The Multi-MOD Platinum is strictly an operating control. It CANNOT be used as a limit control. All boilers must have all safety and limit controls required by code. It is the responsibility of the installer to verify that all the safety and limits are working properly before the Multi-MOD Platinum is installed.

This control must be installed by a licensed electrician.
Content

MULTI-MOD FUNCTION CHART .............................................. 3
MULTI-MOD OVERVIEW ...................................................... 4
Reset Ratio/Outdoor Reset .................................................. 5
INSTALLATION ................................................................. 6
Mounting the Enclosure ...................................................... 6
Wiring the Power ............................................................. 6
Input Wiring ................................................................. 6
Wiring the Outdoor sensor ................................................... 6
Wiring The System Sensor .................................................... 7
Wiring an External Set Point (4-20mA Input) ......................... 7
Wiring the Shutdown ........................................................ 7
Wiring the System Prove ..................................................... 8
Wiring the DHW call .......................................................... 8
Interfacing to HWR ........................................................... 8
Interfacing to MPC ........................................................... 8
Wiring the Lockout Inputs ................................................... 8
Wiring The Setback ........................................................ 9
Output Wiring ............................................................... 9
Wiring the System Output ................................................... 9
Wiring the Stage Outputs .................................................... 10
Modulating Output Card .................................................... 11
Internet Communication Wiring ......................................... 11
BACnet Communication Wiring ........................................... 11
Wiring The Multi-MOD to Extension Panels ................................ 11

USING THE MENUS ............................................................. 12
Menu Basics ............................................................... 12
Different Ways of Connecting the Multi-MOD to Two Extension Panels ................................................ 12
The Main Display .......................................................... 13
Display Stage Modulation Status ......................................... 13
Display Messages ........................................................ 13

MENU SETTINGS .............................................................. 14

MENU SETTINGS CONTINUED ............................................... 15

SYSTEM STARTUP ............................................................. 16
Startup Sequence .......................................................... 16
Sensor Type ............................................................... 16
EMS Input Mode ........................................................... 16
4 & 20mA Set Points ....................................................... 16
Output Type .............................................................. 17
Modulating Mode ......................................................... 17
Operating Mode .......................................................... 17
Heat/Cool Mode .......................................................... 17
Prove/DHW Mode ........................................................ 18
DHW Set Point .......................................................... 18
Sensor Fault ............................................................... 18

OPERATING SETTINGS ...................................................... 18
Set Point ................................................................. 18
Outdoor Cutoff Temperature .............................................. 19
Reset Ratio ............................................................... 19
Offset ................................................................. 19
Minimum Water Temperature ........................................... 20
Gain/Throttle ............................................................. 20
Lead Stage ................................................................. 21
Lead Auto Rotate .......................................................... 21
Purge Delay .............................................................. 21
Lag Delay ................................................................. 21
Standby Time ............................................................. 22
System Run-On ............................................................ 22
Setback ................................................................. 22
Rotate Time .............................................................. 22
Last-Stage-Hold ............................................................ 23
Avoid Conflicting Boiler Limits .......................................... 23
Set Point and Default Table .............................................. 23
SECURITY ................................................................. 24
Enable the Password ........................................................ 24
Change the Password ....................................................... 24
Set the Time ............................................................... 24

STAGE SETTINGS ............................................................. 25
The Stage Menu ........................................................... 25
Moving Around the Stages Menus ........................................ 25
Mode ................................................................. 25
Ignition % ............................................................... 26
Modulation Start .......................................................... 26
Copy Settings (Stage A Only) ........................................... 27

MAINTENANCE ................................................................. 27
System and Outdoor Trim .................................................. 27
Stage Output Trim .......................................................... 27
Soft-off Delay ............................................................. 27
Modulation Speed .......................................................... 28

TROUBLESHOOTING ......................................................... 28

COMMUNICATION ............................................................. 30
Remote Interface ........................................................... 30
Internet Communication ................................................... 30
Internet ID ............................................................... 30
Internet Port-Forwarding Table .......................................... 31
Internet Alarms ............................................................ 31

BACNET COMMUNICATION .................................................. 32
BACnet Communication Option .......................................... 32
BACnet Device ID .......................................................... 32
IP, Mask, and Gateway Address ......................................... 32
Multi-MOD BACnet Variable List ........................................ 32
Platinum BACnet PICS Statement ....................................... 34
Connecting Multi-MOD to SCP-6 ........................................ 35
Multi-MOD Modulating 4 4-20mA Hydronic Boilers with Lockout Inputs .................................................. 36
Multi-MOD Modulating 4 4-20mA Steam Boilers with Lockout Inputs .................................................. 37
Multi-MOD Modulating 4 4-20mA Steam Boilers with Lockout Inputs .................................................. 38
Multi-MOD Modulating 4 4-20mA Steam Boilers with Lockout Inputs .................................................. 39

SPECIFICATIONS .............................................................. 40
Multi-MOD ............................................................... 40
Extension Module .......................................................... 40
The digital display shows the system status, set point, lead stage <in brackets>, and status of each stage. To view and adjust settings, press the Adjust/Select button.

Depress the knob to move forward through the menus and to accept changes, rotate the knob to change a setting's value.

Depress the button to go back through the menus, or to view a setting value without changing it.

To Temp sensor mounted in common header
When closed, all stages are turned off*
Pressure terminals have polarity and source sensor power
To Heat-Timer network sensors**
Checks status of system components or DHW input*
Optional sensor enables outdoor reset
If a unit is in Lockout, the MultiMOD will not consider it an active

Provides remote set point adjustment with a 4-20mA signal or provides a setback function

System Output controls pumps, valves or other system components
One output relay is required for each stage. The relays are ordered separately, HT #500031-00

The modulation outputs can be 0-5V, 0-10V, 1-5V, 2-10V, 4-20mA, or 0-135Ω. Different output boards mount on the back of the Multi-MOD and determine the type of output.

* DRY CONTACTS ONLY
** Only available with the Remote Communications package
MULTI-MOD OVERVIEW

The Multi-MOD is designed to modulate multiple boilers to achieve a smooth and efficient system performance. It is used in building heating as much as in process applications. The Multi-MOD is unique in its capability to provide smooth increase and decrease modulation of multiple boilers without overshooting or undershooting. It does that by overlapping the modulation of the lead and lag boilers. Thus, allowing the lag boiler to start its pre-purge and staying at its lowest firing before having the lead boiler reach its full capacity.

Sequences up to 4 Fully Modulating Stages
The Multi-MOD is the perfect control whenever multiple fully modulating stages are required for heating or cooling applications. The Multi-MOD controls the modulation of each stage to maintain precise set point control.

PID Type Logic
The Multi-MOD’s control algorithm allows it to look at the rate of change in the system. If the system temperature/pressure is changing quickly, the Multi-MOD will react quickly to adjust the stages’ modulating output. If the system temperature/pressure changes slowly, the Multi-MOD will make slow and gradual adjustments. Therefore, the Multi-MOD adapts to specific system requirements and minimizes fluctuations around the set point.

Controls 0-5V, 0-10V, 1-5V, 2-10V, 4-20 mA, or 0-135Ω modulating motors
The Multi-MOD is designed to accurately control the output from 0 to 100% of modulation for each of these different types of motors. One Multi-MOD can even control two different types of motors.

Process or Normal Applications
The Multi-MOD controls the stages based on the type of logic selected. It offers a Normal (PID) logic for slow responding systems. This option is useful in heating applications where In addition, it offers a Process option for systems that requires fast response.

Digital Display of all System Settings
The Multi-MOD’s 80 character alphanumeric digital display names each system parameter in plain English and shows its precise value. The easy to follow menu system allows users to quickly make changes to any system setting without having to learn any specialized codes or keyboard commands. Password protection is available to prevent unauthorized users from making adjustments to control settings.

Automatic Rotation among Stages
Rotating the first stage to be activated on a call for output promotes even wear on each stage. The Multi-MOD has three modes of rotation: Manual, Last-On, or Automatic every selected time period from every hour to every 41 days.

Outdoor Reset Control
The Multi-MOD has a stand-alone hydronic outdoor temperature reset function (When Sensor Type is set to Reset °F or Reset °C.). This allows it to change the target set point based on outdoor temperature changes.

Connects to Energy Management Systems
Multi-MODs can accept a 4-20 mA input signal from an EMS to adjust the temperature set point remotely. In addition, an Energy Management System (EMS) or other controller can disable the Multi-MOD when there is no output requirement.

BACnet IP Remote Communication Upgrade Available
The Multi-MOD can be upgraded to include a BACnet IP remote communication package to monitor and control all Multi-MOD functions from a remote location.

Monitors Stage Status
The Multi-MOD is designed to accept Lockout inputs from each stage. If any stage is in Lockout, the Multi-MOD will automatically skip it when adding more capacity. If a stage goes into Lockout during normal operation, the next stage will be activated immediately to maintain the desired output capacity.

System Output is Active when Any Stage is Active
This output can be used to activate a system pump, combustion air damper, or perform any other function that is required when any stage is active. A System Prove input checks the status of components activated by the System output before stages can be activated.
UNDERSTANDING OPERATION CONCEPT

The Multi-MOD has multiple operating modes that satisfy most hydronic or steam systems. When used to control a hydronic system, it can change the System Set Point based on outdoor temperature (Outdoor Reset) or it can modulate its stages to achieve an adjustable fixed Set Point.

In Outdoor Reset, the Multi-MOD controls a hot water heating system to provide a building with comfortable and even heat levels. The Multi-MOD varies the temperature of the circulating heating water in response to changes in the outdoor temperature. The heating water temperature is controlled through the modulation of the stages.

The Multi-MOD also controls the system circulating pump with an adjustable Outdoor Cutoff. When the outdoor temperature is above Outdoor Cutoff, the pump is off and no heating water is circulated through the system. When the outdoor temperature drops below the Outdoor Cutoff, the system pump relay is activated and the heating water circulates through the system. The temperature of the heating water is controlled by the Reset Ratio, Water Offset, and the Outdoor temperature.

RESET RATIO/OUTDOOR RESET

When a building is being heated, heat escapes through the walls, doors, and windows to the colder outside air. The colder the outside temperature, the more heat escapes. If you can input heat into the building at the same rate that it is lost out of the building, then the building temperature will remain constant. The Reset Ratio is an adjustment that lets you achieve this equilibrium between heat input and heat loss.

The starting point for most systems is the 1.00 (OD):1.00 (SYS) (Outdoor Temperature : Heating Water Temperature) ratio. This means that for every degree the outdoor temperature drops, the temperature of the heating water will increase one degree. The starting point of the curves is adjustable, but comes factory selected at 70°F Outdoor Temperature and 100°F Water Temperature. For example with a 1.00 (OD):1.00 (SYS) ratio, if the outdoor temperature is 50°F, this means the temperature has fallen 20° from the starting point of 70°F. Therefore, the heating water temperature will increase 20° to 120°F.

Each building has different heat loss characteristics. A very well insulated building will not lose much heat to the outside air, and may need a Reset Ratio of 2.00 (OD):1.00 (SYS) (Outdoor : Water). This means the outdoor temperature would have to drop 2 degrees to increase the water temperature 1 degree. On the other hand, a poorly insulated building with insufficient radiation may need a Reset Ratio of 1.00 (OD):2.00 (SYS). This means that for each degree the outdoor temperature drops the water temperature will increase 2 degrees. The Multi-MOD has a full range of Reset Ratios to match any buildings heat loss characteristics.

A heating curve that relies not only on Outdoor temperature but also on type of radiation will improve heat comfort. The following are suggested initial settings for different types of radiation based on average building insulation and heat loss. The contractor can fine tune these adjustments based on the specific building need.

<table>
<thead>
<tr>
<th>Type of Radiation in Building</th>
<th>Reset Ratio</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiators (Steel &amp; Cast Iron)</td>
<td>1.00 (OD):1.00</td>
<td>0°F</td>
</tr>
<tr>
<td>Baseboard (Finned copper tube &amp; Cast Iron)</td>
<td>1.00 (OD):1.00</td>
<td>0°F</td>
</tr>
<tr>
<td>Radiant (High Mass/Concrete)</td>
<td>4.00 (OD):1.00</td>
<td>-10°F</td>
</tr>
<tr>
<td>Radiant (Low Mass/Joists)</td>
<td>2.00 (OD):1.00</td>
<td>-10°F</td>
</tr>
<tr>
<td>Fan Coils &amp; Air Handlers</td>
<td>1.00 (OD):1.00</td>
<td>20°F</td>
</tr>
</tbody>
</table>

**WARNING**

When controlling a non condensing boiler directly without the use of a mixing valve, the Minimum Water Temperature must be set to boiler manufacturer specifications.
**INSTALLATION**

**MOUNTING THE ENCLOSURE**
- Select a location near the equipment to be controlled.
- The surface should be flat and sufficiently wide and strong to hold the Multi-MOD.
- Keep the control away from extreme heat, cold, or humidity.
- Remove the control from its enclosure by removing the top center screw and loosening the two bottom screws.
- Screw the enclosure to the surface through the mounting holes in the back of the enclosure.
- Return the panel to the enclosure. Replace the top screw and tighten the bottom two screws.

