



## Specification

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### **DMC50BS Zone PHE** **THE BRAIN® DIGITAL RECIRCULATION VALVE**

**Category: The Brain®**  
**Type: Digital Recirculation Valve with SAGE®**  
**Model: DMC50BS ZONE PHE**

#### **1.0 Digital Mixing Center Flex (DMC FLEX)**

- 1.1 Digital Recirculation Valve (DRV50) shall be supplied pre-piped and pressure tested as a lead-free Digital Mixing Center (DMC) complete with hot water inlet, cold water inlet connections, and independent continuous recirculation reheat generated by a plate heat exchanger.
- 1.2 DMC50BS shall comprise of (1) DRV50 pre-wired to a Building Automation System (BAS) and web enabled electrical panel, isolation valves, strainers, check valves, thermometers and pressure gauges assembled on Type L copper with hot water bypass securely mounted on a carbon steel frame with industrial grade enamel paint.
- 1.3 Plate heat exchanger shall be brazed double wall 316L stainless steel

#### **2.0 Digital Recirculation Valve (DRV50)**

- 2.1 DRV shall have four thermistors integral of the mixing valve body that measure the cold water inlet, hot water inlet, mixed water outlet, and over-temp safety temperatures.
- 2.2 DRV mixing valve body shall be of 316L stainless steel, mixing valve proportioner of 316L stainless steel, and a NEMA 3S electronics enclosure.
- 2.3 DRV50 shall have 2" inlets and outlet connections that will deliver 94 gpm @ 5 psid.
- 2.4 DMC50BS shall be capable of +/- 2°F control during high, low or extended periods of zero system demand with a continuous recirculation of >10 gpm. Temperature control shall be achieved without aquastat-like control of the recirculation pump.
- 2.5 DRV setpoint shall be configured by the factory to customer specification. DRV shall also be field adjustable.

#### **3.0 DMC50BS shall have the following operational specifications:**

- 3.1 +/- 2°F water temperature control

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- 3.2 1°F minimum return differential
- 3.3 Minimum continuous recirculation of 10 gpm per DRV
- 3.4 Automatic shutoff of hot water flow upon cold water inlet supply failure
- 3.5 Automatic shutoff of hot water flow in the event of a power failure
- 3.6 Programmable set point range of 81-158°F (27-70°C)
- 3.7 Programmable thermal disinfection mode
- 3.8 Programmable 1st level hi/lo temp alert display
- 3.9 Programmable temperature error level for safety shutdown
- 3.10 Standard (custom options are available upon request) zone reheat system parameters based on typical system setpoint temperatures of either 126°F, 129°F or 134°F (52°C, 54°C or 56°C) with a zone recirculation temperature loss of 2°F, 5°F or 10°F (1°C, 2.8°C or 5.6°C) respectively

#### **4.0 DRV shall have the following connectivity specifications:**

- 4.1 DRV shall be supplied with SAGE® Building Automation System (BAS) Interface Module
- 4.2 SAGE® shall connect to BAS via Modbus, BACnet or LonWorks protocol
- 4.3 SAGE® shall receive and communicate the following inputs:
  - 4.3.1 All DRV Integral Thermistor Readings
  - 4.3.2 External Temperature Readings (up to 4)
  - 4.3.3 External Pressure Readings (up to 3)
  - 4.3.4 External Flow Rates (up to 2)
- 4.4 RS485 Serial Port for connection to a performance matched hot water monitoring system
  - 4.4.1 Over Temperature Error
  - 4.4.2 PCB Error
  - 4.4.3 Thermistor Error
  - 4.4.4 Motor Error / Emergency Mode
  - 4.4.5 Battery Error
- 4.5 SAGE® shall be configured for enabling subscription cloud based (separate fee) remote connectivity

#### **5.0 DRV shall be certified to ASSE 1017, UL listed, and conform to CSA B150.**

## **6.0 Warranty**

- 6.1 DRV shall have a 5-year all components warranty, with exception of batteries and O-rings.
- 6.2 Pre-piped DMC components shall have a 2-year warranty from date of installation, but not longer than 27 months from date of shipment.

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