WEIL-McLAIN Ultra

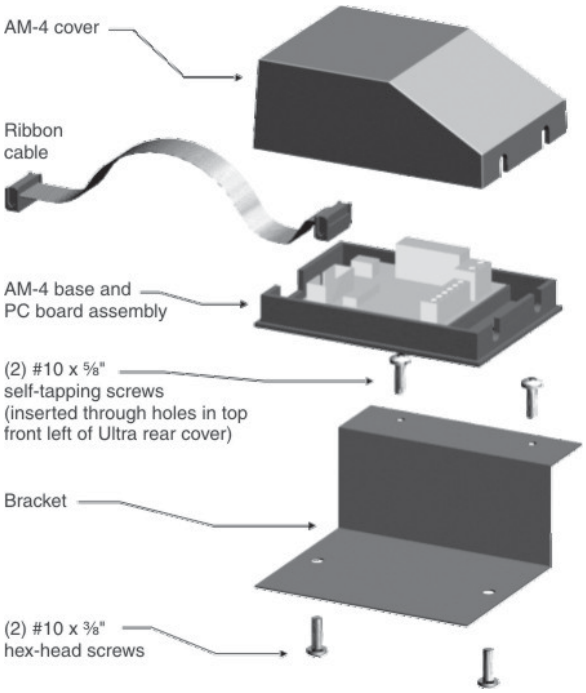
Ultra Gas-fired water boiler

AM4 0-10vdc Module Installation Instructions

(Requires Weil-McLain kit part number 383-500-396)

(AM4 kit allows the Ultra boiler's modulation to be controlled by an external 0-10vdc signal supplied by most modulating multiple boiler controls.)

Figure 1 AM4 assembly



Verify kit contents

- AM4 module with cable clamp and screws
- Sheet metal mounting bracket
- (2) 10-32 x 3/8" hex-head screws
- (2) 10-32 x 5/8" Phillips-head screws
- Ribbon cable

Tools required

- Phillips-head screwdriver
- Flat-blade screwdriver
- Small flat-blade screwdriver
- 5/16" nut driver
- Drill and 3/16" drill bit

NOTICE The alarm contacts of the AM4 module are rated for 2 amps at 120 vac. All hard lockout conditions of the Ultra Control Module will cause an alarm. Soft lockouts will not cause an alarm.

In addition to mounting and wiring the AM4 module to each boiler operated by the multiple boiler controller, you will need to program the Ultra Control Module of each boiler to accept a 0 - 10 vdc input signal, as described in these instructions.

WARNING This document must only be used by a qualified heating installer/service technician. Read all instructions, including this Supplement and the Boiler Manual, before installing. Perform steps in the order given. Failure to comply could result in severe personal injury, death or substantial property damage.

NOTICE Installation must comply with local requirements and with the National Fuel Gas Code, ANSI Z223.1 for U.S. installations or CSA B149.1 or B149.2 for Canadian installations.

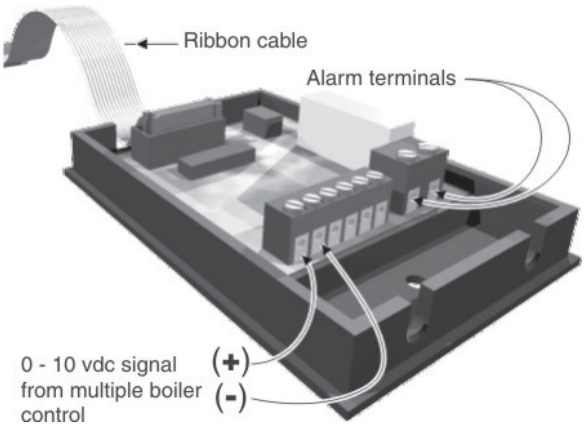
Installation procedure

WARNING Electrical shock hazard — Turn off power to the boiler before proceeding with the installation. Failure to comply could result in severe personal injury, death or substantial property damage.