**WARNING**
Use on the Enclosure Knockouts. **DO NOT DRILL HOLES THROUGH THE ENCLOSURE AS IT WILL VOID CONTROL WARRANTY.**

**WIRING THE POWER**
- Bring the 120VAC 60Hz power wires through a bottom knockout (KO) of the enclosure. The left bottom Knockout is preferred.
- Class 1 voltage wiring must enter the enclosure through a different knockout from any Class 2 voltage.
- Connect the hot line to terminal marked **LINE.**
- Connect the neutral line to the terminal marked **NEUTRAL.**
- The ground screw **MUST** be connected to Earth Ground.
- Heat-Timer recommends the installation of a Surge Suppressor and a Power Switch before the Power Line connection for safety and ease of service.

**INPUT WIRING**

** ALERT**
For proper control operation, the proper location of the Outdoor Sensor is very important. If the sensor is in the sun, or covered with ice, its reading will be different from the actual Outdoor temperature (OD).

**WIRING THE OUTDOOR SENSOR**
- To enable the reset function, an outdoor sensor must be used. See page 16.
- The outdoor sensor can be used as an Outdoor Cutoff for temperature set point systems. The Multi-MOD will disable all stages when the outdoor temperature is above the adjustable Outdoor Cutoff temperature. See page 19. This feature will automatically be activated when an outdoor sensor is connected.

**INSTALLING THE SENSOR**
- Only use the Outdoor Sensor included with the unit (HT# 904220-00).
- Locate the sensor in the shade on the north side of the building. The sensor should never be in direct sunlight.
- Be sure the location is away from doors, windows, exhaust fans, vents, or other possible heat sources.
- The sensor should be mounted approximately 10' feet above ground level.
- Adhere the Outdoor Label provided to the back of the sensor base.
- Use the Sensor Enclosure Base bottom knockout for the conduit. Use the locknut to hold the conduit and enclosure base together. Screw the cover to the base.
- If screws are used to affix the enclosure to the wall, make sure to seal around the sensor and wall except from the bottom.
- The sensor wires can be extended up to 500' using 2-conductor shielded cable (Belden #8760 or equivalent (#18/2)). Do not ground the shield at the sensor but at the control using the Multi-MOD Outdoor Sensor terminal marked with an “O” (A12).
- **Do not run sensor wires in conduit with line voltage wiring.**
WIRING THE SYSTEM SENSOR
For proper operation, the Multi-MOD must be connected to a temperature or pressure sensor located in the common header.

SYSTEM TEMPERATURE
- The Multi-MOD is designed to be connected to a Heat-Timer temperature sensor (HT# 904250-00) for insertion in a 3/8ID well (HT# 904011-00).
- Locate the sensor in the common header where it will register the output of all the stages before any takeoffs. If the sensor cannot read the output of all the stages, it will not be able to control the system properly.
- The sensor wires can be extended up to 500’ by splicing with 2-conductor shielded cable (Belden #8760 or equivalent (#18/2)).
- Do not run sensor wire in conduit with line voltage.
- Temperature sensors have no polarity. Connect the wires from the sensor to the Multi-MOD terminals marked TEMP- A1, A2.
- Connect the shield to the circled terminal TEMP-A2 with one of the sensor wires.
- Cut the shield wire at the sensor end.

SYSTEM PRESSURE
- The Multi-MOD is designed to be connected to a pressure transducer. However, it can be used with a variety of 4-20mA transducers. See "Sensor Type" on page 16.
- Locate the sensor on the main supply header where it will register the output of all the stages. If the sensor cannot read the output of all the stages, it will not be able to control the stages properly.
- Attach a ¼” isolation tube (pigtail) to the header.
- Screw the pressure sensor to the pigtail. The sensor has ¼” NPT female threads.
- Pressure sensor wires can be extended up to 500’ by splicing with 18 gauge shielded wire.
- Do not run sensor wire in conduit with line voltage.
- PRESSURE SENSORS HAVE POLARITY. Cut the Green wire, White wire, and the clear tube. Only the Red and Black wires should be connected.
- Connect the Red wire from the pressure transducer to terminal PRESS - A6 (+).
- Connect the Black wire from the pressure transducer to terminal PRESS - A5 (S).

WIRING AN EXTERNAL SET POINT (4-20MA INPUT)
- The Multi-MOD can utilize an external set point as a 4-20mA signal from an Energy Management System (EMS) or any other signal source.
- A system sensor must be installed as described in the previous section.
- The External Set Point must be set up correctly. See "4 & 20mA Set Points" on page 16. These settings will allow the Multi-MOD to read the 4-20mA input signal and adjust the set point based on its external set point setting.
- The Multi-MOD can source the current for the 4-20mA input. It provides an excitation voltage of 24VDC. If using the Multi-MOD to source the current, attach the (+) side of the 4-20mA input to the Multi-MOD EMS terminal marked +. Attach the (-) side of the 4-20mA signal to the EMS terminal marked SIGNAL.
- If the EMS sources the current (provides the excitation voltage), attach the (+) side of the 4-20mA input to the Multi-MOD EMS terminal marked SIGNAL. Attach the (-) side of the 4-20mA input to the EMS terminal marked SHIELD.

WIRING THE SHUTDOWN
- This feature can be used whenever it is desirable to turn off the Multi-MOD from a remote location using another controller.
- A typical use for this feature would be to turn off all boiler stages when an EMS panel no longer requires heat in the system.
- When the Shutdown feature is enabled by closing a dry-contact, all active stages will immediately modulate down to low. They will remain in low for the Soft-off Delay (See "Soft-off Delay" on page 27) and then, turn off.
- If the System Output relay was active, it will remain active until the System Run-On Delay is over, then it will also turn off.
- The Shutdown signal must be a dry-contact only. No voltage can be placed across the SHUTDOWN terminals.
- Bring the two wires from the dry-contact to the terminals marked SHUTDOWN- A3, A4.
WIRING THE SYSTEM PROVE
- The System Prove feature is provided to check the system component operation status. Prove must be selected from the Prove/DHW Startup option. See "Prove/DHW Mode" on page 18.
- A typical use of this feature is to check for water flow before firing any boiler stages. When there is a call for heat, the System Output relay activates the system pump. When the pump establishes flow, a flow switch closes the SYSTEM PROVE input terminals. Only then can the Multi-MOD activate and modulate the boilers as required to hold the set point.
- If the SYSTEM PROVE input is open on a call, the Multi-MOD will enable only the System Output. All Stage outputs will be off when the SYSTEM PROVE input is open.
- A factory installed jumper provides the System Prove signal. Do not remove the jumper unless it will be replaced by a Prove signal.
- The System Prove signal must be a dry-contact only. No voltage can be placed across the SYSTEM PROVE terminals.
- Bring the two wires from the dry-contact switch to the terminals marked SYSTEM PROVE - A9, A10.

⚠️ WARNING
Do not remove the factory installed System Prove jumper unless it is replaced by a System Prove signal. If the SYSTEM PROVE input is not closed/shorted, the Multi-MOD will NOT activate the stages. The SYSTEM PROVE input cannot be used as a safety limit. All equipment must have its own certified limit and safety controls as required by code.

WIRING THE DHW CALL
- When a DHW call is activated, it will raise system to the DHW Set Point. DHW with or without Priority must be selected from the Prove/DHW Startup option. See "Prove/DHW Mode" on page 18.
- DHW Call terminals are dry contact terminals. No power can be applied to these terminals.
- Wire an aquastat or other controls to provide closure on the DHW Call terminals.
- Remove the jumper on the DHW terminals for proper operation.

INTERFACING TO HWR
- The HWR is an outdoor reset control for hot water heat. The Multi-MOD can be connected directly to a HWR to provide outdoor reset control and night setback with multiple fully modulating boilers. To set the Multi-MOD to operate with the HWR, the Sensor Type must be set to HWR. See "Sensor Type" on page 16.
- The Multi-MOD does not need a sensor when being connected to the HWR. In the HWR mode, the Multi-MOD receives its staging information from the HWR and its sensors.
- The HWR controls the Multi-MOD to either add modulation or subtract modulation.
- Terminal 11 of the HWR must be wired to the Multi-MOD terminal A6.
- Terminal 12 of the HWR must be wired to the Multi-MOD terminal A5.
- Terminal 13 of the HWR must be wired to the Multi-MOD terminal A1.

INTERFACING TO MPC
- The MPC is an outdoor reset control for steam heat. The Multi-MOD can work in conjunction with the MPC and is only active when the MPC is calling for heat.
- When the MPC does not require heat, the Multi-MOD will modulate any active stages down to low fire. They will remain in low for 45 seconds and then turn off.
- If the System Output relay was active, it will remain active until the System Delay is over, then it will also turn off.
- The MPC output terminals 5 and 6 must be wired to the Multi-MOD Shutdown input terminals A3 and A4.

WIRING THE LOCKOUT INPUTS
- The Multi-MOD will not activate or modulate any Stage in Lockout. A closure across the pair of Lockout Input terminals informs the Multi-MOD that the boiler stages have encountered a safety limit and cannot be restarted.
- The Lockout signal is not a safety feature. However, use of the Lockout will drastically improve the Multi-MOD’s set point control performance in the event of a stage going into lockout when encountering a safety limit.
A pair of LOCKOUT INPUT terminals are provided for each stage.
The Lockout signal must be a dry-contact closure from the boiler. No voltage can be placed across the terminals.
Wire the Lockout signals to their respective STAGE terminals.

**WARNING**
The LOCKOUT INPUTS cannot be used as safety limits. All equipment must have its own certified limit and safety controls as required by code.

**WIRING THE SETBACK**
- To use the Setback, the EMS Input mode must be set to Setback. See "EMS Input Mode" on page 16
- The Setback feature can be used to switch the Multi-MOD to a lower Set Point when less load is required during the night or on the weekends when a building is unoccupied, but a minimum level of heat is still required.
- The Setback feature cannot be used with External Set Point (4-20mA EMS input), or Reset operation.
- The Setback signal is wired into the EMS terminals (+) and (SIGNAL).
- The Setback signal must be a dry-contact only. No voltage can be placed across the EMS (+) and SIGNAL terminals.
- When the Setback terminals are shorted, the Setback is enabled and the Multi-MOD will hold the lower Set Point. The lower Set Point will appear on the main display indicating this condition “Stb= 150°F”.
- When the short is removed, the Multi-MOD will revert to the higher saved Set Point.

**ALERT**
The Setback is not equivalent to the 4-20mA input, even though both wire into the EMS terminals. The 4-20mA input requires 4-20mA source that changes the Set Point in one degree increments. The Setback provides lower Set Point.

**OUTPUT WIRING**

**WIRING THE SYSTEM OUTPUT**

**System Output Operation in Set Point Mode**
- The System output relay will energize whenever there is a call for output and the Shutdown is not active.
- Until the SYSTEM PROVE input is activated no stages will be energized. If a Prove is not required, the factory-installed jumper should remain connected.
- The System will remain energized while any stage is active.
- When the last stage relay turns off, and if the Outdoor Cutoff was set “H” or the outdoor sensor was not installed, the System output can remain energized for the period set by the System Run-On.
- A typical use of the System output is to activate a system pump starter. The pump can run whenever there is a call for heat. However, when heat is no longer required, the pump will stay active for Run-On Delay to remove the residual heat from the boilers.
- For the System output to function, a relay must be installed. The relay is capable of switching 1A pilot duty at 120VAC (approximately 1/2HP).

**System Output Operation in Reset Mode**
- The System output relay will energize whenever the outdoor temperature is below the Outdoor Cutoff.
- The System will remain constantly energized while the outdoor temperature is below the Outdoor Cutoff.
- When the outdoor temperature rises 2°F above the Outdoor Cutoff, the System output will remain energized for the System Run-On and then, turn off.

**Wiring the System Output**
- The System output has one Normally Open (N.O.) dry-contact relay. It does not source any power.
- Class 1 voltage wiring must enter the enclosure through a different knockout from any Class 2 voltage wiring.
- Each N.O. contact is capable of switching 1A pilot duty at 120VAC (approximately 1/2HP).
WIRING THE STAGE OUTPUTS
• Each stage has an operating limit relay output in addition to the modulation output. The operating limit output can be used when a boiler requires an activation signal through its limits. However, some newer boilers utilize the modulation signal to manage this function. In this case operating limit outputs are not used.
• To set the Multi-MOD number of boilers to less than the control's capability, each not used stage must have its Mode set to OFF. See "Mode" on page 25.

Installing the Operating Limit Output Relays
• Each operating limit output stage (A through D) that is to be used must have a relay installed in the socket for the limit output to function.
• To install a relay, orient the pins to match the socket and then press it gently into the appropriate socket.

