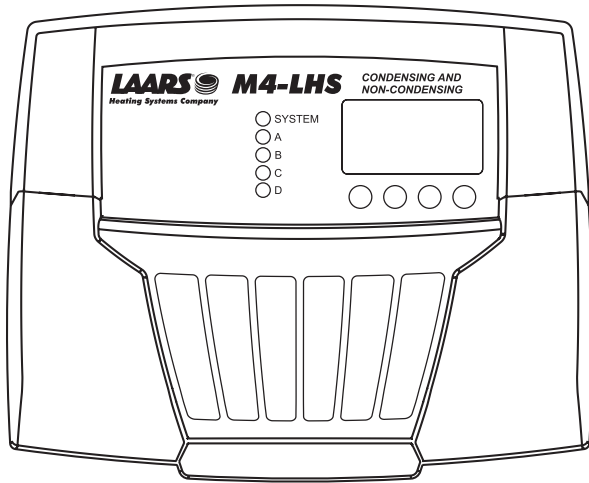


LAARS M4-LHS



Control for Condensing, Non-Condensing, Modulation and Stage-Fired Boilers

Date:

Project #:

Engineer:

Prepared By:

Bid Date:

CA009200

Submittal Data  BRADFORD WHITE

Project Name:

Location:

Contractor:

Standard Equipment

- Multiple boiler control, used to lead-lag modulating, stage-fired, condensing and non-condensing boilers
- Controls up to four stages (one modulating boiler is one stage)
- Ready to use with Laars X-BAC BACnet interface module
- Ready to use with up to two M4EXT extension modules for control of up to 16 modulating stages
- Ready to use with XSIG module to accept external 4-20mA control signal
- Outdoor reset or setpoint control
- System water temperature sensor
- System water temperature sensor well
- Outdoor air temperature sensor
- Outdoor air temperature sensor clip

Features

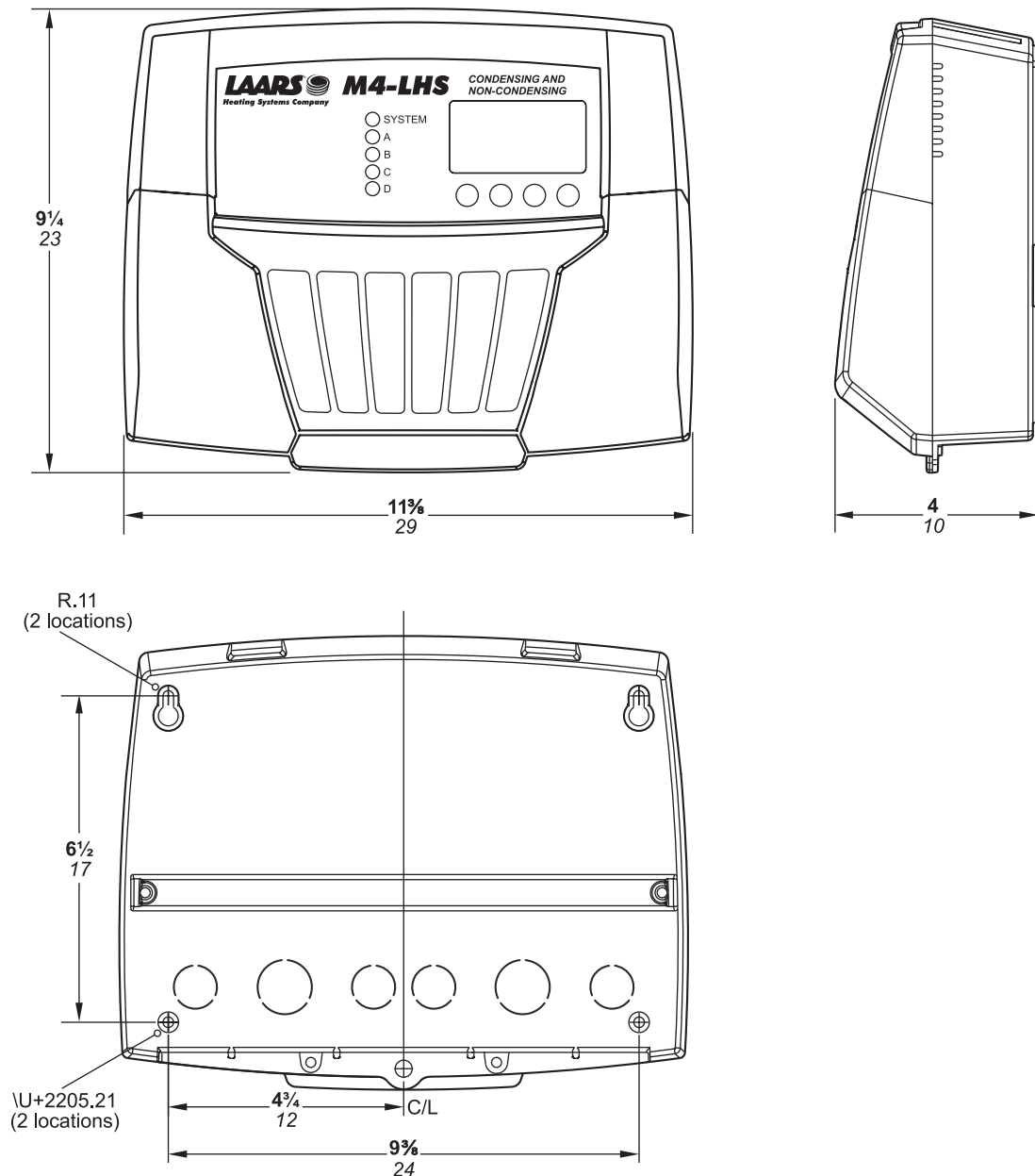
- Operates two groups of boilers - condensing and non-condensing - each with independent configuration - to achieve the highest system efficiency
- Chooses condensing or non-condensing groups based on system temperature
- Controller works with either stage-fired or modulated boilers
- Controls 0-5V, 1-5V, 0-10V, 2-10V and 4-20mA boilers, or stage-fired boilers, in any combination
- Lo/Hi/Lo/Hi sequencing fires lag boiler after the lead boiler reaches full fire capacity - Lo/Lo/Hi/Hi sequencing provides an opportunity for higher boiler efficiency to bring on the lowest firings stages of all the boiler before moving any of them to higher firing rates
- Parallel or normal modulation provides efficient, smooth, and adjustable modulation that can fit most applications whether the boilers are to sequence normally (one after another) or in parallel
- Each boiler can be set for one of three rotation modes; timed (one hour to sixty days), manual, or last-on/last-off
- Each boiler can be set individually to be automatically operated, fully on, manually adjusted, off or be considered a standby boiler. The standby boiler is used as a backup with an adjustable standby delay. This feature is great for using less efficient boilers (with lower initial purchase cost) for periods of high demand only
- Soft-off feature, lag delay and last stage hold assist in minimizing boiler short-cycling
- Adjustable ignition start point and modulation start point
- Adjustable purge delay feature to match the boiler's pre-purge time
- Adjustable minimum and maximum system temperature protect boilers or system
- Communicates with EMS (energy management system) by adding the XSIG 4-20mA interface module, and has shutdown and prove inputs for the EMS
- Domestic hot water with or without priority
- Outdoor reset allows the controller to adjust system water temperature based on outdoor air temperature for fuel savings
- Built-in day/night schedule with adjustable night setback for fuel savings
- External setback signal is accepted for applications that do not follow a pre-determined schedule
- Summer shutdown with domestic water override
- Brightly lit LCD, visible with no ambient light
- Graphics that display in plain English
- Graphical history displayed on the screen shows system and outdoor temps for last 24 hours
- Settings can be copied from one boiler to another for easy programming
- Memory and backup with lithium battery to store information for 100 days
- Locking NEMA-1 enclosure - controller has an integral programming switch that can only be accessed when wiring cover has been unlocked and removed
- UL Listed, tested per standard 916

