

Water Temperature Control Solutions

- Thermostatic
- Digital





Water Temperature Control - Recirculation Systems

Digital



- +/- 2°F Water Temperature Control
- 2°F Minimum Inlet to Outlet Temperature Differential Requirement
- Self Diagnostic Display Messaging
- Integral Building Management System (BMS) Modbus Interface
- Serial Connection Point for BMS Interface (BACnet, LonWorks, Web)
- Programmable Thermal Disinfection
- Programmable Two Level Over Temperature Alert

Water Temperature Control - Recirculation Systems

Digital

Water Temperature Control - Digital features Digital Recirculating Valves (DRV) and Digital Mixing Centers (DMC) specifically designed for use in a continuously pumped recirculating hot water system.

Options

The Brain® - Digital Re-Circulating Valve

Model DRV40 is a Digital Re-Circulating Valve (DRV) designed for systems which experience diverse draw-off between 0 - 41 GPM* and is provided with 1.5" NPT connections.

Model DRV50 is a Digital Re-Circulating Valve (DRV) designed for systems which experience diverse draw-off between 0 - 73 GPM*. DRV50 is a model DRV80 provided with bushed down 2" NPT connections.

Model DRV80 is a Digital Re-Circulating Valve (DRV) designed for systems which experience diverse draw-off between 0 - 165 GPM* and is provided with 3" NPT connections.

The Brain® - Digital Re-Circulating Valve with pre-piped re-circulation manifold

Model DRV40R – As above with integral recirculation system return manifold assembly with 1.5" NPT connections.

Model DRV50R – As above with integral recirculation system return manifold assembly with 2" NPT connections.

Model DRV80R – As above with integral recirculation system return manifold assembly with 3" NPT connections.

The Brain® - Digital Mixing Centers (DMC)

Model DMC40 is a pre-piped Digital Mixing Center supplied with all requisite installation components. DMC40 is designed for systems which experience diverse draw-off between 0 - 41 GPM* and is provided with 1.5" union connections.

Model DMC40-40 is a pre-piped Digital Mixing Center supplied with all requisite installation components. DMC40-40 includes two DRV40 and is designed for systems which experience diverse draw-off between 0 - 115 GPM* or require DRV redundancy. DRV40-40 is provided with 2.5" union connections.

Model DMC50 is a pre-piped Digital Mixing Center supplied with all requisite installation components. DMC50 is designed for systems which experience diverse draw-off between 0 - 73 GPM* and is provided with 2" flanged connections.

Model DMC80 is a pre-piped Digital Mixing Center supplied with all requisite installation components. DMC80 is designed for systems which experience diverse draw-off between 0 - 165 GPM* and is provided with 3" flanged connections.

Model DMC80-80 is a pre-piped Digital Mixing Center including two DRV80 supplied with all requisite installation components. DMC80-80 is designed for systems which experience diverse draw-off between 0 - 294 GPM* and is provided with 4" flanged connections.

Model DMC80-80-80 is a pre-piped Digital Mixing Center including three DRV80 supplied with all requisite installation components. DMC80-80-80 is designed for systems which experience diverse draw-off between 0 - 459 GPM* or require DRV redundancy and is provided with 5" flanged connections.

Connectivity

The Brain® – Digital Re-Circulating Valve (DRV) and all derivative assemblies are provided as standard with the following communication capabilities:

SPCO Relay Outputs – Relay which is energized during operation and switches from a normally open position upon the presentation of an error code. Can also be configured to activate upon a temperature alert condition. Relay may be used to connect to a remote alarm or solenoid valve.

LCD Display – Provides information on set point, delivered temperature with an option for C or F and displays all error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan® or Modbus.

