

THE BRAIN[®] MODEL DRV25RBS

DIGITAL RECIRCULATION VALVE with RECIRCULATION MANIFOLD and SAGE[®]

Engineered exclusively for continuously recirculated hot water systems, DRV25RBS improves system performance and safety by delivering a consistent preset temperature to the points of use.

Innovative digital technology resists “temperature creep” during periods of zero system demand which eliminates the requirement for manual throttling valves, supplementary RTD or a temperature actuated switch to control the pump.

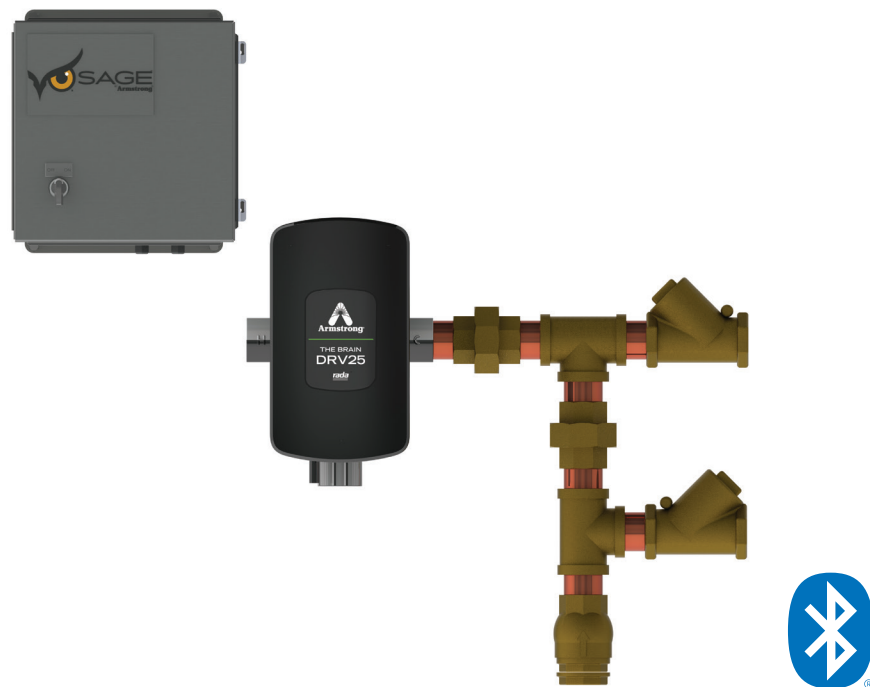
Energy efficient, low temperature loss systems can be implemented by the ability of DRV25RBS to operate with a system return differential of just 1° F below set point.

User safety and overall system health is maintained by a series of programmable temperature alerts, onboard operational self-diagnostics, and a thermal disinfection option.

DRV25RBS is equipped with a recirculation manifold assembly.

SAGE[®] (BS) is a performance software that monitors, records, and documents data as a critical component of a Water Safety Management Plan.

SAGE[®] works seamlessly with several building automation system protocols, or users can purchase a subscription to use SAGE[®] on a mobile device.



Placeholder until new renders complete

Pressure Drop in PSIG to Flow Rate in GPM Performance Chart

Model DRV25	Pressure Drop (PSIG)				Minimum System Draw-Off	Minimum Recirculation Flow Rate	Cv
	5	10	15	20			
GPM	22	31	39	45	0 GPM	2 GPM	9.8

Pressure Drop in BARG to Flow Rate in LPM Performance Chart

Model DRV25	Pressure Drop (BARG)				Minimum System Draw-Off	Minimum Recirculation Flow Rate	Kv
	0.3	0.7	1.0	1.4			
LPM	81	118	145	171	0 LPM	8 LPM	8.5