Wiring the Stage Outputs
• Each stage output (A through D) has one Normally Open (N.O.) relay contact.
• The N.O. contacts are dry-contacts only. They do not source any voltage.
• Each N.O. contact is capable of switching 1A pilot duty at 120VAC.
• Wire the N.O. relay contacts in series with the unit's limit circuit.
• Class 1 voltage wiring must enter the enclosure through a different knockout from any Class 2 voltage wiring.

WIRING TO 135Ω MODULATING MOTORS
• The Multi-MOD can be equipped to operate up to four 135 Ω modulating motors (Multi-MOD ordered with 135 Ohm Output boards.) See "Modulating Output Card" on page 11.
• Terminals C1, C4, C7, and C10 on the Multi-MOD must be connected to the modulation decreasing terminals on the burners (Blue/Black modulating wires).
• Terminals C3, C6, C9, and C12 on the Multi-MOD must be connected to the modulation increasing on the burners (White modulating wires).
• Terminals C2, C5, C8, and C11 on the Multi-MOD must be connected to the modulation common terminals on the burners (Red modulating wires).

WIRING TO 4-20 MA MODULATING MOTORS
• The Multi-MOD can be equipped to operate up to four 4-20 mA modulating motors (Multi-MOD ordered as C/V (Current/Voltage)). See Modulating Output Card below.
• To program the control for 4-20 mA output, see "Output Type" on page 17.
• Apply the supplied label marked Current/Voltage below the modulating terminals.
• The Multi-MOD sources 24VDC excitation voltage for the 4-20mA signal.
• Terminals C2, C5, C8, and C11 on the Multi-MOD must be connected to the modulation Signal (+) terminals on the burners.
• Terminals C1, C4, C7, and C10 on the Multi-MOD must be connected to the modulation Common terminals on the burners.
• In some installation where the boilers do not require a separate activation output signal, it might be beneficial to utilize the limit output relay to make or break the current signal. In this case, wire the current signal as indicated in the diagram.

WIRING TO VOLTAGE MODULATING MOTORS
• The Multi-MOD can be equipped to operate up to four 0-5 V, 0-10V, 1-5V, or 2-10V modulating motors (Multi-MOD ordered as C/V (Current Voltage).)
• Apply the supplied label marked Current/Voltage below the modulating terminals.
• To select the range, 0-5V, 0-10V, 1-5V or 1-10V, see "Output Type" on page 17.
• Terminals C1, C4, C7, and C10 on the Multi-MOD must be connected to the modulation Ground terminals on the burners.
• Terminals C3, C6, C9, and C12 on the Multi-MOD must be connected to the modulation Voltage (V+) terminals on the burners.
In installation where the boilers do not require a separate activation output signal, it might be beneficial to utilize the limit output relay to make or break the voltage signal. In this case, wire the voltage signal as indicated in the diagram on the right.
**MODULATING OUTPUT CARD**

- Every two modulating boiler outputs are controlled by one Modulating Output Card. A and B are controlled by the same Modulating Output Card while C and D are controlled by a different Modulating Output Card.
- The cards are installed on the back of the Multi-MOD main board.
- There are two types of cards available:
  - 135Ω Cards Operates two 135 Ohm modulating motors.
  - Current/Voltage Cards: operates 4-20mA, 0-10V, 0-5V, 2-10V, or 1-5V modulating motors. You can select only one output signal per card.
- The Multi-MOD comes with its Modulating Output cards installed. However, if ordering an Extension panel, you must add the Modulating Output Cards needed as they do not come with the Extension.

**INTERNET COMMUNICATION WIRING**

- The Multi-MOD Platinum control comes either as a Standard without any communication or with Internet or BACnet communication.
- Any Multi-MOD Platinum with Internet communication control package has an Internet Communication Board installed on the back of the main board.
- Connect the Internet CAT5 Ethernet cable coming from the Internet Modem to the Internet RJ45 Communication socket on the back of the Multi-MOD Platinum communication board.
- If the control is sharing the Internet connection with other computers, an Internet Router or Internet server must be used. See "Internet Communication" on page 30.
- If required, set the Multi-MOD Platinum Internet Settings. See "Internet Communication" on page 30.

**BACNET COMMUNICATION WIRING**

- The Multi-MOD control comes either as a Standard without any communication or with BACnet communication.
- Any Multi-MOD with BACnet communication control package has a BACnet Communication Board installed on the back of the Multi-MOD main board.
- Connect the BACnet CAT5 Ethernet cable coming from the network to the BACnet RJ45 Communication socket on the Multi-MOD communication board.
- Set the Multi-MOD BACnet Network Settings as described on page 32.

**WIRING THE MULTI-MOD TO EXTENSION PANELS**

- When an application requires more than 4 modulating stages, up to two Extension panels can be used to add a total of 16 stages. Each extension has 8 stages with lockout inputs. The Multi-MOD can manage the Extension panels using an RS485 connection.
- The RS485 connection is a cable with two rounded ends. Each end fits a socket on the Multi-MOD or the Extension enclosure. All necessary cables come with the extension panel.
- An additional cable with RS485 flat connector on one end and a round connector on the other end is used to connect the RS485 plug on the main Multi-MOD board to the enclosure.
- Prior to starting the Multi-MOD, make sure that all Extension panels are connected, wired, and powered. So, when the Multi-MOD is powered, it will detect all available stages, including the stages on the Extensions.
- If Extension panels were connected after the Multi-MOD Startup, the Multi-MOD must be re-powered to detect the Extension stages.
- The connection from the Multi-MOD to the Extensions can be either in parallel or in series. See "Different Ways of Connecting the Multi-MOD to Two Extension Panels" on page 12.

⚠️ **WARNING**

To connect to the Extension, use the RS485 on the main PCB board. **DO NOT use the RS485 connector on the BACnet communication board**

- Note that, Extension panels do not come with Modulating Output Cards or relays. These items must be purchased separately.
**DIFFERENT WAYS OF CONNECTING THE MULTI-MOD TO TWO EXTENSION PANELS**

**Connecting two Extension Panels in Series**

**Connecting two Extension Panels in Parallel**

**USING THE MENUS**

**MENU BASICS**

- The menus are in English and will guide you through the settings.
- To change a selection, rotate the black knob marked *ADJUST* and *PRESS TO SELECT* (*ADJUST/SELECT*).
- A pointer in front of a menu line indicates that it is the one currently selected.
- When the pointer is on the same line as the item to be selected, press the black *ADJUST/SELECT* knob. This will either save the selection, or bring up a new screen to make further changes to that menu item.
- The *BACK* button will return you to the previous screen without saving any changes.
- The *STAGE* button will bring the Stage menu to the display. See "Stage Settings" on page 25.
- When in the Stage Menu, the *PREV.* button will scroll through the stages in a descending order. See "Moving Around the Stages Menus" on page 25.
- When in the Stage Menu, the *NEXT* button will always bring the display to the Mode menu of the current stage. See "Moving Around the Stages Menus" on page 25.
- To change a selection, rotate the *ADJUST/SELECT* knob. Rotating the knob will cause both the old and the new value will be displayed.
- The *BACK* button will return you to the previous screen without saving any changes.
- After changing a value, press the *ADJUST/SELECT* knob. This will save the selection to memory and return you to the previous menu.
- To view the Multi-MOD's serial number and startup settings, start with the default display and press and hold press the *ADJUST/SELECT* knob for at least three seconds. This shall display the Serial Number and software version. While holding the *ADJUST/SELECT* knob down, pressing the *NEXT* button will scroll through the different settings including the Internet communication settings.
THE MAIN DISPLAY
- The main display screen may have different values in the top two lines depending on the application. The V represents the current Outdoor Sensor value. The Sys represents the current System Sensor value.
- The second line of the display will display any messages that is pertinent to the current operation.
- The third line shows the four stages. The lead stage will be in brackets. For example, the lead stage shown is [A].
- The last line shows the modulation status of each stage. See possible stage modulation status below.

DISPLAY STAGE MODULATION STATUS
The following list shows all possible boiler status:
- --- The stage is off due to no call for heat/cool.
- 97% Stage Mode is set to ON and boiler is firing at 100% (boiler is in bypass). See "Mode" on page 25.
- OFF Stage Mode is set to OFF and boiler stage is unavailable or boiler does not exist. See "Mode" on page 25.
- m95% Stage Mode is set to Manual and set to the 95 percent modulation. See "Mode" on page 25.
- C/E The stage on Extension panel is NOT communicating back to the Multi-MOD. See "Wiring The Multi-MOD to Extension Panels" on page 11.
- L/O The stage Lockout input terminals are shorted. See "Wiring the Lockout Inputs" on page 8.

DISPLAY MESSAGES
The Multi-MOD normal display layout reserved the second line from the top for message indications. The following is a list of the most common Message Display Line information:
- Network Panel The control has a communication package installed and the display is dimmed (Screen Saver Mode).
- Shutdown Active The Shutdown Terminals are Shorted. No stages will be active. See "Wiring the Shutdown" on page 7.
- Shutdown by EMS The EMS is below 2mA or above 22mA. See "4 & 20mA Set Points" on page 16.
- Purge Delay: 23 The current boiler is in purge cycle and the remaining purge time in seconds is 23. See "Purge Delay" on page 21.
- Lag Delay: 123 The lead stage is at 100% and the remaining purge time to start the lag boiler in seconds is 123. See "Lag Delay" on page 21.
- Holding Until 150°F The Lead stage is in Last-Stage-Hold. This example shows that the lead stage will turn off when system temperature reaches 150°F. See "Last-Stage-Hold" on page 23.
- System Run-On: 46 The System relay is ON for the System Run-On Delay. This example shows that it will remain in System Run-On for an additional 46 seconds before turning off. See "System Run-On" on page 22.
- Waiting for Prove The System relay is ON and the prove terminals are open before the lead boiler relay can energize. See "Wiring the System Prove" on page 8.
- Prove Failure After boilers have run for a while, Prove signal was opened. All boiler relays will de-energize. However, the System relay will remain energized. See "Wiring the System Prove" on page 8.
- DHW Call (180°F) A DHW Call is active, the Multi-MOD will modulate the boilers to maintain 180°F.
- Internet Control The control is an Internet control and the display is in Screen Saver Mode. See "Internet Communication" on page 30.
- Ack Received The Internet control has acquired connection to the Heat-Timer communication server.
- Network Panel The control is a BACnet control and the display is in Screen Saver Mode. See "BACnet Communication Option" on page 32.
--- SETTINGS ---
Set Point 140°F
Gain +0
Lead Stage A
<System Settings>
<System Startup>
<Maintenance>

SYSTEM SETTINGS 1
- Auto Rotate Time
- Purge Delay 1.0min
- Lag Delay 0min
- Standby Time 10min
- System Run-On 0min
<More Settings>

--- PURGE DELAY ---
1.0min

--- LAG DELAY ---
0min

--- STANDBY TIME ---
10min

--- SYSTEM RUN-ON ---
0min

--- SETBACK ---
0°F

--- AUTO ROTATE PERIOD ---
0.0 Hr

--- LAST STAGE HOLD ---
0°F

SYSTEM SETTINGS 2
- Setback 0°F
- Rotate Time 0.0min
- Last Stg Hold 0°F
- Password
- Set Time

--- SYSTEM TRIM ---
+0

--- OUTDOOR TRIM ---
+0.0

--- STAGE A TRIM ---
+0.0

--- SOFT-OFF DELAY ---
45sec

--- MOD SPEED ---
0.1min

MAINTENANCE
- System Trim +0
- Outdoor Trim +0
- Output Trim +0.0
- Soft-Off Dly 45sec
- Mod Speed 0.1min
- Internet ID Solo
- Network Settings

BACNET SETTINGS
- BACnet ID: 0
- IP: ---.---.---.---
- Msk: ---.---.---.---
- Gwy: ---.---.---.---

INTERNET SETTINGS
- Solo -> I

--- INTERNET ID ---
Solo -> 1

--- INTERNET ID ---
Solo -> 1

SYSTEM SETTINGS CONTINUED
SYSTEM STARTUP

STARTUP SEQUENCE
• When powered, the Multi-MOD performs a self test diagnostics on its components.
• After the test, the Multi-MOD will initialize the Multi-MOD using a descending counter starting from 10.
• On the first power up, the System Startup menu screens will appear after the initialization is complete. If it doesn't, the Multi-MOD has already been configured. To check the configuration, or to make changes, follow the procedure on the System Startup menu.
• The System Startup menu determines how Multi-MOD should control the system. That is why you the user must go through several warning screens to indicate the importance and severity of their changes.
• Press the ADJUST/SELECT knob once on each screen to accept its value and move to the next setting.

