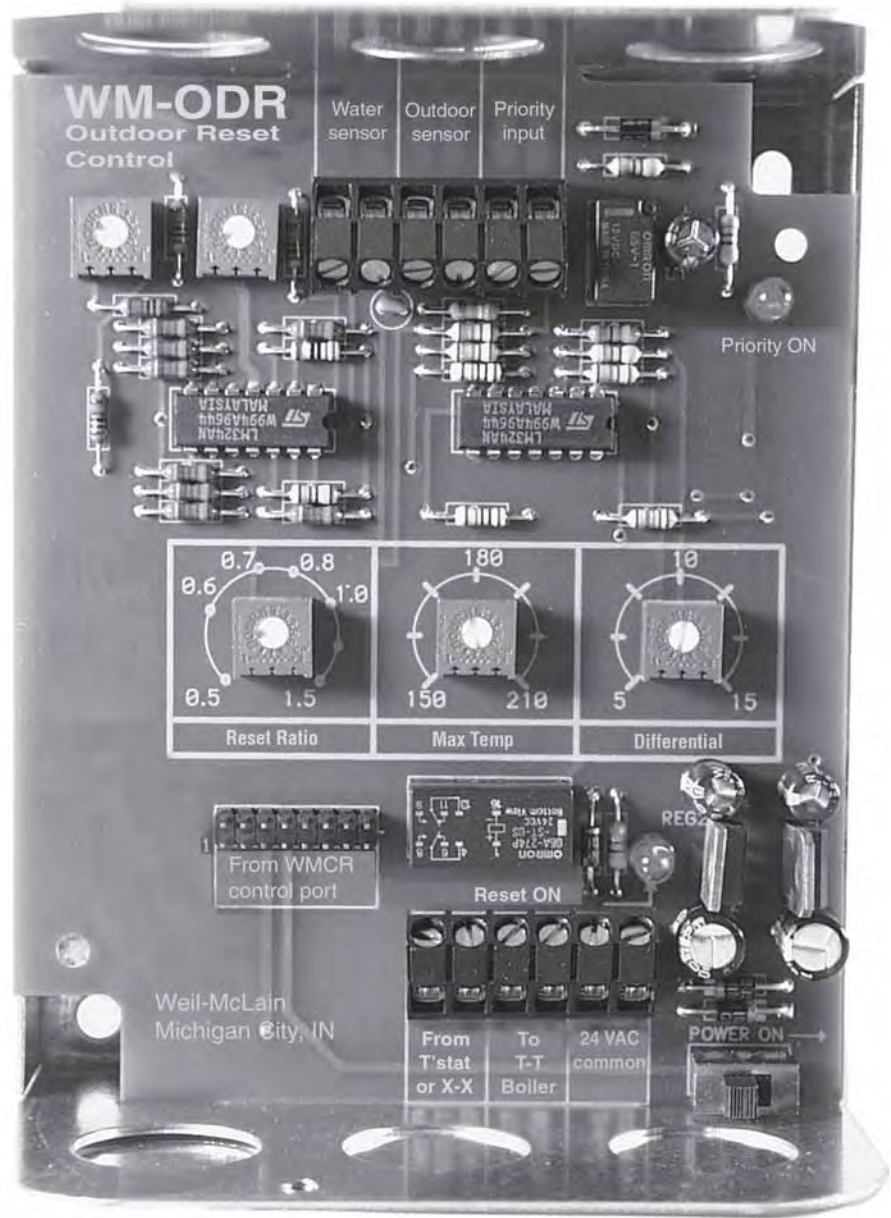




WM-ODR

Outdoor Reset Control

Instruction manual



WARNING

This manual must only be used by a **qualified heating installer/service technician**. Failure to comply could result in severe personal injury, death or substantial property damage.



WM-ODR Outdoor reset control

The WM-ODR Outdoor Reset Control is a cost-effective answer for outdoor reset and may conserve energy when installed on most heating systems.

