



Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.

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Date: 9/1/2025

Return Request: 9/15/2025

Project: Hot Springs National Park – Rehabilitate Bathhouses – Maurice Bathhouse

Supplier: Boone & Boone

Manufacturer: Viessmann

Submittal: Condensing Boilers (B-1M and B-2M)

Submittal Number: 235216.001

Spec Section: 235216

Drawing # and Installation Location: M4.0

ARCHITECT

Strata Architecture

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Kansas City, Missouri 64108

(816)474-0900

GENERAL CONTRACTOR

Tepa, LLC

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Kansas City, Missouri 64108

(816)708-1110

ENGINEER

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MECHANICAL SUBCONTRACTOR

Comfort Systems USA (Arkansas), Inc.

9924 Landers Road

North Little Rock, Arkansas 72117

(501)834-3320

Comments:

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CSUSA PROJECT NO.

25-7065

joe@comfortar.com

9924 Landers Road
No. LittleRock, AR 72117

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To: Tapa, LLC
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From: Comfort Systems USA (Arkansas), Inc.
9924 Landers Road
North Little Rock, Arkansas 72117
501-834-3320

Date: 12/4/2025

Re: Response to Submittal Comments (235216.001 – Condensing Boilers (B-1M and B-2M))

Tapa, LLC,
Comfort Systems USA received submittal comments for the Condensing Boilers (per spec section 23 52 16), and the following is our official response to each of these comments.

Approved As Noted

Boiler turndown was scheduled as 15:1. – Correct. The Viessmann Vitocrossal 200 CI2-750 will turn down to 75-MBH.

What is boiler efficiency at 110-degree return water temperature? – See attached Efficiency Graph. At 30% modulation, the efficiency appears to be slightly over 93% with 110F return water temperature. (page 2 of 3)

All boiler trim must meet ASME CSD-1 requirements. – Viessmann meets CSD-1 requirements.

Design flow is 45-GPM at 30-degree delta T. – Noted

Coordinate boiler controls with TCC for division of responsibility to match Control Diagrams. – Noted

Revise and Resubmit

Heat Exchanger Warranty shall also be 10 years. – The heat exchanger warranty is ten years.

What is the minimum GPM through boiler? – There is no minimum flow rate through Viessmann CI-2 boilers. Zero-GPM.

Where is Combustion Air Connection? – See Page 9 of the attached air intake adapter kit manual. (page 3 of 3)

Not Submitted

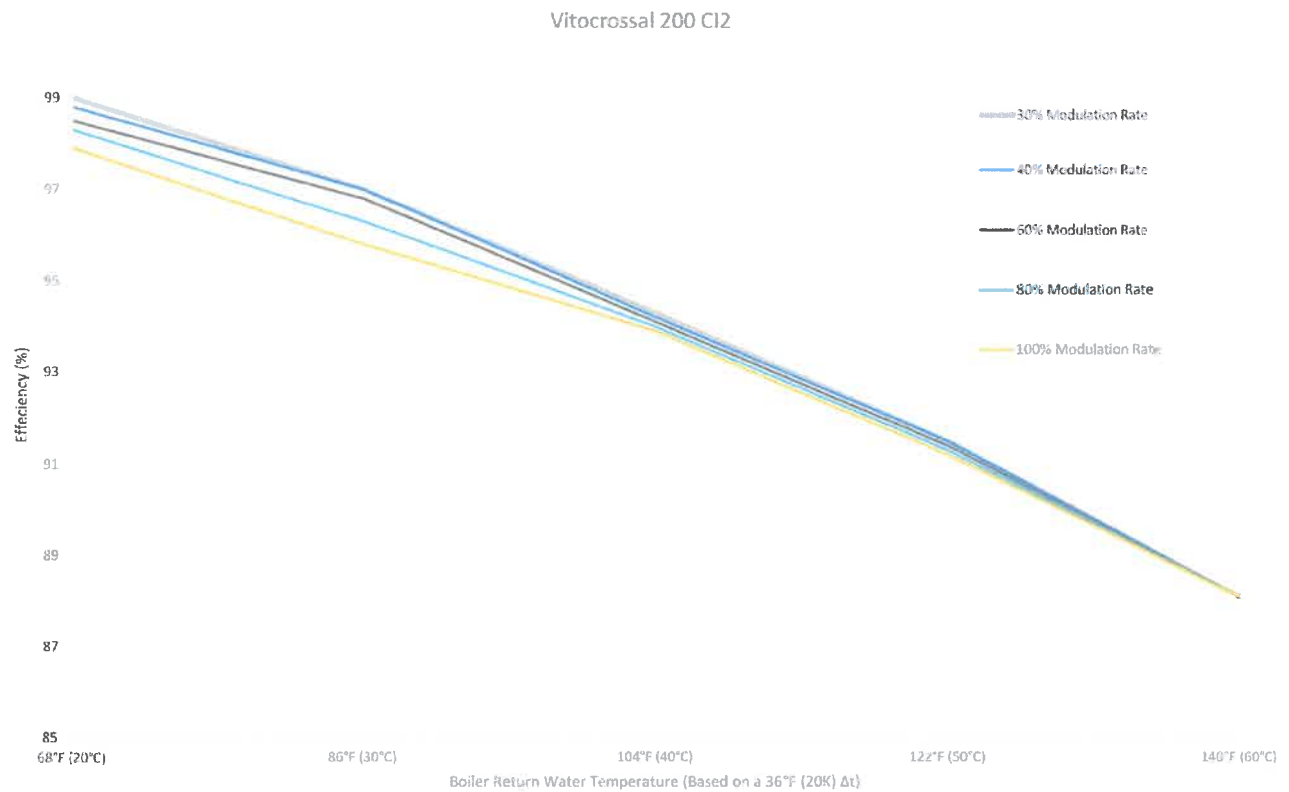
Boiler emergency shutdown switch. Ensure contact is provided at boiler. - This will be by Powers of Arkansas under the temperature controls portion of the project. Please see Submittal #230900.001 – Controls.