SENSOR TYPE
Set Point: (°F, °C), Pressure: (15psi, 30psi, 100psi, 200psi, 300psi), HWR, Reset: (°F, °C)
Default: Set Point °F

EMS INPUT MODE
Setback, EMS Control
Default: Setback

External Set Point (4-20mA EMS Input)
• For this option, an EMS system must provide a 4-20mA signal to automatically change the Set Point based on pre-programmed system parameters. See "Wiring an External Set Point (4-20mA Input)" on page 7.
• An active signal must be wired into the Multi-MOD EMS terminals. If the Multi-MOD does not receive a signal between 2mA and 22mA, it will NOT activate any stages. The display will indicate "Shutdown by EMS" on the display message line.

4 & 20MA SET POINTS
4mA Adjustable from 70°F/21°C to 200°F/93°C Default: 140°F/60°C
20mA Adjustable from 90°F/32°C to 240°F/116°C Default: 200°F/93°C

(Not Available In Reset Sensor Type)
OUTPUT TYPE
135Ω, 0-10V, 0-5V, 2-10V, 1-5V, 4-20mA Default: 0-10V, 135Ω

SELECT: MENU/<System Startup>/.../Output Type A&B
- The Multi-MOD has two Modulating Output Cards, one for every two stages.
- The Output Cards can be either 135Ω Cards for 135 ohm modulating motors or Current/Voltage Cards for current or voltage signal operating motors. Each card controls two boilers (A & B) or (C & D). The Output Cards normally come pre-installed on the back of the control main board of the Multi-MOD. See "Modulating Output Card" on page 11. However, if an extension is installed for additional stages, the installer must purchase and install its Output Cards separately.
- Both output cards must be programmed for the appropriate mode of operation.
- If no output card is installed, the “Not Installed” option will automatically be selected by the control.

135Ω OUTPUTS
- Output Type 135Ω cannot be adjusted. It will automatically be selected by the control if the corresponding Output Card is installed.

4-20MA, 0-5V, 0-10V, 1-5V, OR 2-10V OUTPUTS
- Outputs can be configured to 4-20mA operation (current) or the voltage range can be selected (0-5V, 0-10V, 1-5V, 2-10V).
- Check the modulating motor to determine its control requirements.
- Select the appropriate Output Type for stages A & B. The Multi-MOD will then automatically bring up the screen for stages C & D.
- If different types of burners are being used, stages C & D can be selected to have a different Output Type from stages A & B.

MODULATING MODE
Normal, Parallel Default: Normal
SELECT: MENU/<System Startup>/.../Output Type C&D/Modulating Mode
- Some modulating boilers perform better as their modulation increases. For these units, it is advantageous to run one unit at high modulation than several units at lower modulation. If the units used are of this type, select Normal. This is the recommended setting for typical steel and cast iron boilers or boilers with low turndown ratios.
- There are many condensing boilers that run more efficiently at lower modulation. If it is more energy efficient to run several units at lower modulation than one at high, select Parallel. This is typically used on water-tube boilers, low mass boilers, or burners with high turndown ratios.

OPERATING MODE
Normal, Process Default: Normal
SELECT: MENU/<System Startup>/.../Modulating Mode/Operating Mode
(Available with Normal Modulating Mode Only)
- Most heating applications do not experience rapid changes in the system. For these systems, it is best to adjust the modulation based on the rate of system rise or fall. This PID type of algorithm will help prevent short cycling of the stages, reduce thermal shock, and maintain an accurate system temperature/pressure. If your equipment is of this type, select Normal.
- Systems that run for process may experience large changes in load almost instantaneously. In Process mode, the Multi-MOD will react immediately to load changes. Large load changes may cause stages to be short cycled, as the Multi-MOD can enable and disable stages within seconds.

HEAT/COOL MODE
Heat, Cool Default: Heat
SELECT: MENU/<System Startup>/.../Modulating Mode/Operating Mode/Heat-Cool
- The Multi-MOD offers two modes, Heating and Cooling. In Heating, the Multi-MOD will modulate stages when the system is below the set point. In addition, the system relay will energize when the outdoor temperature is at or below the Outdoor Cutoff setting.
- In Cooling, the Multi-MOD will modulate stages when the system is above the set point. In addition, the system relay will energize when the outdoor temperature is at or above the Outdoor Cutoff setting.
PROVE/DHW MODE

Prove, DHW No Priority, DHW With Priority

Default: Prove

SELECT: MENU/<System Startup>/..../Operating Mode/Heat-Cool/Prove-DHW

• When Prove is selected, the Multi-MOD will not start any boiler stage unless the Prove/DHW terminals are connected.

• Using those terminals to connect to an aquastat for a Domestic Hot Water call and selecting either of the DHW options will raise the calculated water temperature to the DHW Set Point. See next setting.

• Domestic Hot Water Without Priority allows the SYS relay, mostly controlling a primary system pump, to remain energized during a domestic hot water call (aquastat call on terminals \textit{A9 and A10}). In Shutdown or when outdoor temperature is above Outdoor Cutoff, a DHW call will energize the SYS relay. After the DHW call termination, all active stages will modulate down then turn off. The SYS relay will continue to run for the Run-On period before turning off.

• Domestic Hot Water With Priority option de-energizes the SYS relay during a domestic hot water call (aquastat call on terminals \textit{A9 and A10}) for a period of one hour. If after the hour period the DHW call still exist, the SYS relay will energize and the Multi-MOD will continue in the higher temperature setting until the domestic hot water call has terminated.

DHW SET POINT

Adjustable from 140°F/60°C to 200°F/93°C

Default: 180°F/82°C

SELECT: MENU/<System Startup>/..../Heat-Cool/Prove-DHW/DHW Set Point

• This is the set point the Multi-MOD will maintain during a DHW call.

SENSOR FAULT

Shutdown, All On

Default: All On

SELECT: MENU/<System Startup>/..../Sensor Fault Mode

The Sensor Fault will determine the operating status of all output stages that are set to Auto when a sensor reads Short or Open.

RESET MODE

• When All-On is selected, the Multi-MOD will turn all stages On to a 100% when the System sensor reads Short or Open and the outdoor temperature is below Outdoor Cutoff. If the outdoor temperature was above the Outdoor Cutoff, the Multi-MOD will turn all the stages off.

• When All-On is selected, the Multi-MOD will try to maintain the Minimum Water Temperature when the Outdoor sensor reads Short or Open.

• When Shutdown is selected, the Multi-MOD will turn all stages Off when either System or Outdoor sensor reads Short or Open.

SET POINT MODE

• When All-On is selected, the Multi-MOD will turn all stages On to a 100% when the System sensor reads Short or Open.

• When Shutdown is selected, the Multi-MOD will turn all stages Off when the System sensor reads Short or Open.

• The Outdoor Sensor Short or Open status will not allow the Outdoor Cutoff to function in Set Point mode. In this case, the control will modulate the boilers to maintain the Set Point.

OPERATING SETTINGS

SET POINT

See "Set Point and Default Table" on page 23

SELECT: MENU/Set Point

• The Set Point is the temperature/pressure the Multi-MOD will use to control the system.

• The Multi-MOD will add, subtract, modulate, or hold the stages to maintain the system temperature/pressure around the Set Point.

• The system is expected to fluctuate around the set point. The amount of fluctuation depends on the System and Stage Settings.

• If an Outdoor Sensor was connected, pressing the \textit{ADJUST/SELECT} button will continue to the Outdoor Cutoff setting option.

• If the EMS Mode was Enabled, the Set Point will be set by the EMS/BMS system and will be available as a read only.

• The range of Set Point in the EMS is set in the Startup menu at 4mA and 20mA. See "EMS Input Mode" on page 16.

• Any reading below the 2mA or above 22mA will indicate a "Shutdown by EMS" message on the Message Line.

• The Set Point is proportional with the Remote 4-20mA EMS signal. See "Pressure Sensor Chart" on page 28
OUTDOOR CUTOFF TEMPERATURE
Adjustable Off, from 20°F/7°C to 100°F/38°C, On
Default: 60°F/16°C
SELECT: MENU/Set Point/Reset Ratio/Outdoor Cutoff
in Set Point
SELECT: MENU/Set Point/Reset Ratio/Outdoor Cutoff
in Reset
• In Outdoor Reset mode, Outdoor Cutoff will always exist. However, in Set Point
  mode, if the outdoor sensor is installed, the Outdoor Cutoff screen will automatically
  appear after the temperature Set Point has been selected.
• In heating, when the outdoor temperature falls to the adjustable Outdoor Cutoff temperature, the Multi-MOD will control the stages
to hold the calculated temperature/pressure.
• When the outdoor temperature rises to the Outdoor Cutoff plus a 2°F differential, the Multi-MOD will modulate all stages down.
Then, run the Soft-Off delay while blinking the stages modulation status then turn them off. The System relay will remain energized
for the Run-On delay and then de-energize.
• In addition, the Outdoor Cutoff can be set to ON or OFF. In the ON option, the System Relay will run regardless of the Outdoor
temperature and the stages will modulate to hold the target set point.
• In the OFF position, the system will always be off and all stages will be off as well.

RESET RATIO
(1.00 OD : 4.00 Sys) to 12 (4.00 OD : 1.00 Sys)
Default: 1(1.00 OD : 1.00 Sys)
SELECT: MENU/Set Point/Reset Ratio
In Outdoor Reset Only
• The Reset Ratio determines how the system Target temperature will vary based on the
  outdoor temperature. With any of the ratios, the colder it becomes outside, the hotter
  the temperature of the system water.
• With a 1.00 (OD):4.00 (SYS) ratio, the System water temperature (SYS) will increase
  rapidly as the outside temperature falls, hitting 240°F at 35°F outside temperature.
  With a 4.00 (OD):1.00 (SYS) ratio, the System temperature (SYS) will increase slowly
  as the outside temperature falls. Even at -30°F, the system water will only be 125°F,
  and at 22°F outside, the system water will be 112°F. Such a low Reset Ratio might be
  used with radiant floor heating applications.
• With most baseboard heating applications, a 1.00 (OD):1.00 (SYS) setting is a good place to start. Using a 1.00 (OD):1.00 (SYS)
  ratio, for every degree the outside temperature falls, the system water temperature is increased one degree.
• If required: Adjust the RESET RATIO in cold weather. If the ambient building temperature is cold in cold weather, move the
  ratio to a higher selection. That is, if 1.00 (OD):1.00 (SYS) was initially selected, change the selection to 1.00 (OD):1.25 (SYS).
  If the building temperature is too warm in cold weather, move the ratio to a lower selection. That is, if 1.00 (OD):1.00 (SYS) was
  initially selected, change it to 1.25 (OD):1.00 (SYS).
• After selecting the Reset Ratio, pressing the ADJUST/SELECT button will switch to the Offset setting option.

OFFSET
Adjustable from +40°F/+22°C to (-40°F/-22°C)
Default: 0°F/0°C
SELECT: MENU/Set Point/Reset Ratio/Offset
(Available with Reset Modes Only)
• The Offset setting moves the Reset Ratio Curve vertically. This means that, regardless
  of the Outdoor temperature, or the Reset Ratio that has been selected, when the Offset
  setting is changed, that change is directly added to or subtracted from the calculated
temperature. For example, if the Set Point temperature was 130°F and the Offset was
changed from 0°F to 10°F (an increase of 10°F), the Set Point would increase to 140°F.
• The Offset setting does not change the ratio selection. For instance, with 1.50
  (OD):1.00 (SYS) Reset Ratio, the System water temperature will always increase one
degree for every 1.5 degree change in the Outdoor temperature. What the Offset does
is add or subtract a constant temperature value.
• If required: Adjust the Water Offset in mild weather. If the ambient building
  temperatures are too warm in the mild weather, decrease the Offset. If the ambient
  building temperatures are too cold in the mild weather, increase the Offset. The rule
  of thumb for baseboard radiation is to change the Offset 4°F for every 1°F you wish to
  change the building temperatures. In radiant heat applications, change the Offset 1°F
  or 2°F for every 1°F you wish to change the building temperature.
MINIMUM WATER TEMPERATURE
Adjustable from 70°F/21°C to 180°F/82°C  Default: 140°F/60°C

SELECT: MENU/Set Point/Reset Ratio/Offset/Outdoor Cutoff/Min Water Temp

(Available with Reset Modes Only)
• The Minimum Water Temperature must be set to the boiler manufacturer’s specification. The Multi-MOD will calculate the Set Point based on the Outdoor temperature, the Reset Ratio, and the Offset value. The Multi-MOD will control all boilers to hold either the Set Point temperature, or the Minimum Target, whichever is higher.

GAIN/THROTTLE
Adjustable from -10 to +10  Default: 0  in Normal Operating Mode
Adjustable from 1.0 to 10.0  Default: 5  in Process Operating Mode
SELECT: MENU/Gain

NORMAL OPERATING MODE
• In Normal Operating Mode (See "Operating Mode" on page 17), the Gain adjusts the aggressiveness of the Multi-MOD PID logic to control how much modulation is changed when the system temperature/pressure is different from the Set Point. It is based on the rate of change.
• A Gain of 0 is a good starting point for all systems.
• If during normal load conditions, the system temperature/pressure tends to oscillate significantly, decrease the Gain by two numbers (for example, from 0 to -2). Wait for at least 15 minutes before evaluating how the change has affected the system.
• If during normal load conditions the system temperature/pressure tends to remain consistently below the Set Point (or consistently above the Set Point), increase the Gain by two numbers (for example, from 0 to 2). Wait for at least 15 minutes before evaluating how the change has affected the system.

