper switch is connected to the tank full high input and the lower switch is connected to the tank full low input. When both switches are "open", the MRO unit will start. The MRO unit will continue to run when the water level rises, and while the lower switch becomes active (closed). When the upper switch becomes active (closes), after the 5 second delay, the MRO unit will shut down. TANK FULL will show on the display. When the tank level drops and the upper level switch clears, the display will show TANK FULL 99 and the MRO unit will remain off. The number is the tank full restart time and the number will blink until the lower level switch clears (opens). When the lower level switch clears (opens), the number will remain steady and the MRO will restart when the delay times out.

Tank Full Restart

The tank full restart is the delay before the MRO unit starts when a tank full condition clears. This delay can be in minutes or in seconds. The TF Restart Setpoint selects seconds or minutes.

Tank Full Override

A timed tank full override can be initiated when the MRO unit is shut down due to a tank full condition. Pressing the Alarm Silence/Reset key for 3 seconds during a tank full condition will enable the tank full override. The RO will start and TF OVERRIDE 9 will show on the display. The number is the minutes remaining in the override timer. When the override times out, the unit will return to the tank full shut down condition. The TANK FULL OVERRIDE will divert all water to the drain, whether the water quality is good or bad coming into the RO.

Pressure Fault

If the pressure fault input becomes active (closes) and stays active for the delay programmed in the PF Delay Setpoint, the unit will shut down for a pressure fault. The display will show PRESS FAULT, the alarm lamp will flash and the audible alarm will sound. The pressure fault can be cleared by pressing the Alarm Silence/Reset key twice.

Auto Reset

If a pressure fault shut down occurs and the Auto Reset Setpoint is programmed to 0, the unit will remain shut down until manually reset. If the Auto Reset Setpoint is programmed to a value greater than 0, the unit will automatically clear the pressure fault and attempt to restart after this delay times out.

Alarm Silence

When a shut down occurs that causes the audible alarm to sound, the alarm can be silenced by pressing the Alarm Silence/Reset key once. The alarm will remain silenced for 3 minutes [180 seconds (AAMI RD62 standard)] when the Alarm Silence Setpoint is programmed to the factory default 3. If the Alarm Silence Setpoint is programmed to a value other than 3, the alarm will resound after this delay times out. Pressing the Alarm Silence/Reset key will silence the alarm and reset this delay.

Pretreat

If the pretreat input becomes active (closes) and stays active for 2 seconds, the unit will shut down in a pretreat lockout condition. PRETREAT will show on the display and the unit will remain shut down as long as the pretreat input is active.

High Conductivity

If the Conductivity reading exceeds the limit programmed the Cond Limit Setpoint for the delay programmed in the Cond Delay Setpoint, the alarm lamp will light and the HI COND warning message will show on the display. This warning will clear when the Conductivity drops below the Setpoint.

When the High Conductivity warning message is active, the MRO will divert the PRODUCT WATER to drain (through the Reject hose), until the Product water conductivity goes back into the acceptable quality range.

Direct Feed

This is the setting that installation of this new CPU enables. Setting this to “1” allows for pairing with the Heatsan disinfection system. This changes the operation of the “tank full high” and “tank full low” inputs. “Tank full high” is used to indicate that the Heatsan is in operation while “tank full low” is used to turn the RO on and off when water is required. Changing this set point to “0” allows for the RO to operate as if the CPU was not installed.

5 CONTROLLER STANDARD SETPOINTS

SETPOINT	DESCRIPTION	RANGE	FACTORY SETTING
%Rej	The 2nd TDS/Conductivity cell is used to monitor feed water. Programming this setpoint to 1 allows the % rejection to be displayed.	0-1	1
C2 Limit	When this value is met or exceeded, the alarm lamp will light and high TDS/Cond will show on the display. To disable, set to 0.	0-1	1
C2 Range^^	Selects the range of inlet TDS/Conductivity monitor; 0 = 50, 1 = 100, 2= 250, 3= 500, 4 = 1000, 5 = 2500, 6 = 5000.	0-6	4
Direct Feed	This will change the behaviour of the device to allow it to be paired with a Heatsan disinfection system. 1 = direct feed with heatsan, 2 = standard RO.	0-1	0
TDS/Cond Range^^	Selects the range of TDS/Conductivity monitor; 0 = 50, 1 = 100, 2= 250, 3= 500, 4 = 1000, 5 = 2500, 6 = 5000.	0-6	1
TDS/Cond UOM^^	Selects display of water quality in either µS or PPM. 0 = µS, 1 = PPM	0-1	0
Switch Select	Selects if the switch inputs are normally open or normally closed.	0-32	0
Temp UOM	Selects display of the temperature in either °F or °C. 0 = °F, 1 = °C.	0-1	0
Temp Offset	Allows adjustment of the temperature reading by +/- 5 degrees.	+/- 5	0
Current Hours	Current number of hours of RO system operation.	0-6500 hours	0
Maximum Hours	If the current operating hours exceed this limit, the operating hours warning will occur. To disable, set to 0.	0-65000 hours	0
Flush Mode	Selects if the inlet and RO pump relays operate during flush.	1-4	0
Flush Interval	The interval between flush cycles. Only valid with operation hour, elapsed time or off flush cycles.	0-99 minutes	0
Flush Time	The length of time a membrane flush cycle will last when flush is active.	0-99 minutes	0
Flush Type	Selects the type of flush. Set to 0 to disable.	0-8	0
Tank Lo Restart	Not used.	N/A	N/A

^^Changing any setpoints indicated by this symbol will require the unit to be recalibrated and may require the range components be changed.

SETPOINT	DESCRIPTION	RANGE	FACTORY SETTING
TFO Time	The amount of time that a tank full override lasts.	0-15 minutes	3
TF Restart	Selects whether the tank full restart delay is in seconds or minutes. 0= seconds, 1=minutes.	0-1	0
TF Restart Delay	When a tank full condition clears, the system will restart after this delay.	0-99 seconds / minutes	5
Alarm Silence	If the audible alarm is silenced, after this delay, the alarm will resound. If this is set to 0, the alarm will remain silenced.	0-99 minutes	3
Auto Reset	When a pressure fault shut down is active, the system will attempt to restart after this delay. If set to 0, the system must be manually reset.	0-99 minutes	0
Press Fault Delay	The time a pressure fault must be active before a pressure fault shut down occurs.	0-99 seconds	10
RO Start Delay	The amount of time between the inlet valve opening and the RO pump start.	0-99 seconds	10
TDS/Cond Delay	When the limit Setpoint is exceeded, no alarm will be given until this time has expired.	0-999 seconds	10
TDS/Cond Limit	When this value is met or exceeded, the alarm lamp wil light and high TDS/Cond will show on the display. To disable, set to 0.	0-999 µS or PPM*	Based on Water analysis

* µS = microsiemens; PPM = Parts Per Million