Submittals for the emergency shutdown switch can be found on pages 97 and 98 of 258. Per Viessmann, there is not a “dedicated” contact. The emergency shutdown will be attached directly to the boiler’s power supply.

Thanks, Joe Loomis
Joe Loomis, Project Manager
Comfort Systems USA (Arkansas), Inc.

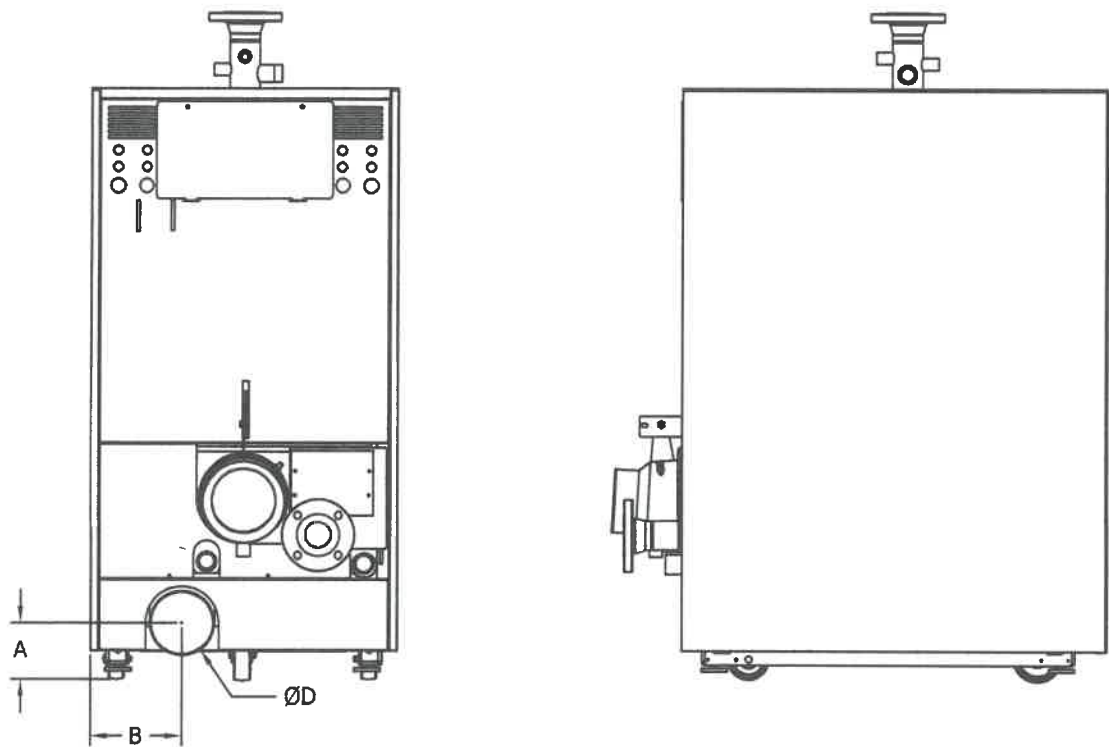
Vitocrossal 200 *(continued)*

Efficiency Graph



The Vitocrossal 200 C12 has no minimum return water temperature limits.

Combustion Air Connection Dimensions (CI2 399-1000)



Dimensions

Boiler Model		CI2 399/500	CI2 750/1000
A *	in. (mm)	5½ (140)	5½ (140)
B	in. (mm)	8 (205)	8 (205)
Ø D	in. (mm)	4 (104.2)	6 (155)

*Height from the bottom of the casters.

Project: Maurice Bathhouse Rehabilitate Bathhouses
Engineer: IMEG Corp
Contractor: Comfort Systems, USA
Representative: Boone & Boone

TAG: B-1M, B-2M



► **Boilers and Burners**

[Vitocrossal 200, CI2-750 Gas-fired Condensing Boiler \(Qty. of 2\)](#)

► **System Accessories**

[Low Water Cut-Off, Model 650A \(Qty. of 2\)](#)

[75 psig Pressure Relief Valve \(Qty. of 2\)](#)

[Neutralization Unit, Model NB-6 \(Qty. of 2\)](#)

[Seismic Bracket Kit \(Qty. of 2\)](#)

[Supply Temperature Sensor \(Qty. of 1\)](#)

[Wago BACnet/IP Gateway \(Qty. of 1\)](#)

Boiler Data



VITOCROSSAL 200

CI2 Series

Full product manuals:



[Technical Data Manual](#)



[Quick Start Guide](#)



[Installation Instructions](#)



[Operating Instructions](#)



[Service Instructions](#)



[Wiring Diagram](#)

1.0 Product Information

Vitocrossal 200 CI2 is a floor-standing, gas-fired condensing boiler with modulating pre-mix cylinder burner, stainless steel Inox-Crossal heat exchanger, and integrated boiler control unit with 7 inch full color graphic display.