PROCESS OPERATING MODE
• The Gain acts as a throttling range around the Set Point.
• When the actual temperature/pressure is equal to the Set Point, the lead stage will be at 100% modulation.
• Each throttling range above or below the Set Point controls one stages modulation linearly from 0 to 100%.
• The Process Gain Table below shows the relationship between the Gain and stage modulation.
• The Process Gain Table does not show all the possible modulation values. The table is for example only. The Multi-MOD will control the modulation in one percent increments based on the Set Point and Gain value.

<table>
<thead>
<tr>
<th>System Temperature</th>
<th>Stages Modulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 1 x Gain above Set Point</td>
<td>Lead Stage is OFF</td>
</tr>
<tr>
<td>1 x Gain above Set Point</td>
<td>Lead Stage at 1%</td>
</tr>
<tr>
<td>0.5 x Gain above Set Point</td>
<td>Lead Stage at 50%</td>
</tr>
<tr>
<td>At Set Point</td>
<td>Lead Stage at 100%</td>
</tr>
<tr>
<td>0.5 x Gain below Set Point</td>
<td>Lead Stage at 100%, 1 Lag at 50%</td>
</tr>
<tr>
<td>1 x Gain below Set Point</td>
<td>Lead Stage at 100%, 1 Lag at 100%</td>
</tr>
<tr>
<td>2 x Gain below Set Point</td>
<td>Lead Stage at 100%, 2 Lag at 100%</td>
</tr>
<tr>
<td>3 x Gain below Set Point</td>
<td>All Stages at 100%</td>
</tr>
</tbody>
</table>
LEAD STAGE
Adjustable from A through D  Default: A
SELECT: MENU/Lead Stage
- The Lead Stage is the first stage brought on when output is required.
- The Lead Stage can be rotated manually or automatically. The automatic rotation is recommended.
- The current Lead Stage is shown in brackets on the display. <A>
- Only stages that are set to Auto Mode can be Lead. Therefore, not all stages may be available when manually selecting a new lead stage.

LEAD AUTO ROTATE
Manual, Time, Last-On  Default: Time
SELECT: MENU/System Settings/Auto Rotate
- The Lead Stage will always be the first stage activated when there is a call for output.
- Automatically rotating the Lead among the active stages promotes more even wear on the stages and can help prolong the life of each unit.
- The Lead Stage is shown on the main display in brackets. <A>

MANUAL
- In Manual, whichever stage is presently the Lead Stage will remain the Lead Stage.

TIME
- If Time is selected, a second screen will allow the adjustment of the Auto Rotate Period. If 24 Hours (default setting) was selected, the first rotation will take effect after 12 hours if the Time was not set. However, if the Time was set, the rotation will always take place at 2:00AM. The following rotations will take place every 24 hours thereafter.
- If Time Rotation was set to other than 24 hours, the rotation timer will start from the moment the setting is changed.
- When less output is needed, the additional stages are turned off in the reverse order of how they were added. For instance, if the stages were added in the sequence A, B, and C, then they will be turned off in the sequence C, B, and finally A.
Note: If you do not set the system time, the Multi-MOD will assume it was installed at 2 PM.

LAST ON
- If Last-On is selected, the concept will follow this example; if A is the lead, the starting sequence of the boilers will be A, B, then C. When the de-energizing of the stages starts, it will turn off A, B, then C. Then, stage D will be the new lead for the next load.

PURGE DELAY
Adjustable from 0.0 to 10.0 minutes  Default: 1.0
SELECT: MENU/System Settings/Purge Delay
(Not Available in Process)
- Most fully modulating units must go through a purge cycle before they are brought on line and can begin generating heat.
- When activating a new stage, the Multi-MOD will hold its modulation at the Ignition % until the Purge Delay is over. This allows the unit to fully come on line and to begin producing output. Once the Purge Delay is over, the Multi-MOD can begin adjusting its modulation.
- The Purge Delay helps prevent short cycling of a newly activated stage. Once a stage is activated, it MUST run through the entire Purge Delay period.
- The minimum Purge Delay setting MUST be set according the unit's manufacturer specification.

LAG DELAY
Adjustable from 0 to 60 minutes  Default: 0.0min
SELECT: MENU/System Settings/Lag Delay
(Not Available in Process)
- Set the Lag Delay to 0 min when two or more stages will generally be needed to hold the load.
- The Lag Delay requires the previous stage to remain at 100% modulation for the full Lag Delay period before another stage can be activated. For example, if the Lag Delay was set to 10 minutes, the Lead Stage would need to remain at 100% modulation for a full ten minutes (never backing down to even 99%) before the lag stage could be activated.
The Lag Delay is useful in installations where one unit should usually have enough output to hold the load unless it fails or load conditions become extreme.

- If the Lag Delay was set to other than 0, it will override the function of the Modulation Start % selected for each stage. That is, regardless of Modulation Start % setting, the lead stage must reach 100% and stay there before the lag stage can be activated.
- The full Lag Delay must always elapse regardless of what happens to the system temperature/pressure. Therefore, set the Lag Delay to 0 min if you want smooth set point control of multiple units.

**STANDBY TIME**

Adjustable from 0 to 60 minutes  Default: 10 minutes

*SELECT: MENU/System Settings/Standby Time*

(Not Available in Process)

- The Standby Time only applies to stages in Standby Mode. See "Mode" on page 25.
- A Standby stage can only be activated after all the stages in Auto Mode have run at 100% modulation for the full Standby Time.
- Standby stages are used for backup or extreme load conditions. A Standby stage can never be a lead stage.
- The full Standby Time must always elapse regardless of what happens to the system temperature/pressure. Therefore, shorter Standby Times will result in smoother set point operation in extreme conditions. Longer Standby times may prevent a Standby boiler from starting if the other boilers can eventually meet the load or if the load decreases.

**SYSTEM RUN-ON**

Adjustable from 0 to 360 minutes  Default: 0 minutes

*SELECT: MENU/System Settings/Sys Run-On*

- The System output relay will energize whenever there is a call for output and the Shutdown feature is not active.
- The System will remain energized while any Stage is active. When the last Stage relay turns off, the System output will remain energized for the period of time set by the System Run-On.
- If the System Run-On is set to 0, the System output will turn off immediately when the last Stage turns off.
- A common use of the System output is to control a system pump in a heating system. After the last Stage is turned off, it is often desirable to run the system pump for an additional period of time to transfer the residual heat from the boilers to the building.
- When Outdoor Cutoff is used, the System output relay will remain energized whenever the outdoor temperature is below the Outdoor Cutoff. However, when the outdoor temperature rises 2°F above the Outdoor Cutoff, the System relay will remain energized for the Run-On period before turning off.

**SETBACK**

Adjustable from 0°F/0°C to 75°F/24°C  Default: 0°F/0°C

*SELECT: MENU/System Settings/More Settings/Setback*

(Not Available in Reset Modes or EMS Modes)

- The Setback feature can be used to provide the Multi-MOD with a lower temperature/pressure Set Point when less load is required.
- The lower Set Point will appear on the main display indicating this condition.
- A typical use for Setback is to provide less system temperature/pressure to a factory or building during the night or on the weekends when product is not being manufactured or tenants are asleep or out, but heat is still required.
- The Setback will not be activated unless a signal is wired into the Multi-MOD EMS terminals. See "Wiring The Setback" on page 9
- In Heating mode, the amount of Setback selected is subtracted from the Set Point when a Setback signal is received.
- For a temperature example, if the Set Point is 180°F and the Setback is 20°F, then when the EMS (+) and SIGNAL terminals are closed, the Multi-MOD will hold a Set Point of 160°F.

**ROTA T E TIME**

Adjustable from 1 to 999 hours  Default: 24 hours

*SELECT: MENU/System Settings/Lag Delay*

- The Rotate Time only takes effect if the Auto Rotate type is Time. See "Lead Auto Rotate" on page 21.
- The default value is 24 hours and is appropriate for most systems. Using 24 hour rotation, at 2 am every morning the Lead Stage will be the next stage in Auto Mode.
- If the Rotate Time is not 24, the leadc stage will change to the next stage in Auto Mode every time the Rotate Time has elapsed. For example, with a 12 hour Rotate Time, the leadc stage will rotate from A to B after the first 12 hours of operation, and then from B to C after the next 12 hours, and so on.
LAST-STAGE-HOLD
Adjustable from 0°F/0°C to 30°F/17°C Default: 0°F/0°C
SELECT: MENU/System Settings/More Settings/Last-Stage-Hold
(Not Available in Process)
  • The Last-Stage-Hold prevents short cycling of the lead stage during low load conditions
    where the system might have a load that is significantly less than the minimum output of one
    stage. When the Multi-MOD brings on the lead stage, the Set Point is quickly exceeded, and
    the lead stage is turned off. To prolong the run time during this type of condition, use the
    Last-Stage-Hold setting.
  • The Multi-MOD will allow the system to exceed the Set Point by the Last-Stage-Hold value
    selected, before the lead stage is turned off.
  • For example, with a Set Point of 160°F and a Last-Stage-Hold setting of 10°F, the lead stage will remain on until the Set Point
    reaches 170°F. During that period, the display will show “Hold Until 170°F” then, the lead stage will turn off

AVOID CONFLICTING BOILER LIMITS

⚠️ WARNING
The limits set on the boilers MUST be set considerably higher than the Multi-MOD's Set Point for the reasons detailed below:
  • The Multi-MOD sensor is located in the common header some distance from the boilers.
  • As the temperature enters the header and travels to the sensor location, energy is dissipated. Therefore, the temperature in the
    header will be lower than that registered by sensors in the boilers.
  • In addition to the normal drop experienced between the boiler's temperature and that read by the Multi-MOD sensor, the Last-
    Stage-Hold setting must be accounted for. The boiler limit must be set above the Set Point PLUS the Last-Stage-Hold PLUS the
    normal temperature drop experienced in the piping.
  • Using the previous example of a 10°F Last-Stage-Hold with a 160°F Set Point, the boilers' limits must be set enough over 170°F to
    prevent the boilers' internal limits from being reached.

SET POINT AND DEFAULT TABLE

<table>
<thead>
<tr>
<th>SENSOR</th>
<th>SET POINT</th>
<th>SETBACK</th>
<th>LAST-STAGE-HOLD</th>
<th>THROTTLE</th>
<th>TRIM (Default=0)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN</td>
<td>MAX</td>
<td>DEFAULT</td>
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<td>21</td>
<td>121</td>
<td>60</td>
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<td>42</td>
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<tr>
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<td>5</td>
<td>0</td>
<td>7.5</td>
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<tr>
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<td>8</td>
<td>0</td>
<td>7.5</td>
</tr>
<tr>
<td>100 PSI</td>
<td>0</td>
<td>100</td>
<td>30</td>
<td>0</td>
<td>75</td>
</tr>
<tr>
<td>200 PSI</td>
<td>0</td>
<td>200</td>
<td>60</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>300 PSI</td>
<td>0</td>
<td>300</td>
<td>80</td>
<td>0</td>
<td>200</td>
</tr>
</tbody>
</table>
SECURITY

ENABLE THE PASSWORD
Yes, No  Default: No

**SELECT:** MENU/System Settings/More Settings/Password
- The Password is to prevent unauthorized users from making changes to the Multi-MOD.
- Setting up the Password is not recommended as it slows down access, makes servicing more difficult, and can disable the system if management or ownership should change.
- The Password feature is not active unless a user enables it.
- If you choose to enable the Password, **DO NOT** forget the Password. Write it down and store it in a safe location known to at least one other authorized user.
- When the Password is enabled, none of the settings can be changed without entering the Password.
- Once the Password is entered, you can make multiple changes. The Password will expire 5 minutes after the last change has been made.
- The Multi-MOD has a built in default Password - MMOD.
- At the Login screen, you will have to enter the Password. Turn the ADJUST/SELECT knob until the desired letter is shown. Then, press the ADJUST/SELECT button to move on to the next letter.
- Enter MMOD into the Login screen.
- When completed, select No to the prompt Change Password?

CHANGE THE PASSWORD
Yes, No  Default: No

**SELECT:** MENU/System Settings/More Settings/Password/Change Password?
- Follow the instructions to use the default Password, but select Yes to the prompt Change Password?
- Enter your new Password in the New Password screen. Turn the ADJUST/SELECT knob until the desired letter is shown. Then press the ADJUST/SELECT button to move on to the next letter. The password must consist of 4 letters.
- Reenter the same new password when prompted.
- If the password is entered correctly, the Success screen will appear. If you made a mistake, the whole procedure must be repeated.