THE BRAIN[®] MODEL DRV25RBS

TECHNICAL SPECIFICATIONS

General		
Protection	NEMA 3S, IPX4	
Ambient Temperature	Minimum 35° F (2° C)	Maximum 122° (50° C)
Ambient Humidity	95% Non-Condensing	
Connections	1" NPT Female Connections	
Installation Environment	Suitable for indoor use only	
Materials	Valve: Stainless Steel; Electronics Casing: PC / ABS	
Safety	Seven fail-safe cold triggers supported by integral self-diagnostics and a programmable over-temp limit	
Pressures		
Inlet Supply Pressures	Maximum Pressure (DRV): 200 psi / 1379 kPa = 13.8 bar	Minimum Pressure: 20 psi / 138 kPa = 1.5 bar
	Maximum Pressure (Manifold): 150 psi / 1034 kPa = 10.3 bar	
Supply Pressure Differential	Nominally equal	
Temperatures		
Inlet Hot Water Temperatures	Maximum Inlet Hot Supply Temp: 185° F (85° C) <i>(131° F (55° C) maximum for on/off "dead leg" group fixture control)</i>	Minimum Inlet Hot Supply Temp: 2° F (1° C) above set point
Minimum Inlet Cold Water Supply	35.6° F (2° C)	
Minimum Recirculation Temp. Loss	1° F (≤ 1° C)	
Min. Continuous Recirculation Flow	2 GPM	
Recirculation Circuit		
Minimum Distance to First Outlet	25 ft (7.6 m)	
Electrical		
Power Supply	120 - 240V AC - 50/60 Hz	
Supply Fuse / Circuit Breaker	Grounding required (Switched Type 3 Amp (no plug); 15 Amp Grounding-type receptacle (plug)	
Battery	Qty (4) Duracell High-Power Lithium CR2 (3v)	
Configurable Settings		
Set Point Range	81° F to 158° F	
High Temperature Alert	Minimum of 2° F (1° C) above set point	
High Temperature Error	5° F (2° C) above set point	
Thermal Disinfection Temperature	Programmable range of 158° F to 185° F (70° C to 85° C)	
Thermal Disinfection Set-Up	Disinfection Duration: ≤ 100 minutes Disinfection Cool Down Duration: ≤ 30 hours	
Units of Measure	Degrees Fahrenheit (° F) or Degrees Celsius (° C)	
Connectivity		
Bluetooth [®]	On board with SAGE [®] mobile application (Apple App Store and Google Play)	
BACnet MSTP	On board for connection to building automation system (BAS) operating on BACnet MSTP protocol	
MODBUS RTU	RS485 port for connection to building automation system (BAS) operating on MODBUS RTU protocol	
SAGE [®] Module	RS485 port for connection to SAGE [®] Module with MODBUS TCP, BACnet TCP/IP, BACnet MSTP or LonWorks protocontroller <i>Note: Protocontrollers for other BAS protocols available upon request</i>	
SAGE [®] Subscription	Real-time monitoring, recording, and documentation dashboard for Armstrong Hot Water Systems	
Standards and Approvals		
ASSE 1017	Certified & Listed	
CSA B125.3-11	Compliant	
UL	Listed	
CE	Listed	



THE BRAIN[®] MODEL DRV25RBS

WRITTEN SPECIFICATIONS

Category: The Brain[®]

Type: Digital Recirculation Valve

Valve Model: DRV25RBS

1.0 Digital Recirculation Valve

- 1.1 DRV shall have four thermistors integral of the mixing valve body that measure the cold water and recirculation return inlet, hot water inlet, mixed water outlet, and over-temp safety measures.
- 1.2 DRV mixing valve body shall be of 316L stainless steel, mixing valve proportioner of 316L stainless steel, and a NEMA 3S electronics enclosure.
- 1.3 DRV25 shall have 1" inlet and outlet connections that will deliver 31 gpm @ 10 psid.
- 1.4 DRV shall be capable of + / - 2° F control during high, low, or extended periods of zero demand on the system, with a continuous recirculation of >2 gpm. Temperature control shall be achieved without aquastat-like control of the recirculation pump.
- 1.5 DRV setpoint shall be configured by the factory to customer specification. DRV shall be field adjustable.
- 1.6 DRV shall be supplied pre-piped with a recirculation manifold.