Standard Equipment:

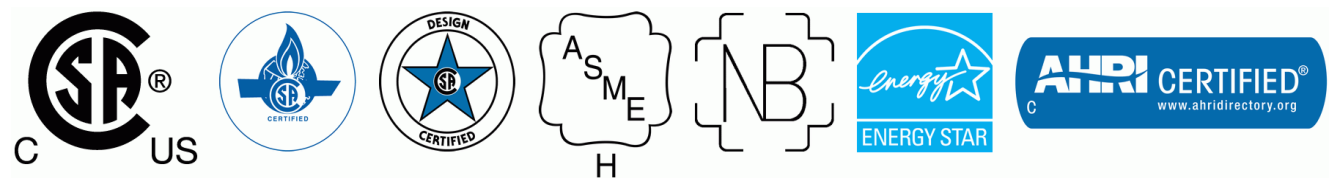
Boiler and installation fittings c/w 80 psig pressure relief valve, integrated boiler control with cascading capability, low water cut-off, gas shut-off valve, drain valve, temperature and pressure gauge.

Standard Warranty:

Limited 10 year warranty for pressure vessel, 5 year warranty for burner, and 2 year warranty for parts and accessories provided with the boiler. See [warranty sheet](#) for details.

Certifications and Listings:

CSA, CRN, ASME, MA State approval, AHRI, Energy Star



1.1 Technical Data for CI2-750

Input	750 MBH	220 kW
Minimum input – NG	75 MBH	22 kW
Minimum input – LPG	90 MBH	26.2 kW
Output (thermal efficiency)	734 MBH	215 kW
Net AHRI rating	638 MBH	187 kW
Combustion efficiency *1	96.9 %	
Thermal efficiency *1	97.8 %	
NG supply pressure		
– Maximum	14 " w.c.	
– Minimum	4 " w.c.	
LPG supply pressure		
– Maximum	14 " w.c.	
– Minimum	10 " w.c.	
Power supply		
Voltage	120 VAC	
Phase	1 Phase	
Frequency	60 Hz	
Current	20 Amp	
Overall boiler dimensions		
Length (A) including insulation & jacketing	47¼ inches	1200 mm
Width (B) including insulation & jacketing	29½ inches	750 mm
Height (C) including insulation & jacketing	64½ inches	1640 mm
Concrete boiler base		

Length	41	inches	1040	mm
Width	29½	inches	750	mm
Thickness	0	inches	0	mm
Weight complete with burners, control, thermal insulation and jacketing	963	lbs	437	kg
Boiler water content	50	USG	189	L
Heat exchanger surface	129.4	sq. ft.	12.0	sq. m
Fixed high temperature limit (manual reset)	210	°F	99	°C
DHW production	194	°F	90	°C
Max. adjustable operating temperature limit (auto reset)	185	°F	85	°C
Max. operating pressure	80	psig	5.5	bar
Min. pressure relief valve capacity	683	lb/hr	310	kg/hr
Boiler connections				
Boiler supply (BS) and return (BR) ANSI flanges	2½	inches	65	mm
Safety supply	1¼	inch		
Boiler drain	1½	inch		
Condensate drain (barbed fitting)	¾	inch		
Gas connection	1½	inch		
Boiler flue collar internal diameter	6	inches	155	mm
Combustion air internal diameter (with combustion air intake kit)	6	inches	155	mm
Flue gas values				
Temperature (at a return temperature of 86°F / 30°C)				
– At rated input	97	°F	36	°C
– At partial load	91	°F	33	°C
Temperature (at a return temperature of 140°F / 60°C)				
– At rated input	145	°F	63	°C
Mass flow rate of flue gas				
– At rated input	675	lbs/h	306	kg/h
– At partial load	202	lbs/h	92	kg/h
Pressure at boiler flue outlet at rated input	2.4	" w.c.	600	Pa
Max. condensate flow rate for NG and LPG	7	USG/h	27.5	L/h
Standby loss				
At boiler water temperature 122°F / 50°C (room temperature 68°F / 20°C)	2930	BTU/h	858	W
NOx emissions				
NOx @ 3% O2 (NG) *2	< 20	PPM		