Mount and wire AM4 module

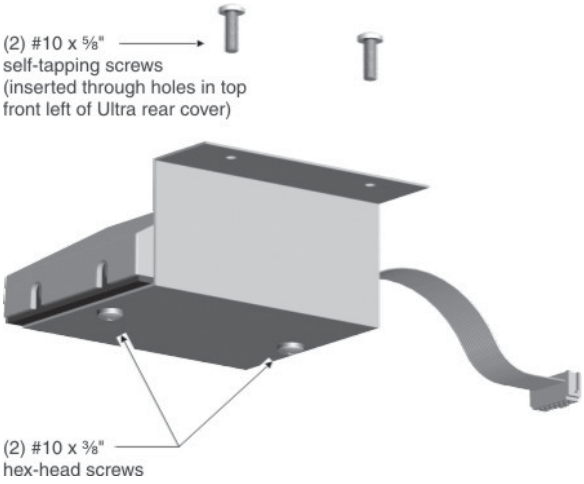
1. Remove boiler front panel by removing the two knurled screws at the bottom with a flat blade screwdriver. Once the knurled screws are removed, lift front panel of boiler and pull forward to remove.
2. Remove top front plastic cover by removing the four Phillips-head screws securing it.
3. Insert a small flat-blade screwdriver into slot on bottom of AM4 module (at tapered end of module cover) and gently pry off the cover.
4. With AM4 cover removed, carefully insert either end of the ribbon cable into the AM4 plug. Cable will fit into the cutout on the end of the module cover and base. See Figure 2.

Figure 2 AM4 wiring connections



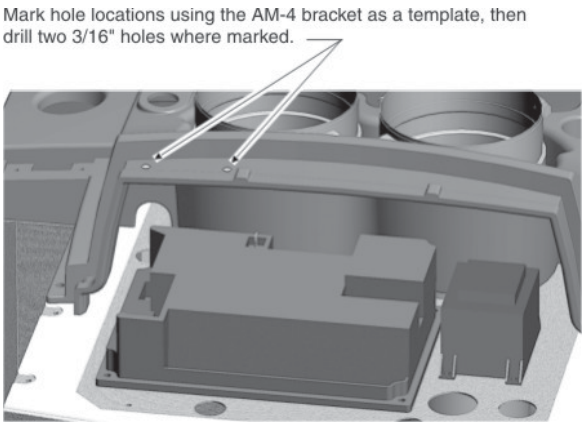
5. Route multiple boiler controller wires and alarm wires through the Ultra boiler cable ways, along with the other wiring. Strip ends and attach to the terminals shown in Figure 2. Use the cable clamp supplied in the AM4 kit to secure the alarm wires to the module.
6. Fasten the AM4 cover on the module.
7. Place the AM4 module on the mounting bracket, oriented as shown in Figure 1, page 1. Secure in place on the bracket by inserting the two 10-32 x ⅜" hex-head screws (supplied) from the bottom of the bracket as shown. See Figure 3.

Figure 3 AM4 mounted to bracket



8. Use the metal bracket as a template, and mark the hole locations on the front left side of the Ultra boiler rear cover as shown in Figure 4.

Figure 4 Mark and drill mounting holes



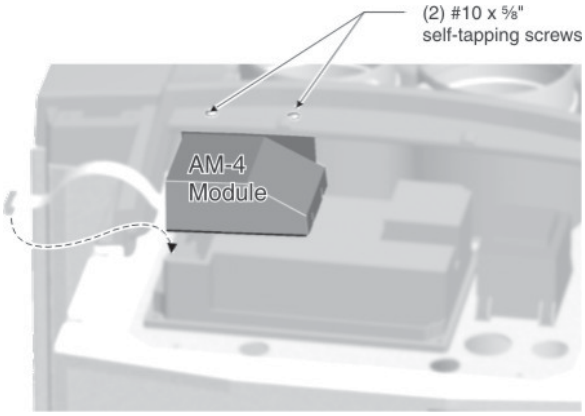
9. The AM4 bracket must be mounted in the position shown for the ribbon cable to reach the Ultra control

Installation procedure *(continued)*

module socket.

10. Drill a 3⁄16" hole in each of the marked locations.
11. Position the AM4 mounting bracket under the top rear panel as shown in Figure 5. Secure the bracket in place by inserting the two 10-32 x 5⁄8" Phillips-head, self-tapping screws (provided) through the rear panel holes and into the bracket holes.

Figure 5 AM4 mounted in position



12. Plug the end of the ribbon cable into the empty socket on the left end of the Ultra control module.
13. Replace the top front cover and secure with the four screws.
14. Restore power to the boiler.

Program boiler control module

NOTICE The factory default setting for operation of the Ultra Control Module is for thermostat control. The module must be programmed, as described in the following, to operate from a 0 - 10 vdc input signal to operate correctly with the AM4 module.