SET THE TIME

**SELECT:** MENU/System Settings/More Settings/Set Time
- Setting the system time will set the default 24 hour rotation to occur at 2 am every morning.
- Turn the ADJUST/SELECT knob until the correct hour is shown. Be sure that am or pm is set correctly. Then select the hour.
- Turn the ADJUST/SELECT knob until the correct number of minutes is shown. Then select the minutes.
STAGE SETTINGS

Press the STAGE button to go to the Stage Menu

STAGE A SETTINGS
- Mode: Auto
- Ignition%: 1%
- Mod Start: 80%
- Copy Settings

Press the STAGE button to go to the next stage

STAGE B SETTINGS
- Mode: Auto
- Ignition%: 1%
- Mod Start: 80%

THE STAGE MENU
- In most installations, all Stage adjustments are the same, but each of the four output Stages can be configured differently if desired.
- If the stages are not set up properly, the Multi-MOD operation may appear to be erratic.
- From the main display, press the STAGE button. The Stage A Settings menu will be shown. Make all the appropriate settings for Stage A.
- After completing all the settings for Stage A, you have the option of copying these settings to the rest of the Stages. Everything but the Mode -- Auto/Standby/Manual/Off/On -- will be copied.
- Then press the STAGE button to bring up the Stage B Settings and make all the changes. Continue until all stages have been set.

MOVING AROUND THE STAGES MENUS
- Pressing the STAGE button allows you to automatically scroll through the Stage A, B, C, and D Settings.
- Pressing the NEXT button automatically moves you through the adjustments for each stage. For example, after viewing the Ignition Point, pressing the NEXT button will move you to the Modulation Start.
- Pressing the NEXT button does NOT save the setting. To save a new setting, you MUST press the ADJUST/SELECT knob.
- Pressing the PREVIOUS button automatically returns you to the previous adjustment for a Stage without having to return to the Stage Settings menu.

⚠️ ALERT
When in Stage menu, pressing the NEXT button DOES NOT save any configuration.

MODE
- Auto, Standby, Manual, Off, On
- Default: Auto

STAGE: STAGE MENU/Mode
- The Multi-MOD only controls the modulation of stages set to Auto or (after a delay) those set to Standby. None of the other settings are recommended for output Stages connected to active units. See "Display Stage Modulation Status" on page 13.
- Any stage without an active unit connected, and/or without an output relay must be set to Off.

⚠️ ALERT
Any Stage not used MUST BE SET to OFF.
The following list describes the MODE options:

**Auto** - The Multi-MOD will control the Stage's operation to maintain the Set Point. Only Stages set to Auto can be Lead Stages.

**Standby** - Standby Stages can only be activated when all Stages in Auto have been at 100% modulation for a selectable period of time. Standby is generally used when an older or less efficient unit is available, but is not desired except under extreme load conditions. A Standby Stage Cannot be a Lead Stage.

**Manual** - The Manual Mode should only be used when testing a Stage. Manual overrides the System Prove input. The exact percent of modulation for a Stage can be set with the Manual mode. Once selected, the unit will immediately turn on and be modulated to the selected percentage. The stage status will indicate the modulation for the manually set stage.

**Off** - Any output Stage A through D without a relay, or not connected to a physical unit should be set to Off. The Off Mode can also be used to disable units, which are being serviced.

**On** - The On Mode should only be used when testing a stage. The On Mode overrides the System Prove input. Once selected as On the Stage will immediately turn on and be modulated to 100%.

**Ignition %**

Adjustable from 1 to 100%  Default: 1%

**STAGE: STAGE MENU/Ignition %**

* The Ignition Point is the percent modulation that must be attained before the unit can be activated.

* For most modern power draft units, the Ignition Point should be set at 1%.

* Older units or atmospheric units may require the modulating fuel valve to be open from 20-50% before proper ignition can be attained. Check with the equipment manufacturer if you are in doubt about the minimum modulation signal required to activate the stage.

**Modulation Start**

Adjustable from 0 to 99%  Default: 80%

**STAGE: STAGE MENU/Mod Start %**

* The Modulation Start determines at what percent modulation of the previous stage the current stage in the sequence will be activated.

* For example, if the Modulation Start for Stage B is set to 75%, then when Stage A reaches 75% modulation, Stage B (if Stage B is in Auto Mode and is not already on) will be brought on.

* When modulation is decreasing, the lag unit will remain on in low modulation, until the previous stage reaches 40% of lag stage's Modulation Start point, or 2% above the Ignition Point, whichever is higher.

* Using the same example, as the load decreased, Stage B would modulate down to its Ignition %. Stage A would then modulate down to 30%. Only then, Stage B would turn off.

* If the Lag Delay is set to anything other than 0, a Stage must always go up to 100% modulation before the next stage is activated. However, the Modulation Start should still be set correctly, because it will be valid when modulation is decreasing.

* The Modulation Start point will generally be set differently based on the Modulating Mode selected.

**Modulating Mode - Normal**

*(See "Modulating Mode" on Page 17)*

* Lower Modulation Start settings allow the next boiler in the sequence to be activated and warmed up, generally allowing more even set point control.

* Higher Modulation Start settings can prevent unnecessary stages from being activated.

* Some general guidelines to follow:
  - Less than 50% - not recommended in the Normal Modulating Mode.
  - 50%-70% - These lower settings might be used in an application that has wide load swings such as an industrial plant or a hospital. This allows an additional boiler to be brought on line before the previous boiler has begun to reach its capacity. The next boiler will now be available for fast, high demands.
  - 70-90% - This range is recommended for most applications. When there are several stages of relatively equal capacity and all can be used to hold the load, this allows some degree of overlap, without activating unnecessary stages.
  - 90-100% - Recommended when one stage can always handle the load while the other stages are mainly used for backup.

**Modulating Mode - Parallel**

*(See "Modulating Mode" on Page 17)*

* The Modulation Start should be set to the maximum value where the unit runs most efficiently.

* Contact the unit manufacturer to determine the appropriate setting.
COPY SETTINGS (STAGE A ONLY)

Stage (Button) Stage Settings/Copy Settings

- If all the stages set to Auto or Standby will have the same Ignition % and Modulation Start, then set it for Stage A and then copied to all other stages.
- It is still required to set the Mode for all other stages. The Mode setting WILL NOT be copied.

⚠️ ALERT

The Mode must be set for each stage. The Copy Settings command will not set the Mode for the rest of the stages.

MAINTENANCE

The Maintenance menu gives access to sensor and output trimming, Soft-Off, and Modulation Speed. If Multi-MOD had the communication package, then all the Network Settings will be listed under the Maintenance menu as well.

SYSTEM AND OUTDOOR TRIM

Adjustable from -5°F/-3°C to +5°F/+3°C  
Default: 0°F/0°C

SELECT: MENU/<Maintenance>/System Trim
SELECT: MENU/<Maintenance>/Outdoor Trim

- The Heat-Timer thermistor type sensors are very accurate, and normally require no calibration. Sometimes it may be desirable to make small adjustments to the displayed value for either the Outdoor temperature (OD) or the System temperature (SYS).
- For pressure transducers, the trim range will vary based on the Sensor Type Selected. See "Set Point and Default Table" on page 23.

STAGE OUTPUT TRIM

Adjustable from -1.0 to +1.0  
Default: 0.0

SELECT: MENU/<Maintenance>/Output Trim

- The Multi-MOD gives the user the ability to adjust the percentage of Output for each stage individually to match the actual burner.
- Output Trim acts as an adjustment to a stage output percent to match the burner motor.
- When selecting Output Trim, Stage A Trim will show as the first option. By clicking on the Stage button, Multi-MOD will scroll through the rest of the stages.
- After adjusting the Output Trim, test the operation of the stage throughout the full range to make sure the results match your expectation.

⚠️ ALERT

DO NOT use the Output Trim for a Stage unless it is absolutely necessary. Test burner operation and modulation output matching after adjusting the Output Trim.

SOFTWARE DELAY

Adjustable from 0 to 60 seconds  
Default: 45 seconds

SELECT: MENU/<Maintenance>/Soft-Off Delay

- When a stage is no longer needed, the Soft-Off keeps that stage burner in Low Fire prior to turning it off.
- The display will show a percent that is equal to the Ignition % for the stage in Soft-Off delay. The Soft-Off will be indicated with the blinking Ignition % for that stage.
- If during the Soft-Off delay of a stage the Multi-MOD needs that stage to increase modulation, the stage will be released from the Soft-Off delay and resume normal operation.
MODULATION SPEED
Adjustable from 0.1 to 6.0 minutes Default: 0.1 minutes

SELECT: MENU/<Maintenance>/Mod Speed
(Available in Process Mode Only)
- The Modulation Speed is designed to match the burner modulating motor speed to the Multi-MOD output. This allows Multi-MOD set to Process Operating Mode to respond accurately to system changes. See "Operating Mode" on page 17.
- When different stages have different modulating burner motor speeds, adjust the Modulation Speed to the longest motor speed.

TROUBLESHOOTING

No Display, or Garbled Display
Check the 120V AC power input to the Multi-MOD. Turn power to the Multi-MOD off and back on. Make sure that the Ground screw is connected to a reliable Earth Ground. Make sure that all wiring is fed to the control through the bottom knockouts and that no high voltage wiring is running behind the control board.

SENSOR INPUTS

Display shows Sensor OPEN or SHORT
If Open, short the sensor input terminals. The display should read Short. If it does, check the sensor wiring. If it doesn’t, the Multi-MOD may be damaged.
If Short, remove the wires from the input terminals. The display should read Open. If it does, check the sensor wiring. If it doesn’t, the Multi-MOD may be damaged.

System or Outdoor Reads an Incorrect Temperature
Remove the wires from the input terminals. The display should change to read Open. If it doesn’t, the Multi-MOD may be damaged. Otherwise, take an ohm reading across the detached sensor wires. The ohm reading should correspond to the Temperature Sensor Chart. If the difference is within 5°F adjust the Trim of the sensor. Otherwise, the sensor may be damaged.

Display shows an Incorrect Temperature
Remove the wires from the sensor terminals. The display should change to read Open. If it does not, the Multi-MOD may be damaged. Take an ohm reading across the detached sensor wires. The ohm reading should correspond to the Temperature sensor Table. If it does not, the sensor may be damaged.

Display shows an Incorrect Pressure
Check the pressure range in the System Startup settings. If the reading is still not correct remove the wires from input terminals S and + (A5 & A6). Check for 24 VDC across the two terminals. If 24 VDC is not present, the Multi-MOD may be damaged. Otherwise replace the black sensor wire to terminal + (A6). Put an ammeter in series by connecting the (-) side of the meter to the detached red wire from the sensor, and the (+) side of the meter to the S (A5) input terminal. The mA reading should correspond to the Pressure Sensor Chart. If it doesn’t, the sensor may be damaged.

Pressure Sensor Chart

<table>
<thead>
<tr>
<th>INPUT (in mA)</th>
<th>0-30 Range (in PSI)</th>
<th>0-100 Range (in PSI)</th>
<th>0-200 Range (in PSI)</th>
<th>0-300 Range (in PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Open</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.08</td>
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<tr>
<td>4.16</td>
<td>1</td>
<td></td>
<td>2</td>
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<tr>
<td>4.53</td>
<td>1</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>5.07</td>
<td>2</td>
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<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Temperature Sensor Chart

<table>
<thead>
<tr>
<th>TEMPERATURE</th>
<th>Value (in Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
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<td>-23 59076</td>
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<td>-4   19939</td>
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<td>-1   17264</td>
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<td>4   13040</td>
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<td>240</td>
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<tr>
<td>250</td>
<td>121  187</td>
</tr>
<tr>
<td>SHORT</td>
<td>100</td>
</tr>
</tbody>
</table>
CONTROL OPERATION

No Heat
- **Prove** - Even though, the system relay may be energized, the Multi-MOD will not energize any stage relays unless the Prove is shorted. See "Display Messages" on page 13.
- **Shutdown** - The Multi-MOD will activate stage outputs when the Shutdown terminals are short. See "Display Messages" on page 13.
- **Sensor Fault** - When the Sensor Fault is set to Shutdown in the startup menu (See "Sensor Fault" on page 18), the System sensor fault (in all Sensor Type modes) or the Outdoor sensor fault (in Reset mode) will de-energize all stage relays. Check the display for sensor values.
- **System or Outdoor Sensor** - If the System or Outdoor sensor reading was higher than the actual temperature, the Multi-MOD might not bring any stage on. Check "Display shows an Incorrect Temperature" section.

Too Much Heat
Check if the control has any of the following:
- **Reset Ratio and Offset** - If excessive heat occurs only in certain weather conditions, adjust the Reset Ratio and Offset (See "Understanding Operation Concept" on page 5). If excessive heat occurs year round, reduce the Offset.
- **Boiler Mode Settings** - The Multi-MOD will only modulate boilers their mode is set to Auto or Standby. Check to if any boiler stage is set to Manual or On. See "Mode" on page 25.
- **Control Settings** - The Last-Stage-Hold will allow only the Lead boiler to stay on for an additional number of degrees. If the setting is too high, and only the Lead boiler is on, the system can over heat. Reduce the Last-Stage-Hold setting. See "Last-Stage-Hold" on page 23.
- **DHW Call** - On a DHW call, the System Set Point will rise to the DHW Set Point. See "Prove/DHW Mode" on page 18.