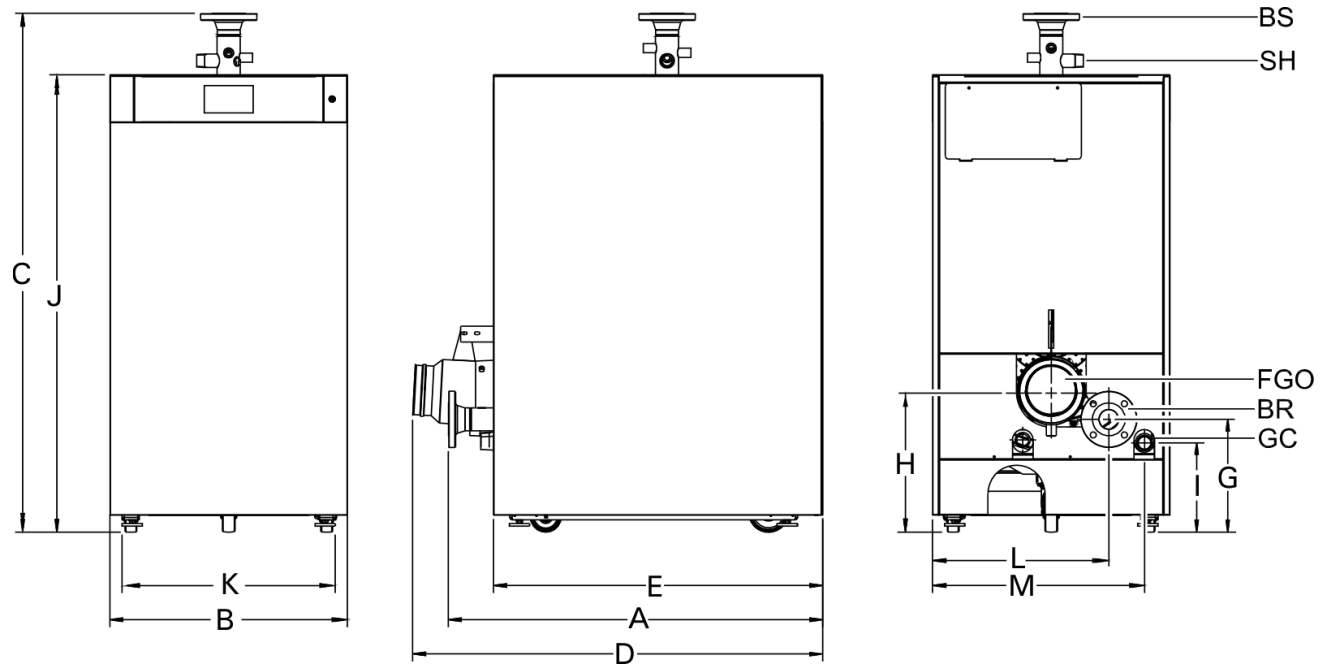
Notes:

*1 Tested to ANSI/AHRI standard 1500 Performance Rating of Commercial Space Heating Boilers / DOE Test Procedure 81 FR 89276 / U.S. Standards ANSI Z21.13/CSA 4.9.

*2 The Vitocrossal 200 CI2 boilers are certified to the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1146.2, Bay Area Air Quality Management District (BAAQMD) Regulation 9 Rule 6.

1.2 Dimensional Drawings

Boiler Front, Side and Rear Views



Dimensions

A	46½ in.	1183 mm
B	29½ in.	750 mm
C *	64½ in.	1640 mm
D	47¼ in.	1200 mm
E	41 in.	1040 mm
G	14 in.	358 mm
H	17¼ in.	444 mm
I	11 in.	283 mm
J	57 in.	1452 mm
K	26½ in.	674 mm
L	22 in.	557 mm
M	26½ in.	670 mm