- The WM-ODR Outdoor Reset Control is designed to raise or lower the temperature of the boiler supply water based upon a proportionate drop or rise in temperature at the outside sensor.
- The WM-ODR Outdoor Reset Control provides settings for:
 - maximum boiler water operating temperature (**Max Temp** dial)
 - reset ratio (**Reset Ratio** dial)
 - differential (**Differential** dial).
- Also included are:
 - Indicator lights
 - On-off switch
 - Terminals for connection to Weil-McLain Zone Controllers.
- Priority override feature automatically disables reset when the Priority Heating Zone (Domestic Hot Water) calls for heat.
- The WM-ODR plugs into Weil-McLain **WMCR Circulator Zone Controllers** and can be “hard-wired” into Weil-McLain **WMZV Zone Valve Controllers**.
- The WM-ODR Outdoor Reset Control is shipped complete with wiring harness, strap-on water supply sensor, outdoor sensor and sunshield.

Hazard definitions

DANGER

Indicates presence of hazards that **will cause** severe personal injury, death or substantial property damage.

WARNING

Indicates presence of hazards that **can cause** severe personal injury, death or substantial property damage.

CAUTION

Indicates presence of hazards that **will or can cause** minor personal injury or property damage.

NOTICE

Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

Specifications


Adjustments			Technical specifications		
Reset Ratio	Max Temp	Differential	Power supply	Relay capacity	Sensor (1000 ohms @ 70°F)
0.5 to 1.5	150° to 210°	5° to 15°	20-28 VAC 2 VA	24 VAC 48VA	Accurate up to 500 ft with 18 gauge wire

Replacement parts

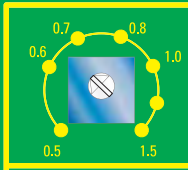
Part description	Weil-McLain part number
Ribbon cable	591-850-079
2-Wire water temperature sensor	511-724-279
2-Wire outdoor sensor with housing	511-724-280

WM-ODR
Outdoor Reset Control

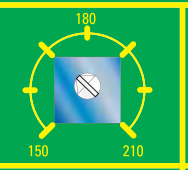
Water sensor Outdoor sensor Priority input



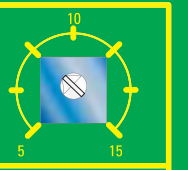
Priority ON



ResetRatio



Max Temp



Differential

From WMCR control port

Reset ON

From T'stat or X-X To T-T Boiler 24 VAC common

Power ON

Weil-McLain
Michigan City, IN



Installation

Outdoor sensor

WARNING

When applying outdoor reset to a hydronic system, review boiler instruction manual for any special piping requirements needed for low temperature operation. Outdoor reset controls will cause sustained operation below 140°F. Failure to pipe boiler in accordance with boiler manufacturer’s recommendations could result in damage to the boiler, causing severe personal injury, death or substantial property damage.

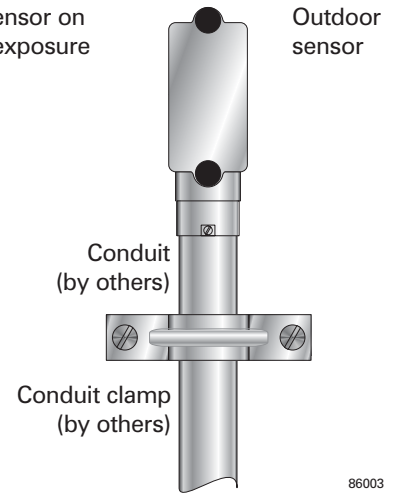
Install on the North side or a shaded side of the building. Locate a minimum of 10 feet above grade or 3 feet above anticipated maximum snow level and not near any place where internal heat could affect the sensor reading, such as windows, doors, exhaust vents or fans.

Figure 1
Outdoor sensor installation

Locate outdoor sensor on North wall — no exposure to sunlight

NOTICE

Prevent outdoor sensor from being covered by snow. The sensor would be unable to correctly sense outdoor temperature, causing possible incorrect system water temperature regulation.

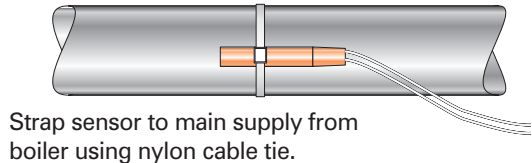


86003

Water sensor

Install the water sensor on the common supply header.