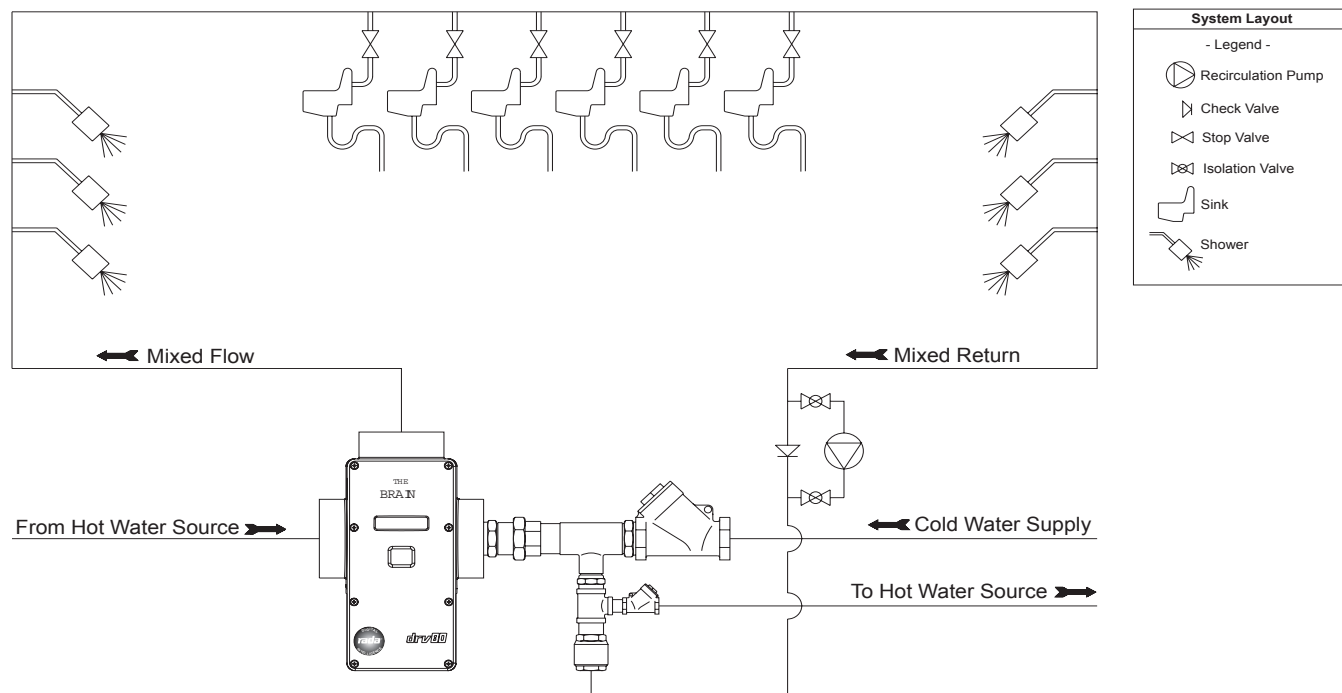
BrainScan® an optionally selected control module which enables an interface with Building Automation Systems (BAS) which utilize Modbus, Bacnet™ or LonWorks™ protocols. BrainScan also has an ethernet port and operates as a web server for remote network access.

Modbus – DRV can be configured to communicate directly with Building Automation Systems which use Modbus protocols. When configured for Modbus the DRV becomes a Remote Terminal Unit (RTU).

Further information on DRV connectivity specific to BrainScan and Modbus is available on page 42.

* Note: Flow capacities indicated at 7.5 ft/sec pipeline velocity.

Digital



Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DRV40/R	48	70	85	98	0	41	22
DMC40	48	70	85	98	0	41	22
DMC40-40	96	140	170	196	0	115	44
DRV50/R	94	133	163	188	0	73	42
DMC50	94	133	163	188	0	73	42
DRV80/R	94	133	163	188	0	165	42
DMC80	94	133	163	188	0	165	42
DMC80-80	188	266	326	376	0	294	84
DMC80-80-80	282	399	489	564	0	459	126

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

Water Temperature Control - Recirculation Systems



Digital

The Brain® Model DRV40

DRV40 Digital Recirculation Valve (DRV) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications

- +/-2°F water temperature control at points of use 25' downstream during demand
- +/-2°F water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of 81-158°F (27-70°C)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications (DRV80)

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Lead Free compliant
- Maximum inlet HW supply temperature 185F (85C)
- Minimum Circulation Flow - 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10 -150 psig
- Display in °C or °F
- Shipping weight 10 lbs (4.5 kg)

Connectivity

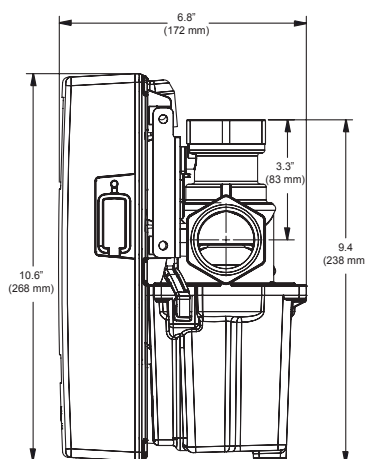
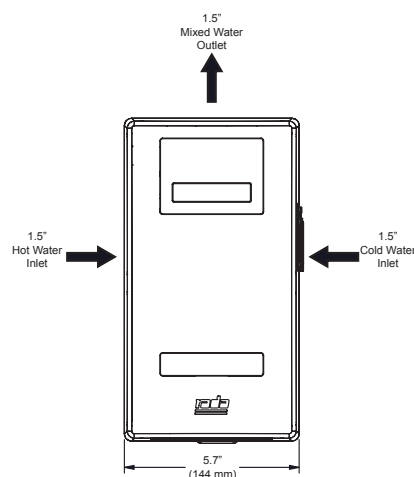
SPCO Relay Outputs – Relay which is energized during operation.

LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.



For a submittal drawing, refer to D41578.

Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DRV40	48	70	85	98	0	41	22

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.



Water Temperature Control - Recirculation Systems

Digital

The Brain® Model DRV40R

DRV40R Digital Recirculation Valve (DRV) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system. DRV40R is supplied with a recirculation return manifold as shown.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications

- +/-2°F water temperature control at points of use 25' downstream during demand
- +/- 2°F water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of 81-158°F (27-70°C)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Complete Assembly Lead Free Compliant
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow - 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10 -150 psig
- Display in °C or °F
- Shipping weight 32 lbs (14.5 kg)

Connectivity

SPCO Relay Outputs – Relay which is energized during operation.

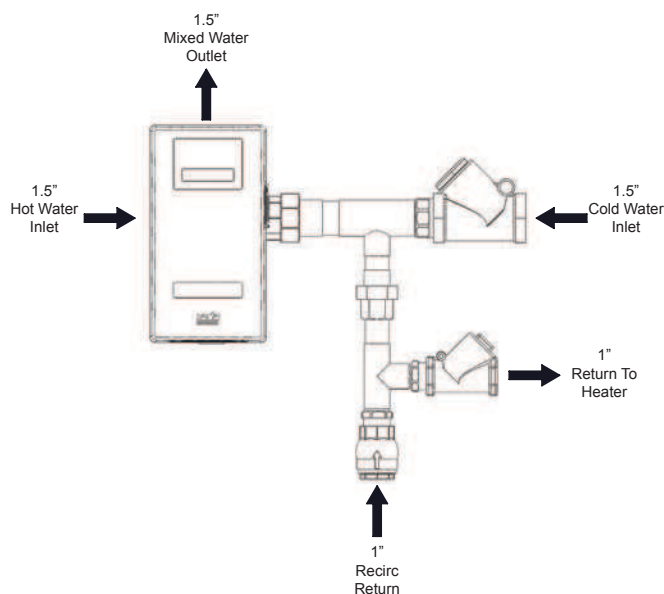
LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.

For a submittal drawing, refer to D40809.



Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DRV40R	48	70	85	98	0	41	22

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

Water Temperature Control - Recirculation Systems



Digital

The Brain® Model DMC40

DMC40 is a fully Digital Mixing Center (DMC) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications (DRV40)

- $\pm 2^{\circ}\text{F}$ water temperature control at points of use 25' downstream during demand
- $\pm 2^{\circ}\text{F}$ water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of $81\text{--}158^{\circ}\text{F}$ ($27\text{--}70^{\circ}\text{C}$)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications (DRV40)

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Complete Assembly Lead Free Compliant
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow – 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10-150 psig
- Display in $^{\circ}\text{C}$ or $^{\circ}\text{F}$
- Shipping weight 315 lbs (143 kg)

Connectivity (DRV40)

SPCO Relay Outputs – Relay which is energized during operation.

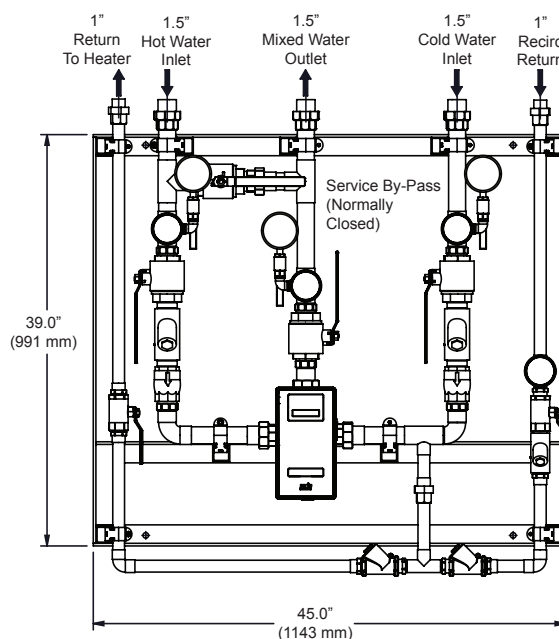
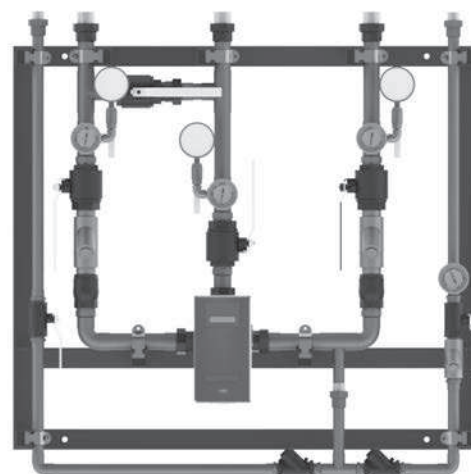
LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.