Legend

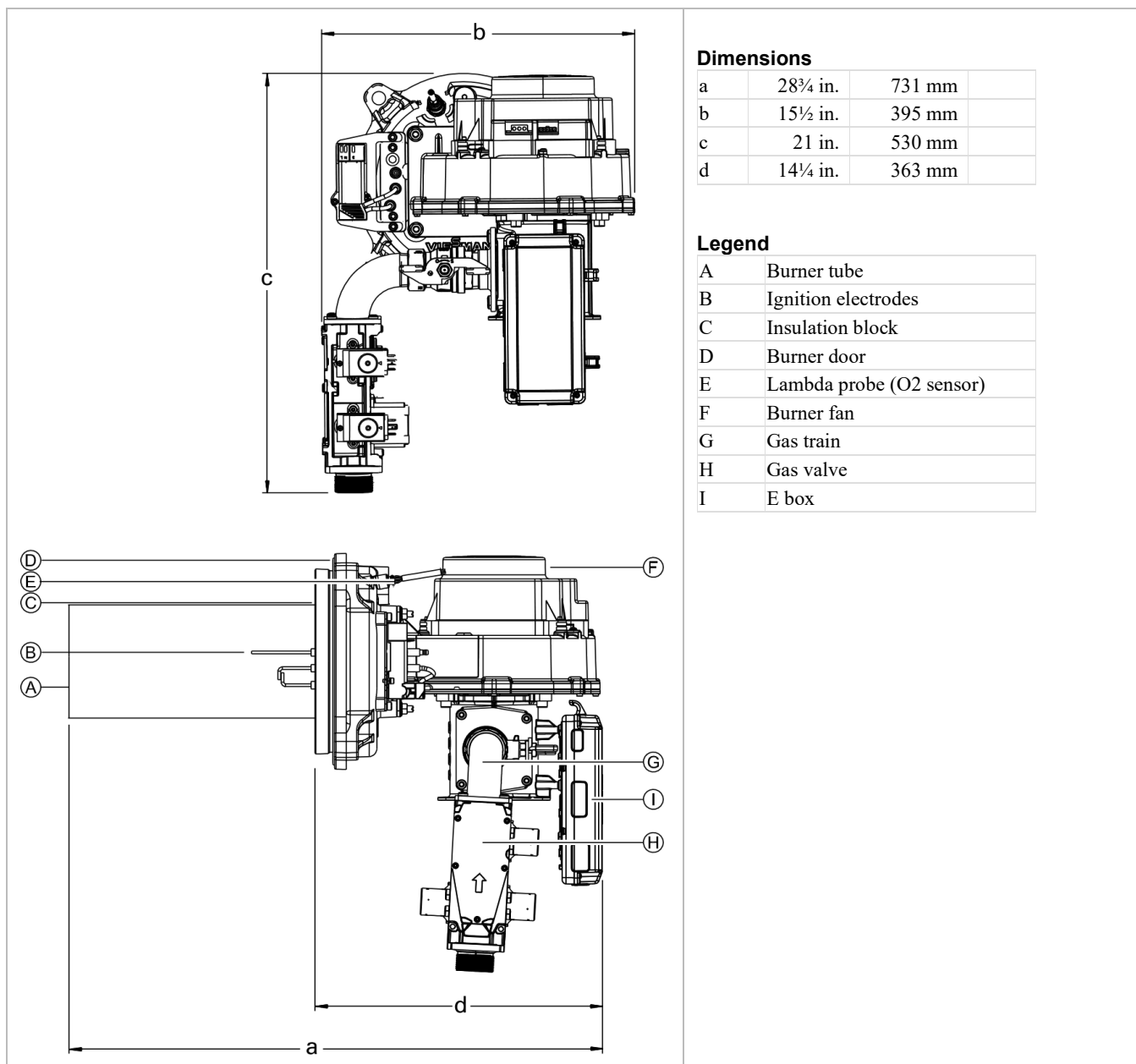
BR	Boiler Return
BS	Boiler Supply
FGO	Flue Gas Outlet (vent pipe connection)
GC	Gas Connection
SH	Safety Header

Notes

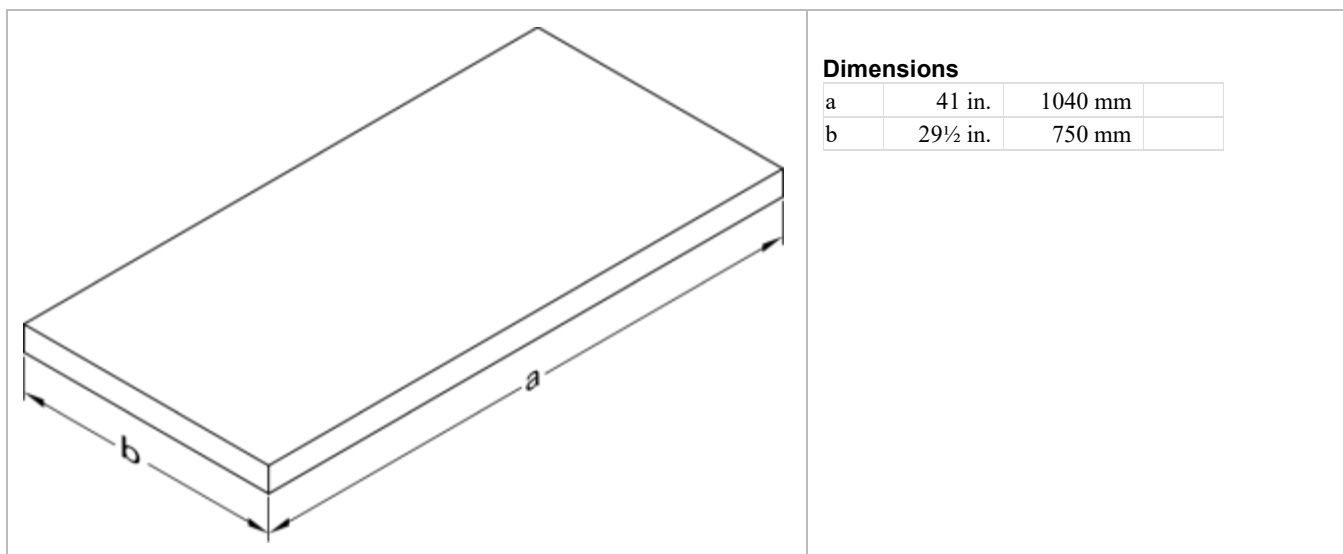
* Height from the bottom of the casters.

Dimensional tolerance of $\pm \frac{1}{4}$ in. (± 5 mm).