Too Little Heat
Check if the control has any of the following:
- **Reset Ratio and Offset** - If reduced heat occurs only in certain weather conditions, adjust the Reset Ratio and Offset (See "Understanding Operation Concept" on page 5). If reduced heat occurs year round, increase the Offset.
- **Setback** - If reduced heat occurs only during specific hours, check the Setback value and the source of the setback signal. Either reduce the Setback setting (See "Setback" on page 22) or change the hours the setback signal is activated.

INTERNET OPERATION

Values on the Web do not Change
- **Internet connection to the control** - First check the ICMS Live Session "Last Values Update" Date and Time. It must be accurate. If not, the control internet connection is not functioning. If using a router, check for Internet service using a computer. If using a cable modem, power down both the control and the modem. Then power the control back on and wait for two minutes before power the modem back on. Wait for the Message **ACK RECEIVED** to show.
- **User Rights** - The control is being accessed by another user. Only a single user can make changes at a time. Wait for the other user to leave the control and building access, then try to re-access the control. The Live Session top right should indicate the user current rights to the control. Also, a user may have been granted Read Only rights to the control.
COMMUNICATION

• The Multi-MOD Platinum is available as a stand alone or with one of the communication options. Each of the communication options requires the purchase of the control with that specific remote communication option or the upgrade of the control.
• An Internet communication option (Multi-MOD Platinum RINet) provides the user with access to modify control settings, add space sensors and other sensors, e-mail alarms and reports, view history, and much more.
• A BACnet communication option (Multi-MOD Platinum BAC) provides the user with the capability of changing settings and communicating over a BACnet IP network. The same control can be used with Fieldserver and other gateways to communicate over a multitude of protocols. Contact Heat-Timer to find out about the possibility of interfacing to other protocols.

REMOTE INTERFACE

SELECT MENU/Maintenance/Internet ID

• The Multi-MOD Platinum can be controlled remotely through the Internet or a BACnet network. The Internet communication is started by creating an account using the Heat-Timer Internet Control Management System (ICMS) website (http://www.htcontrols.com). After the account is approved, the user can create the building where the control will reside. Then when the control communicates, he can assign the control to the building. Visit the ICMS website for additional help information.
• Several features are only available to Internet controls including: Configuring additional sensors (Space, Temperature, Oil level, Stack temperature, pulse/count sensor (for water meters), vacuum, humidity, and pressure), Alarm activation and deliveries, history analysis and reporting, Data Export to a variety of spreadsheets and databases.

INTERNET COMMUNICATION

Visit (http://www.htcontrols.com)
(Requires Internet Package)
• The Multi-MOD Platinum can be set to communicate over the Internet.

INTERNET ID
(Requires RINet Package)
Solo, 1-32, Custom Default: Solo

SELECT MENU/Maintenance/Internet ID
• If the control is connected directly to the Internet using a dynamic cable modem without a firewall or an Internet router, then the user must select Solo as the Internet ID. The Multi-MOD Platinum will acquire its Internet information directly from the cable modem.
• If the control is behind an Internet router or a server with an active DHCP server, the firewall must be configured for port forwarding. In addition, the Multi-MOD Platinum must have its Internet ID set to any number between 1 and 32. The DHCP server must not provide an internet IP that matches the control local static IP. Each of the Internet IDs selected uses a specific Internet TCP Port to communicate on. This allows multiple controls to communicate over the internet using the same Internet connection. See "Internet Port-Forwarding Table" on page 31.
• The Custom option is primarily used when the Internet connection on the WAN side is Static or when the DHCP server is not activated. Thus, allows the user to manually configure the Internet connection by entering the IP, Mask, Gateway, and DNS information. All the information must be entered in an IP format.
• On a power up, the Multi-MOD Platinum will have a delayed Internet start (approximately one to two minutes) to allow routers, modems, and servers to initialize and get online.
INTERNET PORT-FORWARDING TABLE

<table>
<thead>
<tr>
<th>INTERNET ID</th>
<th>ACTUAL INTERNAL IP</th>
<th>PORT TO FORWARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLO</td>
<td>N/A</td>
<td>8082</td>
</tr>
<tr>
<td>1</td>
<td>... ... ... 101</td>
<td>8082</td>
</tr>
<tr>
<td>2</td>
<td>... ... ... 102</td>
<td>8083</td>
</tr>
<tr>
<td>3</td>
<td>... ... ... 103</td>
<td>8084</td>
</tr>
<tr>
<td>4</td>
<td>... ... ... 104</td>
<td>8085</td>
</tr>
<tr>
<td>5</td>
<td>... ... ... 105</td>
<td>8086</td>
</tr>
<tr>
<td>6</td>
<td>... ... ... 106</td>
<td>8087</td>
</tr>
<tr>
<td>7</td>
<td>... ... ... 107</td>
<td>8088</td>
</tr>
<tr>
<td>8 - 31</td>
<td>... ... ... 108 TO</td>
<td>8089 TO</td>
</tr>
<tr>
<td></td>
<td>... ... ... 101</td>
<td>8112</td>
</tr>
<tr>
<td>32</td>
<td>... ... ... 132</td>
<td>8113</td>
</tr>
<tr>
<td>CUSTOM</td>
<td>ANY IP</td>
<td>8082</td>
</tr>
</tbody>
</table>

INTERNETALARMS
• The Multi-MOD Platinum RINet has a set of pre-configured control alarms that can be activated through the Internet ICMS website by visiting the control Alarms webpage.
• Each alarm can be activated by creating at least one delivery. Simply, click on the Alarm button. Then, add a delivery by clicking on the Add Delivery button on the right hand side of the screen. A delivery method option (Web or e-mail) must be selected from the drop down list. Then, fill the fields with the delivery information including subject, e-mail, and message.
• A delivery can be in the form of a web alarm (the building and control icons will have a Red dot), e-mail alarm, a text message to a cell phone (it is an e-mail in the form of 1111111111@CellCompany.com where CellCompany.com will vary with the cell phone carrier).

• The Multi-MOD Platinum control alarms are:
  • (#1004) Extension Module Communications Error: This alarm will be generated if the extension panel communication the Multi-MOD Platinum has terminated. (#6004) Is an end alarm that can be set to indicate that the initial alarm status has terminated.
  • (#1005) Lockout on Boiler: This alarm will be generated for any boiler that has gone into lockout status. The message will indicate the specific boiler in lockout. (#6005) Is an end alarm that can be set to indicate that the initial alarm status has terminated.
  • (#1006) System Pressure Fault: This alarm will be generated whenever the System sensor goes open or short. (#6006) Is an end alarm that can be set to indicate that the initial alarm status has terminated.
  • (#1008) No prove for More Than 10 Minutes: This alarm will be generated whenever there is a call for output but the Prove terminals have not been shorted for over 10 minutes. (#6008) Is an end alarm that can be set to indicate that the initial alarm status has terminated.
  • (#1011) EMS Signal Fault For More Than 30 Minutes: If the control is receiving its set point as a 4-20mA signal, any signal below 2mA or above 22mA will be considered a an EMS Fault. If that lasted for more than 30 minutes, this alarm will be generated. (#6011) Is an end alarm that can be set to indicate that the initial alarm status has terminated.
BACNET COMMUNICATION

If the Multi-MOD was purchased with a communication package, the following settings must be configured to guarantee reliable communication.

BACNET COMMUNICATION OPTION

**SELECT: MENU/<Maintenance>/Network Settings**

After connecting the Multi-MOD to the BACnet network, see "BACnet Communication Wiring" on page 11, the user must set the following parameters according to the BACnet Network Administrator's instructions.

BACNET DEVICE ID

This is a unique ID within the BACnet network. It must be provided by the BACnet Network Administrator and entered into the **BACnet ID** field.

IP, MASK, AND GATEWAY ADDRESS

These fields are either left blank if the IP information is automatically provided by the network (DHCP server assigns IPs). Otherwise, fill in these information as per the Network Administrator instructions.

---

**Network Settings**

- **BACnet ID**: 0
- **IP**: ---.---.---.---
- **Msk**: ---.---.---.---
- **Gwy**: ---.---.---.---

---

**Alert**

A Multi-MOD that is BACnet capable will display **-- NETWORK PANEL --** on the 2nd row of the display when it is in screen saver mode. See "Display Messages" on page 13.

MULTI-MOD BACNET VARIABLE LIST

The following is the BACnet variable list that can be used to communicate with the Multi-MOD.

<table>
<thead>
<tr>
<th>OBJ ID</th>
<th>OBJECT NAME</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
<th>UOM</th>
<th>RANGE / STATES</th>
<th>READ ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 through 19</td>
<td>BTIME00 through BTIME19</td>
<td>Stage Run-Time</td>
<td>AV</td>
<td>Minutes(72)</td>
<td>0 - 2,147,483,647</td>
<td>X</td>
</tr>
<tr>
<td>100</td>
<td>CO</td>
<td>Outdoor Cutoff Temp</td>
<td>AV</td>
<td>°C(62), °F(64)</td>
<td>-6 - 38°C, 20 - 100°F</td>
<td></td>
</tr>
<tr>
<td>200 through 219</td>
<td>FIRE00 through FIRE19</td>
<td>Ignition Level</td>
<td>AV</td>
<td>% (98)</td>
<td>1 - 50</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>GAIN</td>
<td>Modulation Gain</td>
<td>AV</td>
<td>none (95)</td>
<td>-10 - +10 (non process), 1 - 10 (process temp), 0.25 - 20.0 (process psi)</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>HC</td>
<td>Heat/Cool</td>
<td>BV</td>
<td></td>
<td>0=heat, 1=cool</td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>HFHOLD</td>
<td>High Fire Hold</td>
<td>AV</td>
<td>Minutes(72)</td>
<td>0 - 60</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>INMODE</td>
<td>Sensor Mode</td>
<td>MV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>LEAD</td>
<td>Lead Stage</td>
<td>MV</td>
<td></td>
<td>0 - 19 = A - T</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>LFHOLD</td>
<td>Pre-purge Delay</td>
<td>AV</td>
<td>Minutes(72)</td>
<td>0 - 10</td>
<td></td>
</tr>
<tr>
<td>900 through 919</td>
<td>LOCK00 through LOCK19</td>
<td>Lockout Input</td>
<td>MV</td>
<td>1=(inactive), 2=Lockout, 3=Comm Error</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>LSTHOLD</td>
<td>Last-Stage-Hold</td>
<td>AV</td>
<td>Psi (56), °C(62), °F(64)</td>
<td>0 - 0.3 psi, 0 - 30 psi °C °F</td>
<td></td>
</tr>
<tr>
<td>1100 through 1119</td>
<td>MAN00 through MAN19</td>
<td>Manual Modulation Level</td>
<td>AV</td>
<td>% (98)</td>
<td>0 - 100</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>MAXSTG</td>
<td>Maximum Stages</td>
<td>AV</td>
<td>none (95)</td>
<td>4 - 20</td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>MIN</td>
<td>Minimum Target</td>
<td>AV</td>
<td>°C(62), °F(64)</td>
<td>21 - 68°C, 70 - 180°F</td>
<td></td>
</tr>
<tr>
<td>1400 through 1419</td>
<td>MODE00 through MODE19</td>
<td>Stage Mode</td>
<td>MV</td>
<td>1=Auto, 2=Standby, 3=Manual, 4=Off, 5=On</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500 through 1519</td>
<td>MODST00 through MODST19</td>
<td>Modulation Start Point</td>
<td>AV</td>
<td>% (98)</td>
<td>0 - 99</td>
<td></td>
</tr>
<tr>
<td>1600 through 1619</td>
<td>MTRIM00 through MTRIM19</td>
<td>Modulation Output Trim</td>
<td>AV</td>
<td>none (95)</td>
<td>-1.0 - +1.0</td>
<td></td>
</tr>
<tr>
<td>OBJ ID</td>
<td>OBJECT NAME</td>
<td>DESCRIPTION</td>
<td>TYPE*</td>
<td>UOM</td>
<td>RANGE / STATES</td>
<td>READ ONLY</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------</td>
<td>-----</td>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1700</td>
<td>ODTEMP</td>
<td>Outdoor Sensor</td>
<td>AV</td>
<td>°C(62), °F(64)</td>
<td>-40 - +122°C, -40 - +250°F</td>
<td>X</td>
</tr>
<tr>
<td>1800</td>
<td>ODTRIM</td>
<td>Outdoor Sensor Trim</td>
<td>AV</td>
<td>°C(62), °F(64)</td>
<td>-5 - +5</td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td>OFF</td>
<td>Offset Temp</td>
<td>AV</td>
<td>°C(62), °F(64)</td>
<td>-28 - +28°C, -50 - +50°F</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>PDATETIME</td>
<td>Panel Date</td>
<td>AV</td>
<td>Days (70) since 1/1/1981</td>
<td>0 - 2,147,483,647</td>
<td></td>
</tr>
<tr>
<td>2100</td>
<td>PTIME</td>
<td>Panel Time</td>
<td>AV</td>
<td>Minutes(72) since 0:00</td>
<td>0 - 1,439</td>
<td></td>
</tr>
<tr>
<td>2200</td>
<td>R</td>
<td>Reset Ratio</td>
<td>MV</td>
<td>1=1:4, 2=1:3, 3=1:2, 4=1:1.5, 5=1:1.25, 6=1:1, 7=1:25:1, 8=1:5:1, 9=2:1, 10=3:1, 11=4:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2300</td>
<td>RTMODE</td>
<td>lead stage Rotation Mode</td>
<td>MV</td>
<td>1=Manual, 2=Time, 3=Last-On</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2400</td>
<td>RTTIME</td>
<td>Periodic Rotation Interval</td>
<td>AV</td>
<td>Hours(71)</td>
<td>1 - 999</td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td>SB</td>
<td>Setback</td>
<td>AV</td>
<td>Psi (56), °C(62), °F(64)</td>
<td>0 - 7.5psi, 0 - 75psi °C °F</td>
<td></td>
</tr>
<tr>
<td>2600</td>
<td>SETPT</td>
<td>Set point</td>
<td>AV</td>
<td>Psi (56), °C(62), °F(64)</td>
<td>0.0-15.0psi, 0.0-30.0psi, 0-100psi, -40 - +122°C, -40 - +250°F</td>
<td></td>
</tr>
<tr>
<td>2700</td>
<td>SRUNON</td>
<td>System Run-on</td>
<td>AV</td>
<td>Minutes(72)</td>
<td>0 - 60</td>
<td></td>
</tr>
<tr>
<td>2800</td>
<td>STBYDLY</td>
<td>Standby Delay</td>
<td>AV</td>
<td>Minutes(72)</td>
<td>0 - 60</td>
<td></td>
</tr>
<tr>
<td>2900 through 2919</td>
<td>STONOFF00 through STONOFF19</td>
<td>Stage Relay</td>
<td>BV</td>
<td>0=Off, 1=On</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3000 through 3019</td>
<td>STPCT00 through STPCT19</td>
<td>Modulation Level</td>
<td>AV</td>
<td>% (98)</td>
<td>0 - 100</td>
<td>X</td>
</tr>
<tr>
<td>3100</td>
<td>SYSONOFF</td>
<td>System Relay</td>
<td>BV</td>
<td>0=Off, 1=On</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3200</td>
<td>SYSSEN</td>
<td>System Sensor</td>
<td>AV</td>
<td>Psi (56), °C(62), °F(64)</td>
<td>0.0 - 15.0psi, 0.0 - 30.0psi, 0 - 100psi, -40 - +122°C, -40 - +250°F</td>
<td>X</td>
</tr>
<tr>
<td>3300</td>
<td>TARG</td>
<td>Calculated Target</td>
<td>AV</td>
<td>°C(62), °F(64)</td>
<td>21 - 122°C, 70 - 250°F</td>
<td>X</td>
</tr>
</tbody>
</table>