For a submittal drawing, refer to D40805.



Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DMC40	48	70	85	98	0	41	22

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.



Water Temperature Control - Recirculation Systems

Digital

The Brain® Model DMC40-40

DMC40-40 is a fully Digital Mixing Center (DMC) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications (DRV40)

- +/-2°F water temperature control at points of use 25' downstream during demand
- +/-2°F water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of 81-158°F (27-70°C)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications (DRV40)

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Complete Assembly Lead Free Compliant
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow – 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10-150 psig
- Display in °C or °F
- Shipping weight 510 lbs (231 kg)

Connectivity (DRV40)

SPCO Relay Outputs – Relay which is energized during operation.

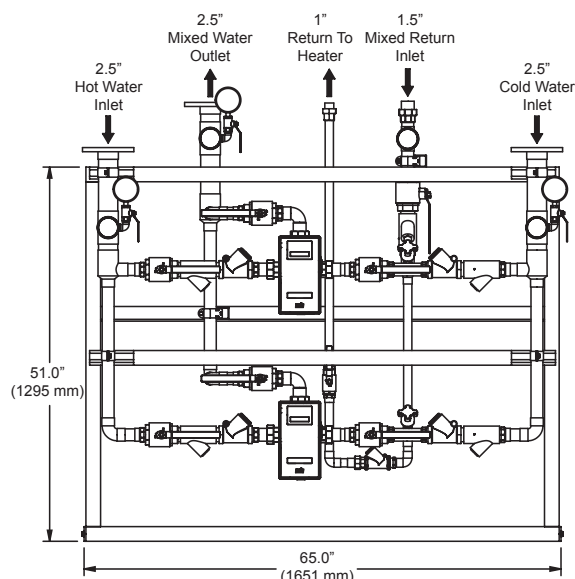
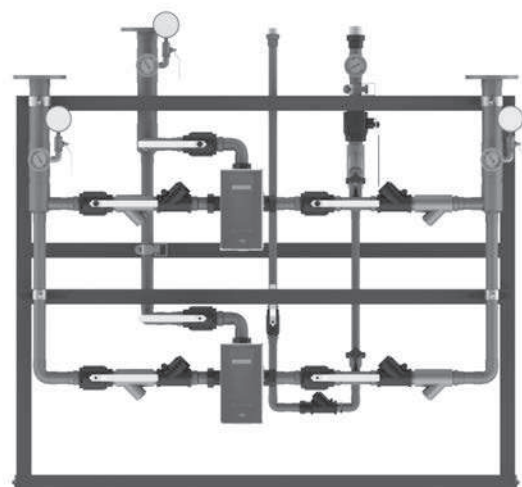
LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.

For a submittal drawing, refer to D40807.



Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DMC40-40	96	140	170	196	0	115	44

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

Water Temperature Control - Recirculation Systems



Digital

The Brain® Model DRV80

DRV80 Digital Recirculation Valve (DRV) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications

- +/-2°F water temperature control at points of use 25' downstream during demand
- +/-2°F water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss).
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of 81-158°F (27-70°C)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction – Lead Free compliant
- DRV80 3" NPT
- DRV50 2" NPT*
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow – 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10-150 psig
- Display in °C or °F
- Shipping weight 23 lbs (10.5 kg)

Connectivity

SPCO Relay Outputs – Relay which is energized during operation.

