



## Specification

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### DMC40-40BS The Brain® Digital Recirculation Valve with SAGE®

Category: The Brain®

Type: Digital Recirculation Valve with SAGE®

Model: DMC40-40BS

#### 1.0 Digital Mixing Center

- 1.1 Two (2) Digital Recirculation Valves (DRV) shall be supplied pre-piped and pressure tested as a lead-free Digital Mixing Center (DMC) complete with hot water inlet, cold water inlet, mixed water outlet, recirculation return inlet, and return to heater connections.
- 1.2 DMC40-40BS shall comprise of (2) DRV40s 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.

#### 2.0 Digital Recirculation Valve (DRV40)

- 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 Each DRV40 shall have 1.5" inlets and outlet connections that will deliver 48 gpm @ 5 psid.
- 2.4 DRV shall be capable of +/- 2°F control during high, low or extended periods of zero system demand with a continuous recirculation of >5 gpm per valve. 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 DRV40 shall have the following operational specifications:

- 3.1 +/- 2°F water temperature control
- 3.2 1°F minimum return differential
- 3.3 Minimum continuous recirculation of 5 gpm per valve
- 3.4 Automatic shutoff of hot water flow upon cold water inlet supply failure

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- 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
- 4.0 DRV with SAGE® (BS) 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 SAGE® shall receive and communicate the following self-diagnostic error messages
    - 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 B125.
- 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.