BACnet Interface

When used with Laars X-BAC module, the variable list available to the BACnet network from the M4-LHS shall be:

- Operation mode
- Outdoor temperature
- System temperature
- Output status
- Control status
- Season
- Reset ratio
- Offset
- Outdoor cutoff
- Minimum water temp.
- Maximum water temp.
- Setback
- Purge delay
- System run-on
- Rotation time
- Standby time
- Last stage hold
- Condensing unit lead stage
- Non-condensing unit lead stage
- Reaction time
- Minimum run time
- Gain
- Lag delay
- Soft off
- Set time
- Day schedule
- Night schedule

Dimensions



Specifications

Voltage Input	120VAC 60Hz
Power Consumption	12 VA Max
Operating Temperature	20°F to 130°F
Operating Humidity	20% to 80%
Dimensions	11-3/8" wide x 9-1/4" high x 3-3/4" deep
Weight	2.5 pounds
Lead Stage Rotation	Time (1 to 1440 hours [60 days]), manual, last-on
Staging Boiler Modes	Auto, standby, on, off
Modulating Boiler Modes	Auto, manual, standby, on, off
Switch Between Boiler Group Modes	System/Return Temp
Ignition Start Point	1% to 50%
Modulation Start Point	0% to 100%
Standby Time (PID only)	1 to 60 minutes
Purge Delay	0.0 to 10.0 minutes Switch between boiler group modes: Outdoor Temp or System/Return Temp
Lag Delay	0 to 60 minutes
Modulating Signals Available	0-5V, 1-5V, 0-10V, 2-10V and 4-20mA
Sequencing Output Types	On/Off, 2-Stage, 3-Stage, or 4-Stage
Output Relay Ratings	1 Amp inductive, 6Amp resistive at 120VAC 60Hz, 15A total for all circuits
Modulation Modes	Normal or parallel
Sequencing Modes	Lo/Hi/Lo/Hi or Lo/Lo/Hi/Hi
Pump Output	1 N.O. SPST
Add-on M4EXT Extension Panels	Up to two M4EXT panels using included RS485
Temperature Display	Fahrenheit or Celsius
Display	Graphical alphanumeric (7 rows x 21 characters each)
LED	1 system output relay, 4 boiler output relays
Sensor Ranges	-35°F to 250°F
Outdoor Cutoff Range	20°F to 100°F, ON and OFF
Set Point	70°F to 250°F
External Set Point	-10°F to 240°F using XSIG 4-20mA interface (optional)
Domestic Water	With or without priority
Reset Ratio Range (Outdoor Reset only)	(1:4) to (4:1) (outdoor : system water), and custom ratio
Offset Adjustment (Outdoor Reset only)	-40°F to 40°F
Minimum Target (Outdoor Reset only)	70°F to 170°F
Maximum Target (Outdoor Reset only)	90°F to 240°F
Last Stage Hold (PID only)	0°F to 30°F
Pump Run-On	0 to 360 minutes
Night Setback	0°F to 75°F
Schedules	1 Day and 1 Night (setback) settings per day
Power Backup	Lithium coin battery, 100 days minimum 5 year replacement (maintains clock in power outage)
External Inputs	Shutdown input and prove input (dry contacts only)
Seasons	Winter and Summer

Bradford White Corporation reserves the right to change specifications, components, features, or to discontinue products without notice.

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