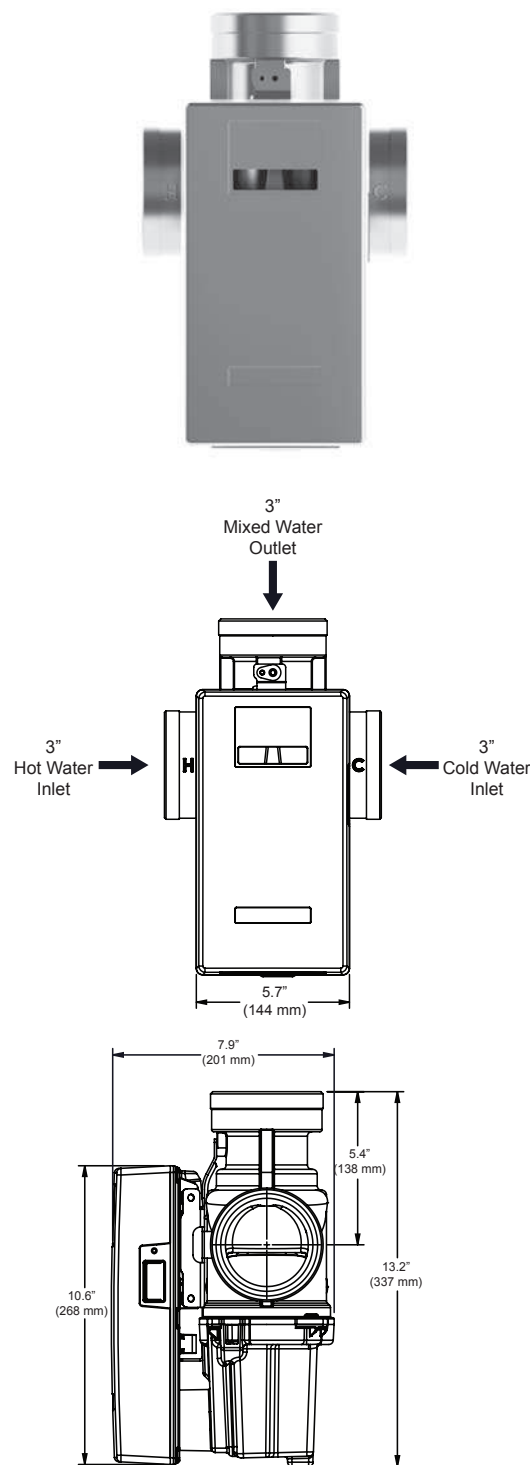
LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.

*DRV50 is a DRV80 supplied with 3" x 2" Bushings at the inlets and outlet.



For a submittal drawing, refer to D41579.

Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DRV80	94	133	163	188	0	165	42

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.



Water Temperature Control - Recirculation Systems

Digital

The Brain® Model DRV80R

DRV80R Digital Recirculation Valve (DRV) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system. DRV80R is supplied with a recirculation return manifold as shown.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications

- +/-2°F water temperature control at points of use 25' downstream during demand
- +/-2°F water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss).
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of 81-158°F (27-70°C)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Complete Assembly Lead Free Compliant
- DRV80R 3" NPT Inlet/Outlet
- DRV50R 2" NPT* Inlet/Outlet
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow – 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10-150 psig
- Display in °C or °F
- Shipping weight 70 lbs (32 kg)

Connectivity

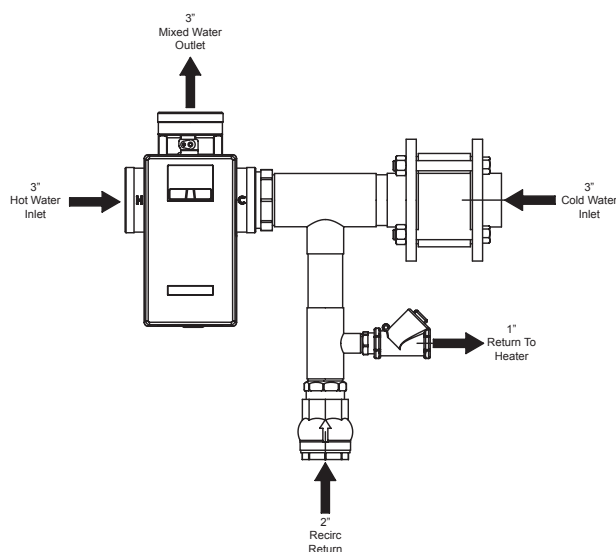
SPCO Relay Outputs – Relay which is energized during operation.

LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.



*DRV50R is a DRV80 supplied with 3" x 2" Bushings at the hot inlet, 2" recirculation manifold and outlet.

For a submittal drawing, refer to D40821.

Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DRV80R	94	133	163	188	0	165	42

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

Water Temperature Control - Recirculation Systems



Digital

The Brain® Model DMC80

DMC80 is a fully Digital Mixing Center (DMC) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications (DRV80)

- $\pm 2^{\circ}\text{F}$ water temperature control at points of use 25' downstream during demand
- $\pm 2^{\circ}\text{F}$ water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of $81\text{--}158^{\circ}\text{F}$ ($27\text{--}70^{\circ}\text{C}$)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications (DRV80)

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Complete Assembly Lead Free Compliant
- DMC80 3" NPT Inlet/Outlet
- DMC50 2" NPT Inlet/Outlet
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow – 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10-150 psig
- Display in $^{\circ}\text{C}$ or $^{\circ}\text{F}$
- Shipping weight 660 lbs (299 kg)

Connectivity (DRV80)

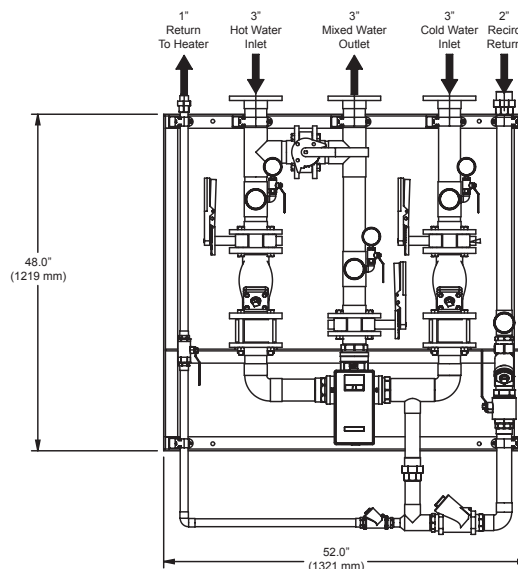
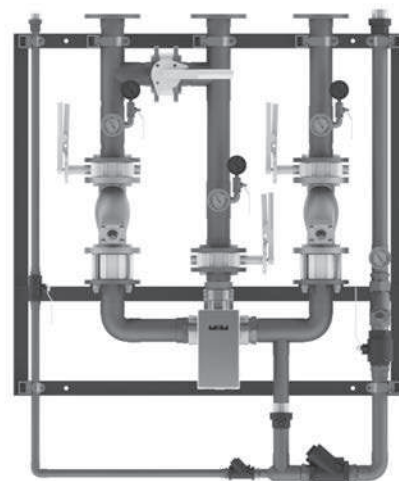
SPCO Relay Outputs – Relay which is energized during operation.

LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.



*DMC50 is a DMC80 supplied with a 2" pipe work, fittings with union inlet/outlet connections.

For a submittal drawing, refer to D40815.

Recirculation Systems - Digital (gpm)

Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DMC80	94	133	163	188	0	165	42

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.



Water Temperature Control - Recirculation Systems

Digital

The Brain® Model DMC80-80

DMC80-80 is a fully Digital Mixing Center (DMC) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications (DRV80)

- +/-2°F water temperature control at points of use 25' downstream during demand
- +/-2°F water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of 81-158°F (27-70°C)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications (DRV80)

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Complete Assembly Lead Free Compliant
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow – 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10-150 psig
- Display in °C or °F
- Shipping weight 1,195 lbs (542 kg)

Connectivity (DRV80)

SPCO Relay Outputs – Relay which is energized during operation.

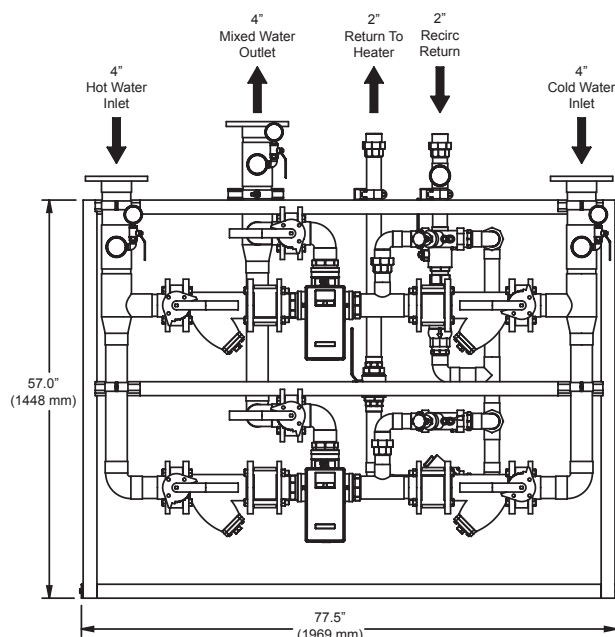
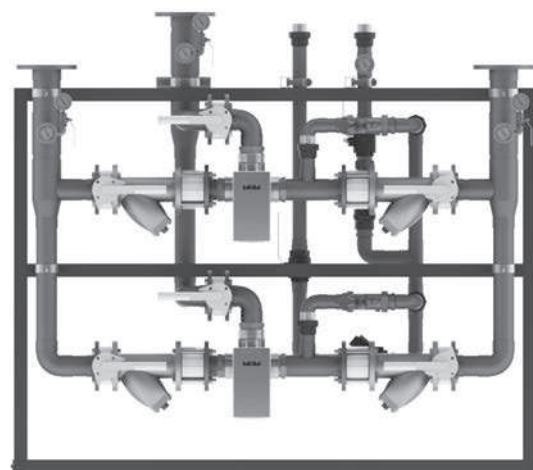
LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.