Figure 2
Water supply sensor installation



Strap sensor to main supply from boiler using nylon cable tie.



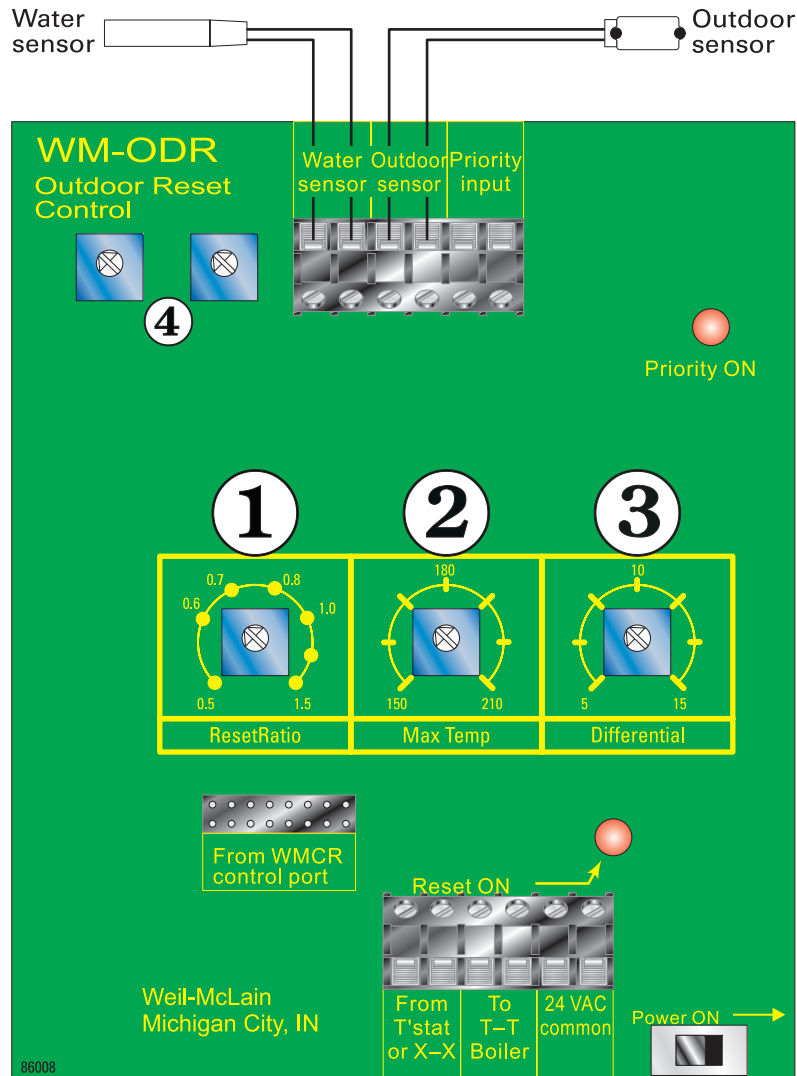
86004

Wrap sensor and pipe with pipe insulation (by others) to assure sensor will correctly sense water temp.