Burner Top and Side Views



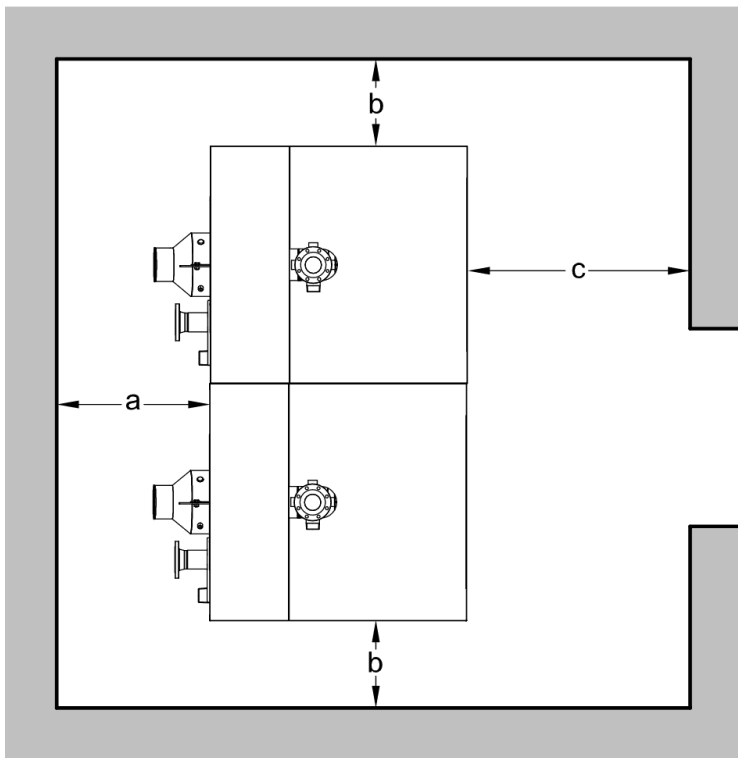
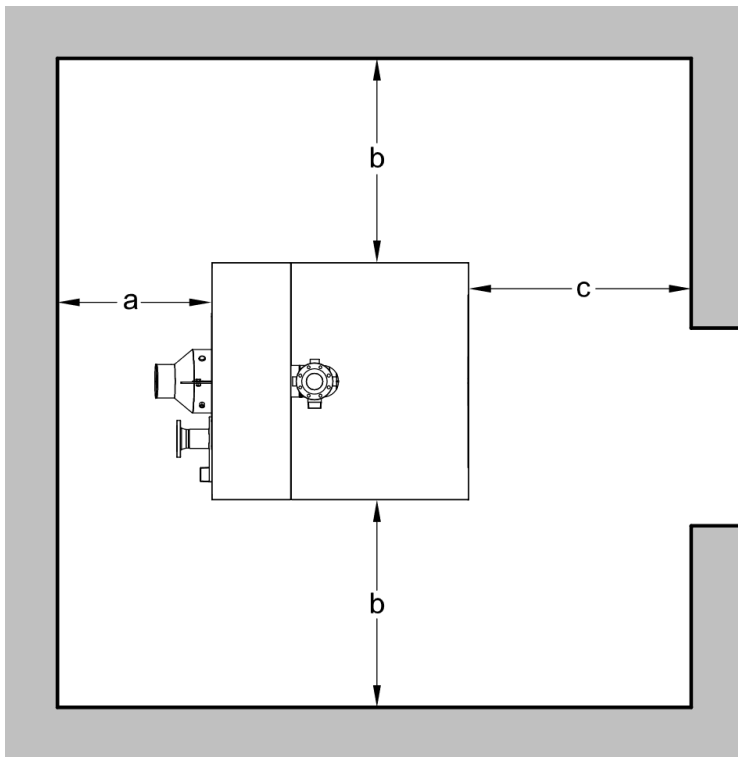
Concrete Pad (If Required)



1.3 Minimum Clearances

Clearances to Combustibles	
Top	0" / 0 mm
Sides	0" / 0 mm
Flue	As per vent manufacturer's specifications
Front	0" / 0 mm
Floor	Combustible

Recommended Minimum Service Clearances



Dimensions

a *1	31½ in.	800 mm	
b *2	27½ in.	700 mm	
c	39½ in.	1000 mm	
Top clearance	20 in.	510 mm	