2.0 DRV25 shall have the following operational specifications

- 2.1 + / - 2° F (1° C) water temperature control
- 2.2 1° F minimum mixed water outlet to recirculated return inlet differential (system temperature loss)
- 2.3 Minimum continuous recirculation of 2 gpm
- 2.4 Automatic shutoff of hot water upon cold water inlet supply failure
- 2.5 Automatic shutoff of hot water flow in the event of a power failure
- 2.6 Programmable setpoint range of 81–158° F (27–70° C).
- 2.7 Programmable thermal disinfection mode
- 2.8 Programmable 1st level hi/lo temperature alert display
- 2.9 Programmable temperature error level for safety shutdown

3.0 DRV with SAGE[®] (BS) shall have the following connectivity specifications

- 3.1 Bluetooth[®] on-board with SAGE[®] mobile application (Apple App Store and Google Play)
- 3.2 BACnet MSTP on-board for connection to building automation system (BAS) operating on BACnet MSTP protocol
- 3.3 MODBUS RTU RS485 port for connection to building automation system (BAS) operating on MODBUS RTU protocol
- 3.4 RS485 port for connection to SAGE[®] module with MODBUS TCP, BACnet TCP/IP, BACnet MSTP, or LonWorks processor
Note: Processors for other BAS protocols are available upon request
- 3.5 SAGE[®] Building Systems (BS) Module
- 3.6 SAGE[®] subscription real-time monitoring, recording, and documentation dashboard for Armstrong Hot Water systems

4.0 DRV shall be certified to ASSE 1017, UL listed, and conform to CSA B125.

5.0 Warranty

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



THE BRAIN[®] MODEL DRV25RBS

CONNECTIVITY



The Brain[®] and SAGE[®]

SAGE[®] works seamlessly with The Brain[®] as it analyzes data to track behavior and performance as an integral component of a hot water system operation protocol which complies with a standard of care.

The Brain[®] and every derivative assembly is supplied with an integral RS485 serial port. This port provides a direct connection to Building Automation Systems that operate on a **Modbus RTU** or **BACnet MSTP** protocol.

The RS485 port is also deployed for direct connection to an optionally supplied Building System (BS) Module.

SAGE[®] Options

SAGE[®] for Building Automation Systems (BAS) – BS Module available with BAS specific ProtoCessor cards for connection to systems which operate on **Modbus TCP**, **BACnet™ TCP/IP**, **BACnet™ MSTP**, or **LonWorks™** protocols.

SAGE[®] for Mobile Connectivity - Featuring smart hot water system dashboard monitoring, secure remote programming, multi-location view, temperature and system diagnostic alerts, with unlimited digital documentation and automated report generation.

Mobile connectivity may be enabled by a customer activated no-term subscription.