1. Follow instructions in the Ultra Boiler Manual and the Ultra Control Supplement to install, set up and adjust the boiler.

Differences from standard operation

1. The AM4 module responds to a signal from the multiple boiler controller. The boiler will not cycle on thermostat action, but on the control signal from the AM4 module to the Ultra Control Module. To test boiler operation, you will need to operate the multiple boiler controller to signal the boiler to initiate a call for heat to test the boiler and controls.
2. Parameter readouts (Ultra Control Module):
   - Parameter 4 will not show outside temperature. The Ultra Control Module does not use an outside sensor when using an AM4.
   - Parameter 6 will not show target outlet water temperature. Water temperature control is performed by the multiple boiler controller.

Program control module for AM4 input

1. You must program the Ultra Control Module to accept the 0 - 10 vdc input signal from the AM4 as described on the next page.

WARNING Do not attempt to revise any other control settings except those covered in the Ultra Control Supplement. Perform only the revisions described in this document and the Ultra Control Supplement. Failure to comply could result in erratic or unreliable operation of the boiler.

Installation procedure *(continued)*

Program control module for AM4 input *(continued)*

2. Once the instructions for preparation of the boiler are completed, activate code mode on the Ultra Control Module as follows:
   a. Press and hold STEP. Continue holding STEP and press MODE also. Hold both buttons for 2 seconds or longer. The module readout will change to [CODE]. Release the STEP and MODE buttons.
   b. Press STEP once. The module readout will show [C - XX], where the "XX" will be a random number.
   c. Use + or — to change the last two digits until the display shows [C - 05]. (To change numbers one unit at a time, tap + or —. To make the number change quickly, hold down + or —.)
   d. When the display shows [C - 05], press STORE to enter the code number.
3. Revise parameter 34 as follows:
   a. Once the code has been stored, change to the "Parameter" mode by pressing MODE until parameter mode is selected.
   b. Press STEP repeatedly until the readout shows [P . 34]. The readout sequence as you press the button will be:
      [1 140], [2.01], [3.01], [4 190], [P.05], [P.06], [P.07], etc.
      The readout will continue to show "P." followed by a two-digit number that increases each time you press STEP.

NOTICE The actual parameter values displayed may vary, depending on the application. The parameter sequence will always occur in the order shown.

   c. When the readout shows [P.34], stop pushing the STEP button. Wait a few seconds and the display will show the current setting for parameter 34 in the right two display spaces.
   d. Press + or — to change the value until the display shows [- - 04].
   e. Save the change by pressing STORE.

NOTICE To return the boiler to thermostat operation, perform the above steps, but set parameter 34 to "00" instead (display shows [- - 00] instead of [- - 04]).

4. Exit code mode by pressing RESET once.

Test and verify boiler/control operation

1. Follow the Ultra Boiler Manual and Ultra Control Supplement instructions to test operation of the boiler and its controls. To initiate a call for heat you will have to operate the multiple boiler controller to activate the boiler.
2. Verify the boiler modulates correctly by adjusting the multiple boiler controller.
3. The control response to the 0 - 10 vdc signal will be:
   - Boiler on for voltage above 0.5 vdc.
   - Boiler at low fire at voltage between 0.5 vdc and 1.8 vdc.
   - Boiler at high fire at voltage of 10 vdc.
   - Boiler modulates between high fire and low fire for voltage between 1.8 and 10 vdc.

Test AM4 alarm circuit (if used)

NOTICE The AM4 will close the alarm relay contacts on any hard lockout of the Ultra Control Module. It will not send an alarm on soft lockouts.

1. With the boiler electrical power OFF, unplug one of the electrical connectors to either the supply or return temperature sensor.
2. Restore power to boiler and allow to cycle.
3. The Ultra Control Module should enter a hard lockout, causing the AM4 alarm relay to close. The remote alarm should activate.
4. Disconnect boiler power and replace the sensor lead removed in step 1.
5. Restore power and verify boiler operation before leaving the jobsite.

Replace boiler components

1. Replace all boiler components and boiler front jacket panel.

WARNING Replace boiler jacket front door after servicing. The boiler front door must be securely fastened to the boiler to prevent boiler from drawing air from inside the boiler room. This is particularly important if the boiler is located in the same room as other appliances. Failure to keep the door securely fastened could result in severe personal injury or death.

WEIL-McLAIN

Weil-McLain
500 Blaine Street
Michigan City, IN 46360-2388
http://www.weil-mclain.com