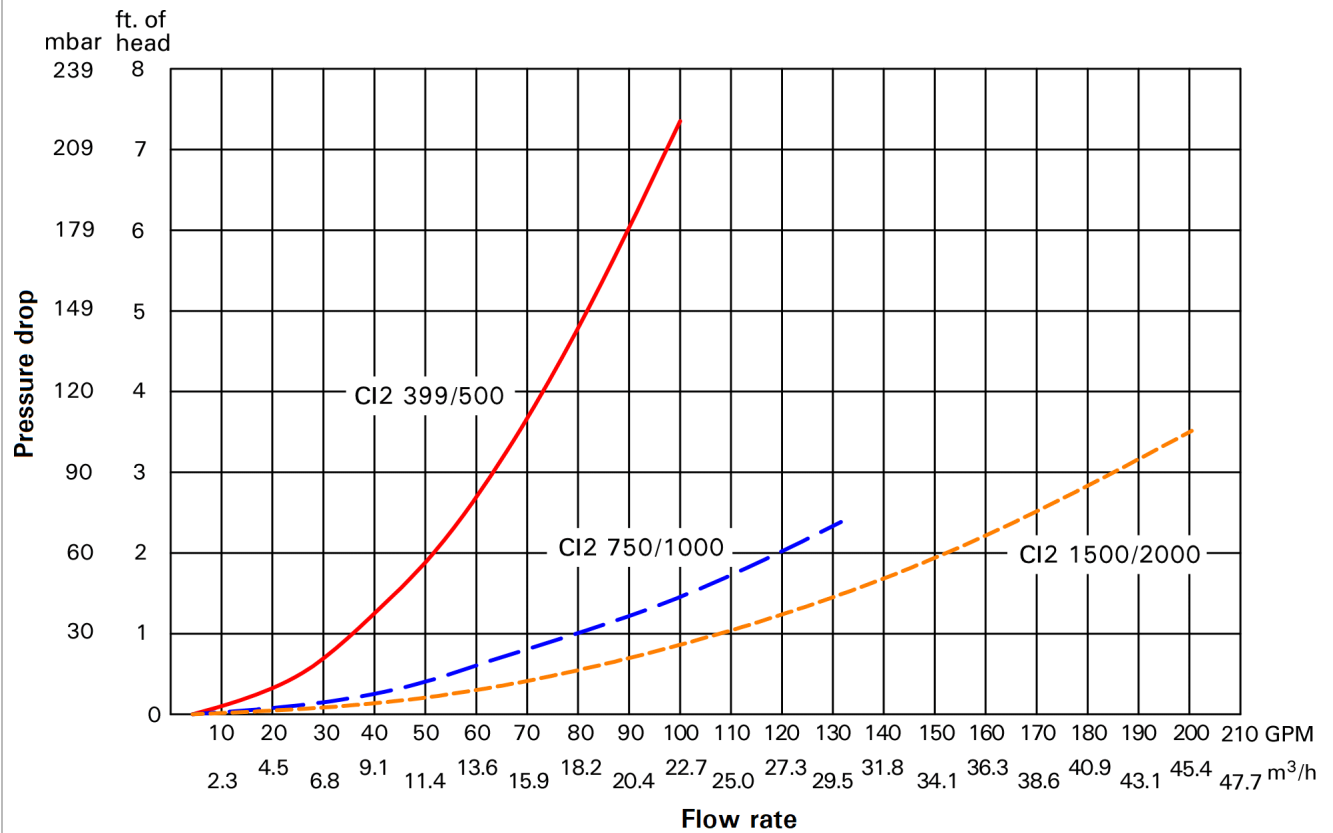
Notes

*1 Clearance for vent pipe installation.

*2 Clearance between boilers may be reduced to zero in multi-boiler installations.

1.4 Waterside Flow

Pressure Drop (Primary Circuit)



Recommended flow rates for CI2-750

20°F Δt	73 GPM
40°F Δt	36 GPM
100°F Δt	15 GPM
11°C Δt	16.6 cubic m/h
22°C Δt	8.2 cubic m/h
56°C Δt	3.4 cubic m/h

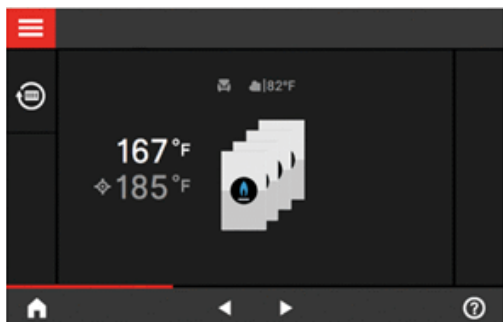
Δt = temperature difference

This boiler does not require a flow switch.

Minimum flow rate based on 100°F Δt (56°C Δt)

Maximum flow rate based on 20°F Δt (11°C Δt)

Control Data



7 Inch Color Touch Screen Control

Weather-compensated boiler and heating circuit control integrated into each Vitocrossal 200 CI2 boiler in single or multi-boiler systems (cascadable up to 16 boilers).

1.0 Technical Data

Electrical Connections

Plug / designation	Component	Rated voltage	Single boiler system	Multi boiler system	
				Lead boiler control unit	Lag boiler control unit
P1	DHW pump or heating circuit pump for heating circuit A1 depending on system configuration	120V~	X	X	
P2	Heating circuit pump for heating circuit A1 or DHW recirculation pump depending on system configuration	120V~	X	X	
[20]	Boiler pump	120V~	X	X	X
[40]	Boiler power supply	120V~	X	X	X
[52]	Boiler isolation (accessory)	120V~	X	X	X
[53]	Flue gas damper (accessory)	120V~		X	X
[66]	Central fault message depending on configuration	120V~	X	X	X
ZP1	Zone 1 pump	120V~	X	X	
ZP2	Zone 2 pump	120V~	X	X	
ZP3	Zone 3 pump	120V~	X	X	