For a submittal drawing, refer to D40817.



Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DMC80-80	188	266	326	376	0	294	84

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

Water Temperature Control - Recirculation Systems



Digital

The Brain® Model DMC80-80-80

DMC80-80-80 is a fully Digital Mixing Center (DMC) designed specifically to be the primary water temperature controller in a continuously pumped circulating hot water system.

Digital technology provides enhanced water temperature control accuracy which resists zero system demand "Temperature Creep" without the use of a manual throttling valve or a temperature activated pump shut-off device (aquastat).

Operational Specifications (DRV80)

- $\pm 2^{\circ}\text{F}$ water temperature control at points of use 25' downstream during demand
- $\pm 2^{\circ}\text{F}$ water temperature control at the DRV during zero system demand "idling" periods
- 2°F minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow upon cold water inlet supply failure
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of $81\text{--}158^{\circ}\text{F}$ ($27\text{--}70^{\circ}\text{C}$)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown

Technical Specifications (DRV80)

- 100-240 V AC
- Polymer Electronics Enclosure
- Stainless Steel Valve Construction
- Complete Assembly Lead Free Compliant
- Maximum inlet HW supply temperature 185°F (85°C)
- Minimum Circulation Flow – 5 GPM/19 LPM
- Minimum System Draw Off - 0
- ASSE 1017, CSA B125 and CE Certified
- Operational water pressure of 10-150 psig
- Display in $^{\circ}\text{C}$ or $^{\circ}\text{F}$
- Shipping weight 1,980 lbs (898 kg)

Connectivity (DRV80)

SPCO Relay Outputs – Relay which is energized during operation.

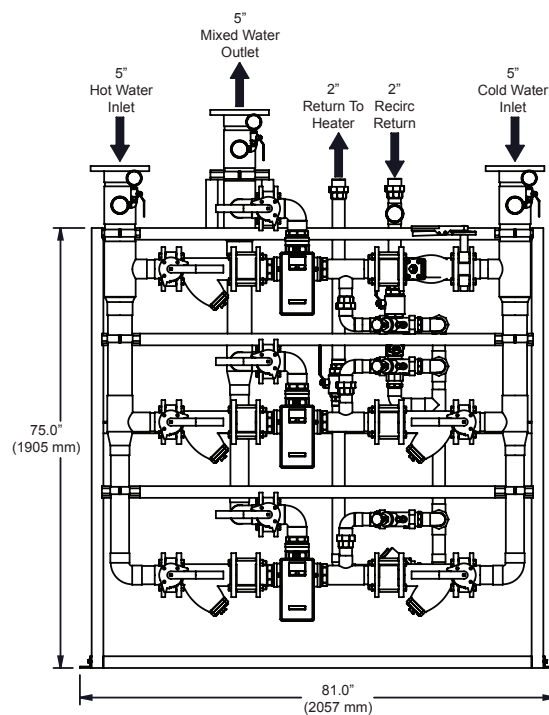
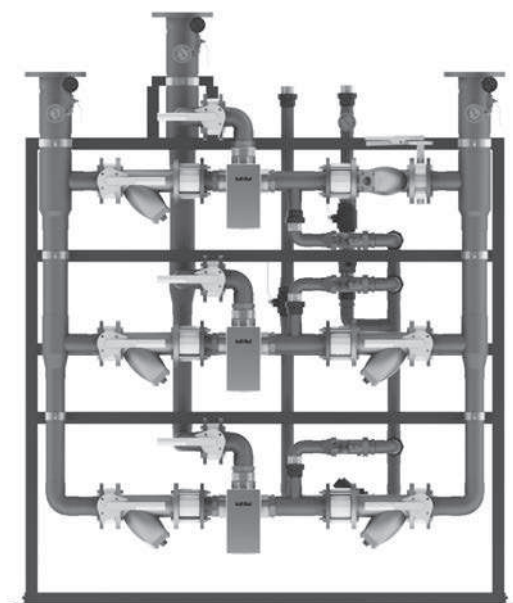
LCD Display – Provides information on set point, delivered temperature, error codes and alert conditions.

