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

<table>
<thead>
<tr>
<th>Adjustments</th>
<th>Technical specifications</th>
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<td>Reset Ratio</td>
<td>Max Temp</td>
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<tr>
<td>0.5 to 1.5</td>
<td>150˚ to 210˚</td>
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Replacement parts

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<th>Part description</th>
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<tr>
<td>Ribbon cable</td>
<td>591-850-079</td>
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<tr>
<td>2-Wire water temperature sensor</td>
<td>511-724-279</td>
</tr>
<tr>
<td>2-Wire outdoor sensor with housing</td>
<td>511-724-280</td>
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![Diagram of WM-ODR Outdoor Reset Control](image-url)
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

**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.

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.

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.

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.

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

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

![Diagram showing heating curve and reset ratio formula](image)

**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

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