Setup

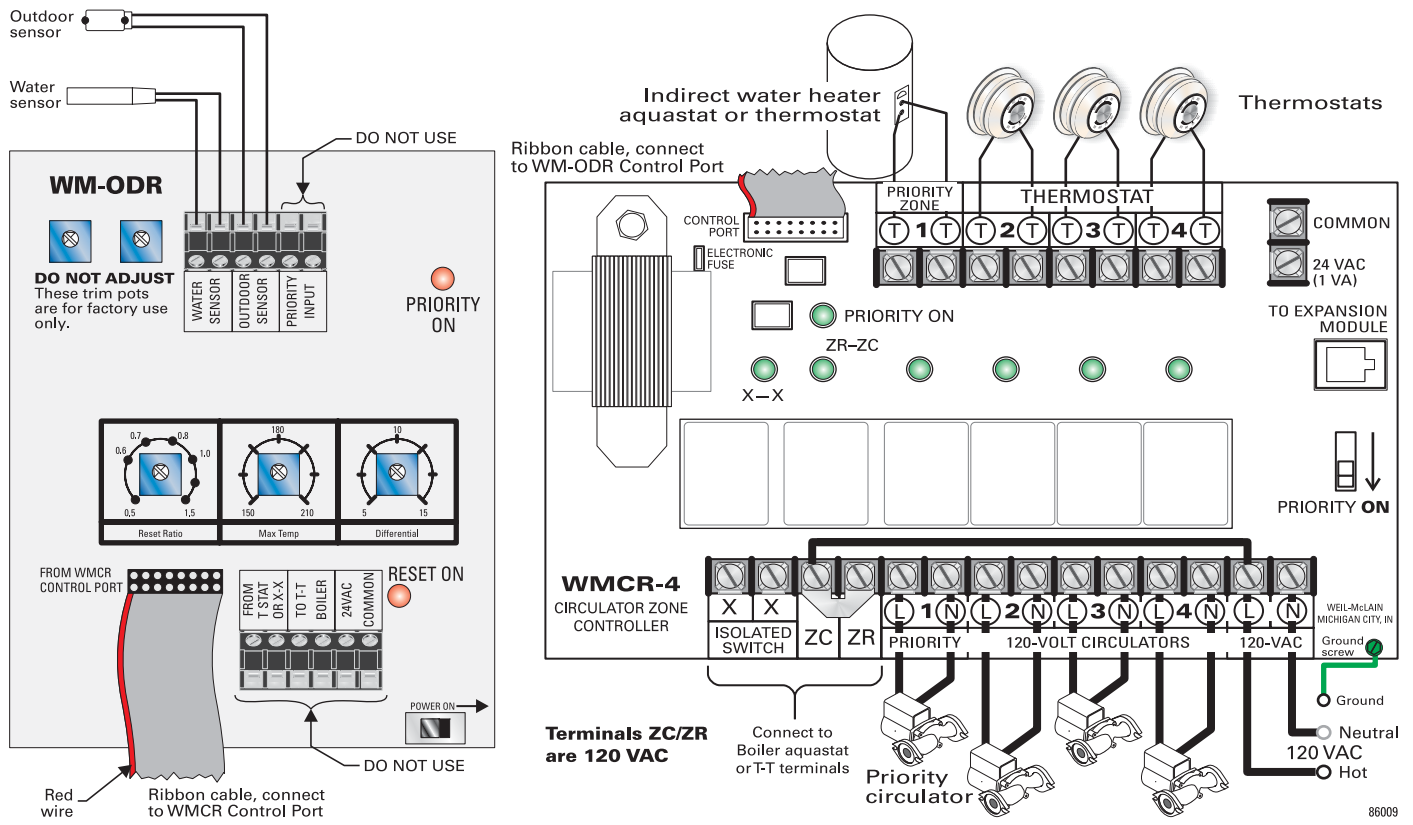
- Reset Ratio** ① Determine ratio and adjust **Reset Ratio** dial (if heat curve is unknown, try 1.0 ratio). The reset ratio dial number is the number of degrees (°F) the supply temperature control point will change for each 1 °F change in outdoor temperature. See page 8 for more information.
- Max Temp** ② Set **Max Temp** to the supply water temperature needed at design outdoor temperature. This will be the maximum temperature called for by the WM-ODR Outdoor Reset Control. The boiler high limit must be set higher than the **Max Temp** setting.
- Differential** ③ Set the **Differential** Trim Pot to midscale (10°F). The boiler will turn off when the water is 10°F above the control point and turns back on when the water is 10°F below the control point. The effect of differential is to prevent quick cycling of the boiler. If the boiler does “quick cycle”, increase the **Differential** setting. Optimal performance is obtained when this setting is as low as possible, but still allows for reasonable cycle time.
- ④ Do not use trim pots in the upper left corner of the control. These must be used only for factory calibration.





Wiring

Figure 3 — Typical wiring — WM-ODR Outdoor Reset Control with WMCR-4 Circulator Zone Controller



NOTE: Add jumper between ZC and L when using WMCR with WM-ODR.