Optional Building System (BS) Module

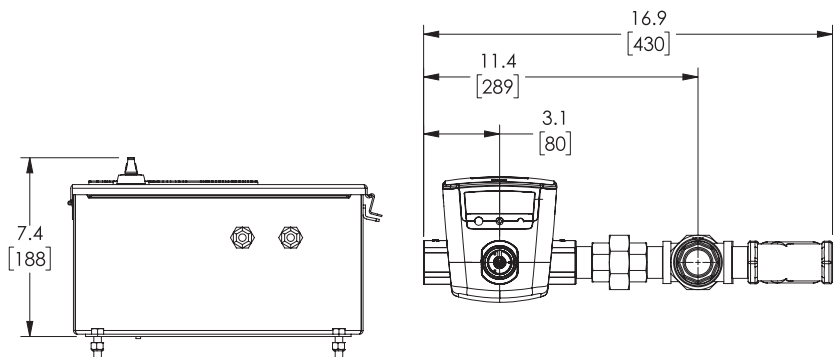
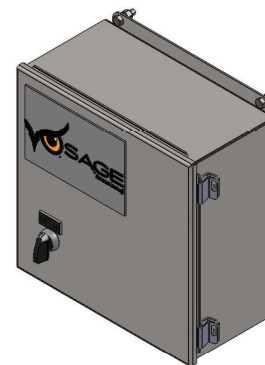
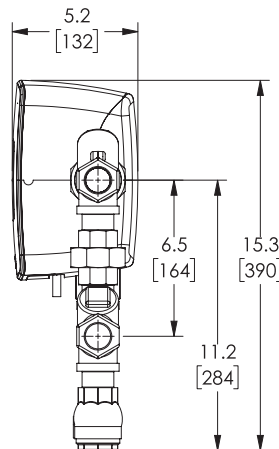
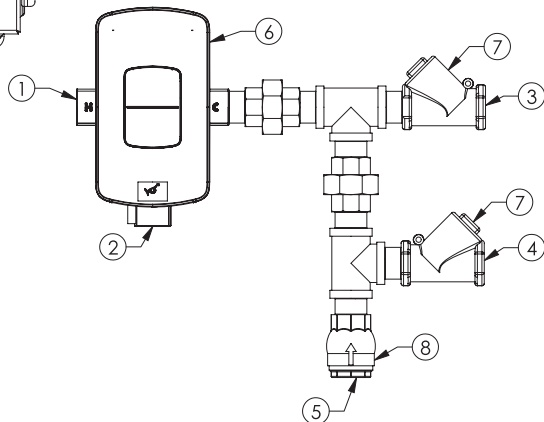
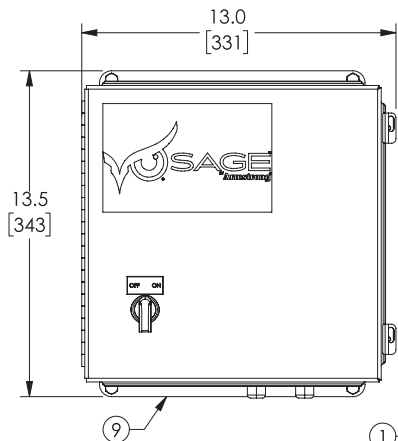
Adding a suffix “BS” to The Brain[®] DRV (example DRV25BS) will automatically add SAGE[®], the supplemental hardware and software required to maximize the connectivity features of Armstrong digital technology.



APPROVAL

BY: _____ DATE: _____

- APPROVED, PROCEED WITH FABRICATION
- APPROVED AS NOTED, PROCEED WITH FABRICATION IN ACCORDANCE WITH COMMENTS
- DISAPPROVED, DO NOT FABRICATE



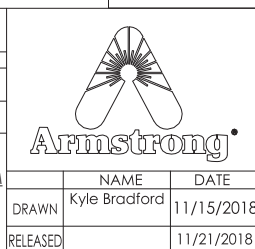
PROJECT NAME :

TAG :

ITEM NO.	DESCRIPTION	QTY	CONNECTION
1	HOT WATER INLET	1	1" NPT
2	MIXED WATER OUTLET	1	1" NPT
3	COLD WATER INLET	1	1" NPT
4	RETURN TO HEATER	1	1" NPT
5	RECIRC RETURN INLET	1	1" NPT
6	DRV25	1	1" NPT
7	SWING CHECK VALVE	2	1" NPT
8	SPRING CHECK VALVE	1	1" NPT
9	ELECTRICAL PANEL/SAGE	1	110 VAC @ 1.2A

- NOTE(S):
1. ARMSTRONG PART NUMBER: D112526
 2. ALL VALVES AND FITTINGS IN THIS ASSEMBLY CONTAIN LESS THAN 0.25% LEAD BY WEIGHTED AVERAGE.

DO NOT SCALE DRAWING TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONING ENGLISH (mm)	
FRACTIONAL	± 1/64
ANGULAR:	± 2
DECIMAL	.xxxx ± .0005 .xxx ± .005 .xx ± .015 .x ± .3
	IN. MM



ARMSTRONG INTERNATIONAL Copyright © 2010 ARMSTRONG INTERNATIONAL, INC.	
DRV25RBS	
NAME	DATE
DRAWN Kyle Bradford	11/15/2018
MATERIAL	
RELEASED	11/21/2018
CN65424	REV A DWG. SALES