* AV=analog value(2),
  BV=binary value(5),
  MV=multi-state value(19).

Note: The device object id is set through the menus. The device object name is ‘HTC_‘ followed by the panel serial number.

Note: All objects with multiple UOM’s depend upon the value of INMODE to determine which to use. Objects with only °F/°C UOM’s default to °F when INMODE is not temperature.

Note: OFF, R and TARG have no effect unless INMODE is set to Reset °F or Reset °C.

Note: When writing to MAN, MODE will change to Manual.
### Vendor Information
Heat-Timer Corp.
20 New Dutch Ln.Fairfield, NJ 07004
(973)575-4004
Vendor ID: 248

### Product Description
Various controls for heating or cooling applications. Includes Platinum Models MPC, Multi-MOD, HWR, HWRQ, Multi-Mod, SRC. (see http://www.heat-timer.com for more information)

### BACnet Standardized Device Profile (Annex L)

<table>
<thead>
<tr>
<th>Product</th>
<th>Device Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum series BACnet Controls</td>
<td>BACnet Application Specific Controller (B-ASC)</td>
</tr>
</tbody>
</table>

### Supported BIBBs (Annex K)

<table>
<thead>
<tr>
<th>Supported BIBBs</th>
<th>BIBB Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS-RP-B</td>
<td>Data Sharing-ReadProperty-B</td>
</tr>
<tr>
<td>DS-WP-B</td>
<td>Data Sharing-WriteProperty-B</td>
</tr>
<tr>
<td>DM-DDB-B</td>
<td>Device Management-Dynamic Device Binding-B</td>
</tr>
<tr>
<td>DM-DOB-B</td>
<td>Device Management-Dynamic Object Binding-B</td>
</tr>
<tr>
<td>DM-DCC-B</td>
<td>Device Management-DeviceCommunicationControl-B</td>
</tr>
</tbody>
</table>

### Standard Object Types Supported

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Creatable</th>
<th>Deletable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog Value</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Binary Value</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Multi-State Value</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Device</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### Data Link Layer Options (Annex J)

<table>
<thead>
<tr>
<th>Product</th>
<th>Data Link</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum series BACnet Controls</td>
<td>BACnet/IP</td>
<td></td>
</tr>
</tbody>
</table>

### Segmentation Capability

<table>
<thead>
<tr>
<th>Segmentation Type</th>
<th>Supported</th>
<th>Window Size (MS/TP product limited to 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to transmit segmented messages</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Able to receive segmented messages</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

### Device Address Binding

<table>
<thead>
<tr>
<th>Product</th>
<th>Static Binding Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum series BACnet Controls</td>
<td>No</td>
</tr>
</tbody>
</table>

### Character Sets

<table>
<thead>
<tr>
<th>Product</th>
<th>Character Sets supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum series BACnet Controls</td>
<td>ANSI X3.4</td>
</tr>
</tbody>
</table>
The Multi-MOD is set to control four modulating hydronic boilers. The SCP-6 offers boiler pump control with Run-On delay in addition to combustion air damper control and alarm. Each boiler requires a modulation signal from the Multi-MOD and an activation signal from the SCP-6. In addition, the Multi-MOD is controlling the system using either Outdoor Reset or temperature Set Point.

Control Startup Settings
- Sensor Type = °F, °C, Reset °F, or reset °C

The Multi-MOD Platinum is aware that each installation is unique. Thus, it is not responsible for any installation related to any electrical or plumbing diagram generated by Heat-Timer Corp.. The provided illustrations are to demonstrate Heat-Timer Corp.'s control operating concept only.
MULTI-MOD MODULATING 4 4-20MA HYDRONIC BOILERS WITH LOCKOUT INPUTS

The Multi-MOD is set to control four 4-20mA modulating hydronic boilers and the primary loop system pump. Each boiler requires a modulation signal and an activation signal. The boiler lockout circuit is wired to the Multi-MOD Lockout inputs. In addition, the Multi-MOD is controlling the system using either Outdoor Reset or temperature Set Point with DHW (can be with or without priority).

Control Startup Settings
- Sensor Type = °F, °C, Reset °F, or reset °C
- Output Type A & B and Output Type C & D = 4-20mA

Heat-Timer Corp. is aware that each installation is unique. Thus, is not responsible for any installation related to any electrical or plumbing diagram generated by Heat-Timer Corp. The provided illustrations are to demonstrate Heat-Timer Corp.'s control operating concept only.
The Multi-MOD is set to control four voltage modulating hydronic boilers and the primary loop system pump. Each boiler requires a modulation signal and an activation signal. The boiler lockout circuit is wired to the Multi-MOD Lockout inputs. In addition, the Multi-MOD is controlling the system using either Outdoor Reset or temperature Set Point with DHW (can be with or without priority).

**Control Startup Settings**
- Sensor Type = °F, °C, Reset °F, or reset °C
- Output Type A & B and Output Type C & D = Any of the Voltage Options
The Multi-MOD is set to control four 4-20mA modulating steam boiler. Each boiler requires a modulation signal and an activation signal. The boiler lockout circuit is wired to the Multi-MOD Lockout inputs. In addition, the Multi-MOD is controlling the system using either Normal PID with Parallel Modulation or OSS.

**Control Startup Settings**
- Sensor Type = any of the Pressure PSI options
- Output Type A & B and Output Type C & D = 4-20mA

Heat-Timer Corp. is aware that each installation is unique. Thus, is not responsible for any installation related to any electrical or plumbing diagram generated by Heat-Timer Corp. The provided illustrations are to demonstrate Heat-Timer Corp.'s control operating concept only.
The Multi-MOD is set to control four voltage modulating steam boiler. Each boiler requires a modulation signal and an activation signal. The boiler lockout circuit is wired to the Multi-MOD Lockout inputs. In addition, the Multi-MOD is controlling the system using either Normal PID with Parallel Modulation or OSS.

**Control Startup Settings**
- Sensor Type = any of the Pressure PSI options
- Output Type A & B and Output Type C & D = Any of the Voltage Options
MULTI-MOD

Lead Stage Rotation: ........................................... Time (1 to 999 Hours (41 days)), Manual, Last-On
System Output Relay: ........................................... (1) N.O. S.P.S.T
Stage Output Relay: ........................................... (4) N.O. S.P.S.T
Stage Modes: .................................................... Auto, Manual (0% - 100%), Standby, On, Off
Standby Time: ................................................... 1 to 60 minutes
Modulating Output Types: .................................... Total of four outputs. Can be Current (4-20mA)/Voltage (0-5V, 0-10V, 1-5V, 2-10V)/135Ω
Output Relay Ratings: ......................................... (5) 1 Amp Pilot Duty, 6Amp resistive at 120 VAC 60 Hz (1/3HP), 15A total for all circuits
Add-On Extension Panels: ..................................... up to two Extension Panels using RS485, Each Panel with 8 modulating stages
Ignition Point %: ................................................... 1 to 50%
Modulation Start Point %: ..................................... 0 to 100%
Modulation Modes: ............................................. Normal or Parallel
Heat/Cool Modes: ............................................... Heating or Cooling
Temperature Display: .......................................... Alphanumeric (4 rows x 20 char. each)
Display: ................................................................ (1) System Output relay, (4) Boiler Output relays
LED: .................................................................. Indoor temperature sensor -35°F/-37°C to 250°F/121°C
Sensor Ranges: ..................................................... Heating system sensor -35°F/-37°C to 250°F/121°C
Outdoor Cutoff Range: ......................................... 20°F/7°C to 100°F/38°C, ON and OFF
Reset Ratio Range: ............................................. (1.00 : 4.00) to (4.00 : 1.00) (Outdoor : System Water)
Offset Adjustment (Reset Only): ......................... -40°F/-22°C to + 40°F/+22°C
Minimum Water Temperature (Reset Only): .......... 70°F/21°C to 170°F/77°C
Set Point Temperature Range: ......................... 70°F/21°C to 250°F/121°C
DHW Set Point Temperature Range: ................. 140°F/60°C to 200°F/93°C
EMS Temperature Range: .................................... 70°F/21°C to 240°F/116°C
System Run-On: ................................................... 0 to 360 minutes
Purge Delay: ....................................................... 0.0 to 10.0 minutes
Lag Delay: ........................................................... 0 to 60 minutes
Last-Stage-Hold: .................................................. Temperature 0°F/0°C to 30°F/17°C
.................................................................................. Pressure (0-15psi or (0-30psi) 0 to 3 psi
.................................................................................. Pressure (0-100psi, (0-200psi, or (0-200psi) 0 to 10% of full range
Setback: .............................................................. Temperature 0°F/0°C to 75°F/42°C
.................................................................................. Pressure (0-15 or 0-30) 0-7.5 psi
.................................................................................. Pressure (0-100) 0-75psi
.................................................................................. Pressure (0-200) 0-150psi
.................................................................................. Pressure (0-300) 0-200psi
Power Backup: ................................................... Lithium coin battery, 100 days minimum 5 year replacement (Maintains Clock in power outages).
External Inputs: ................................................... Shutdown Input, Setback Input, and Prove Input (Dry-contacts Only)
Lockout Inputs: .................................................... External Set Point input (4-20mA)
Remote Communication Options: ..................... four Dry-Contact Lockout inputs

EXTENSION MODULE

Modulating Output Types: .................................... Total of 8 outputs. Can be Current (4-20mA)/Voltage (0-5V, 0-10V, 1-5V, 2-10V)/135Ω
Output Relay Ratings: ......................................... (8) 1 Amp Pilot Duty, 6Amp resistive at 120 VAC 60 Hz (1/3HP), 15A total for all circuits
Lockout Inputs: .................................................... 8 Dry-Contact Lockout inputs
Connection to Control: ...................................... RS485