WARNING

Electrical shock hazard — Disconnect power before installing or servicing. Can cause severe personal injury, death or substantial property damage if ignored.

NOTICE

All wiring must be installed in accordance with:

U.S.A. — National Electrical Code and any other national, state or local code requirements. Wiring must be N.E.C. Class 1.

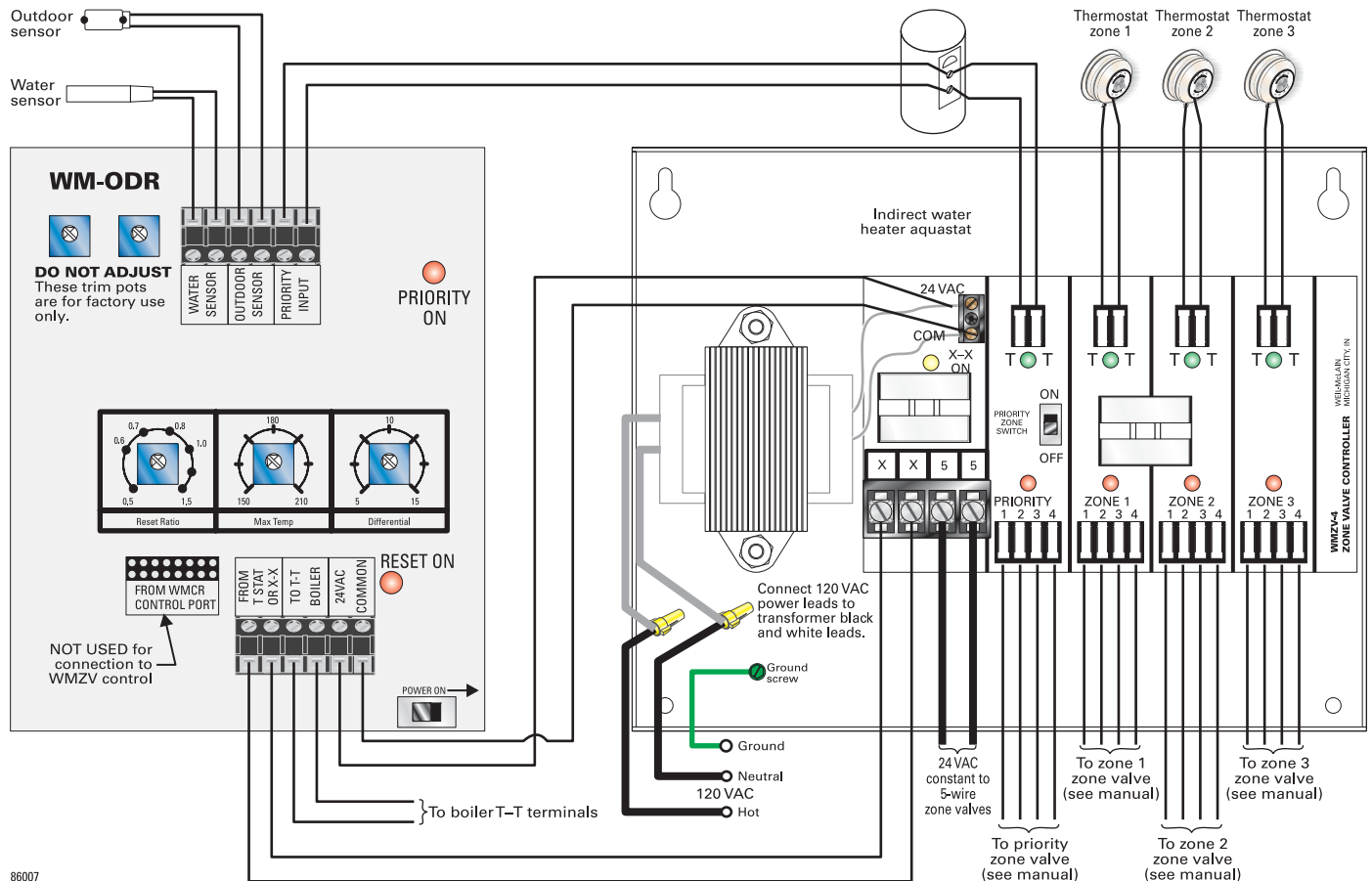
Canada — C.S.A. C22.1 Canadian Electrical Code Part 1 and any other national, provincial or local code requirements. Wiring must be C.S.A. C22.1 C.E.C. Part 1.