RS485 Serial Port – Connects the DRV to either BrainScan or Modbus.

BrainScan® – BAS interface for Modbus, Bacnet™ or LonWorks™ plus operates as a web server.

Modbus – DRV can be configured to communicate directly with Building Automation Systems (BAS) using Modbus protocols.

For a submittal drawing, refer to D40819.



Recirculation Systems - Digital (gpm)							
Model	Pressure Drop (psi)				Minimum System Draw-Off	Maximum Flow @7.5 ft/sec.	C _v
	5	10	15	20			
DMC80-80-80	282	399	489	564	0	459	126

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.



Water Temperature Control - Recirculation Systems

Connectivity

The integral RS 485 Serial Port on The Brain® Digital Recirculating Valve (DRV) can be used to connect the DRV to either BrainScan® or directly to a Building Automation System (BAS) which operates on a Modbus protocol.

BrainScan®

BrainScan® is an optionally selected control module from Armstrong which enables an interface with Building Automation Systems (BAS) which utilize Modbus, Bacnet™ or LonWorks™ protocols via the use of specific processor cards.

BrainScan® also has an ethernet port and operates as a web server for remote network access.

BrainScan® includes remote hot water supply, cold/ recirculation water supply, blended water outlet temperature outputs and is supplied with a system graphic, memory card for data storage and web based software.

BrainScan® includes terminals for additional installer supplied RTD's, pressure transducers and pulse type flow meters and this data can be forwarded via the BrainScan® interface.

Modbus

Modbus – DRV can be configured to communicate directly with BAS which use Modbus protocols.

When configured for Modbus the DRV becomes a Remote Terminal Unit (RTU).

The BAS will need to be using a Modbus RTU format.

When connected directly to a BAS using Modbus, the DRV will be assigned a unique network address which is programmed via the integral DB9 external port.

RS485 Port

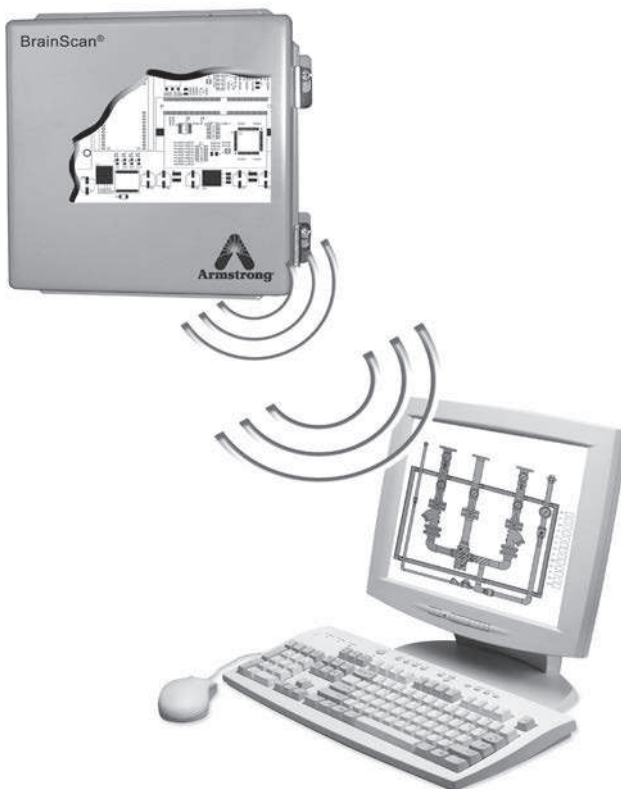
The integral RS485 Serial Port provides an ability to remotely program the DRV and update the firmware via BrainScan® or Modbus.

The integral RS485 Serial Port can receive the following outputs from the DRV and communicate them via BrainScan® or Modbus.

- Set Point
- Inlet/Outlet Temperature
- Over Temperature Alert

The integral RS485 Serial Port can receive the following self-diagnostic error messages from the DRV and communicate them via BrainScan® or Modbus

- Over Temperature Error
- PCB Error
- Thermister Error
- Motor Error/Emergency Mode
- Battery Error



All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

Notes

Armstrong provides intelligent system solutions that improve utility performance, lower energy consumption, and reduce environmental emissions while providing an “enjoyable experience.”



Armstrong Hot Water Group

221 Armstrong Blvd., Three Rivers, MI 49093 - USA Phone: 269-279-3602, Fax: 269-279-3130

armstronginternational.com

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