NOTICE

Refer to Weil-McLain WMCR Circulator Zone Controller manual for details. Consult boiler manufacturer’s manual for recommended piping and application information.



Figure 4 — Typical wiring — WM-ODR Outdoor Reset Controller with WMZV-4 Zone Valve Controller



86007

Legend

- 120 VAC field wiring
- 120 VAC factory wiring
- 120 VAC ground lead
- 24 VAC field wiring
- 24 VAC factory wiring

WARNING

Electrical shock hazard — Disconnect power before installing or servicing. Can cause severe personal injury, death or substantial property damage if ignored.

NOTICE

All wiring must be installed in accordance with:

U.S.A. — National Electrical Code and any other national, state or local code requirements. Wiring must be N.E.C. Class 1.

Canada — C.S.A. C22.1 Canadian Electrical Code Part 1 and any other national, provincial or local code requirements. Wiring must be C.S.A. C22.1 C.E.C. Part 1.

NOTICE

Refer to Weil-McLain WMZV Zone Valve Controller manual for details. Consult boiler manufacturer's manual for recommended piping and application information.



Settings

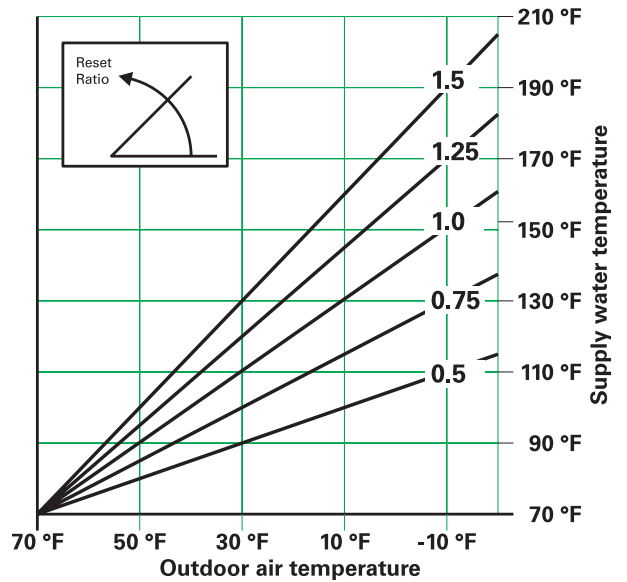
To obtain the best operation from a reset control, it is important to monitor the system supply temperature as accurately as possible. The system pump must be operating to maintain continuous water flow across the supply temperature sensor.

As outdoor temperature drops, heat loss from a space becomes greater, and the heating system supply water temperature must be increased to maintain a constant room temperature. The heating curve value (**Reset Ratio**) describes *how many degrees the supply water temperature is raised for a one degree drop in outdoor temperature*. The supply temperature starts to increase when the outdoor temperature falls below 70 °F.

To calculate the correct setting for the heating curve, use the **Reset Ratio formula**, below right.

If the actual **Design supply water temperature** for a system is unknown, calculate a trial setting for Reset Ratio using these typical supply temperatures:

- Fan coils 180 °F to 210 °F
- Baseboard convectors 160 °F to 190 °F
- Radiant floors, typical 100 °F to 130 °F



$$\text{Reset Ratio} = \frac{\text{Design supply temperature} - 70\text{ °F}}{70\text{ °F} - \text{Design outdoor temperature}}$$

- Example:**
- Design outdoor temperature = 5 °F
 - Design supply temperature = 160 °F

$$\text{Reset Ratio} = \frac{160\text{ °F} - 70\text{ °F}}{70\text{ °F} - 5\text{ °F}} = \frac{90\text{ °F}}{65\text{ °F}} = 1.4$$



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