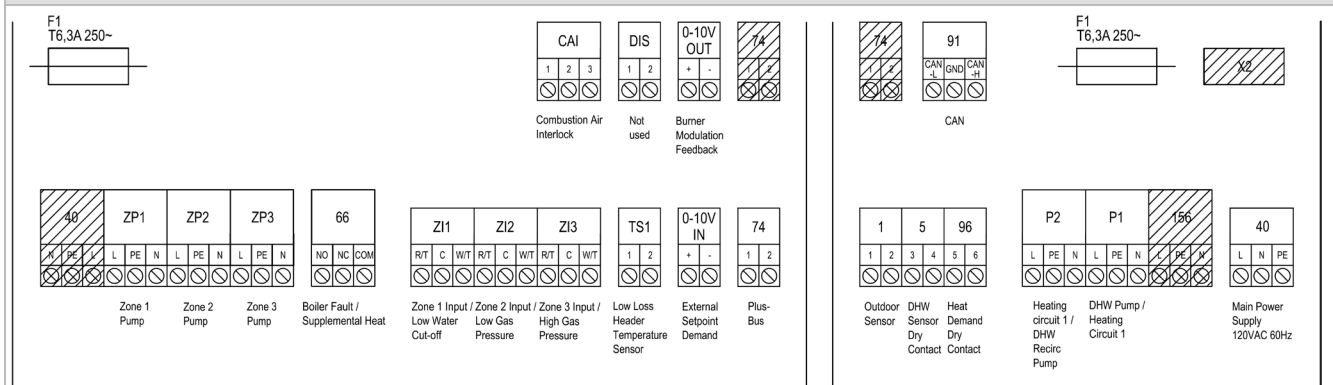
Low Voltage Connections

Plug	Component	Single boiler system	Multi boiler system	
			Lead boiler control unit	Lag boiler control unit
[1]	Outdoor temperature sensor	X	X	
[5]	DHW tank temperature sensor	X	X	
[74]	PlusBus participant	X	X	
[91]	CAN communication interface for data exchange between lead and lag boilers in a cascade system and boiler control units and WAGO Gateway	X	X	X
[96]	External demand via switching contact	X	X	
0-10VDC IN	Boiler setpoint temperature or burner modulation setpoint depending on configuration	X	X	

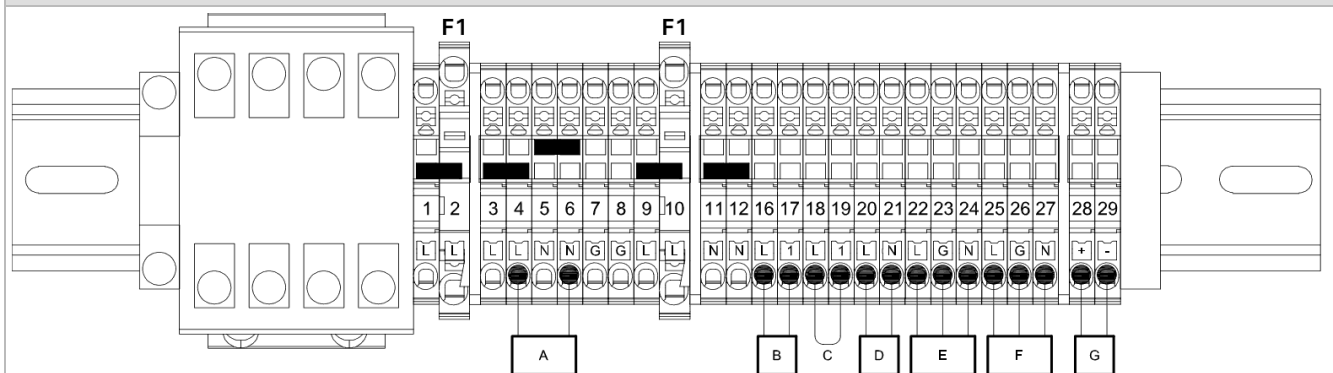
0-10VDC OUT	Boiler pump modulation signal	X	X	X
CAI	Combustion air device interface	X	X	X
DIS	Digital input – burner block	X	X	X
TSI	Boiler common supply temperature sensor	X	X	
ZI1	External safety equipment or TT contact for Zone 1	X	X	
ZI2	External safety equipment or TT contact for Zone 2	X	X	
ZI3	External safety equipment or TT contact for Zone 3	X	X	

1.1 Control Diagrams

Boiler Connections at WP and MZIO Boards



DIN Rail Connections



Legend

- A Low water cut-off power supply
- B Low water cut-off feedback
- C Flue gas damper for common venting feedback (factory installed jumper)
- D Flue gas damper for common venting power supply
- E Boiler isolation valve (power open spring return)
- F Boiler pump power supply

G	Boiler pump modulation signal (0-10VDC)
F1	Fuse 6.3 (slow) 120VAC

System Accessories Data



Low Water Cut-Off

Hydrolevel Safgard™ Model 650A

Electronic low water cut-off control with probe for hot water boilers.

1.0 Product Description

The low water cut-off is designed to shut down the burner in low water conditions.

The probe is installed in the boiler shell or external manifold, and connected to the control unit. Water is used as a conductor to complete the circuit between the probe and the boiler shell. When water is in contact with the probe, the circuit is completed; when the water level drops below the probe, the circuit opens.

The low water cut-off features:

- Automatic reset (boiler control manual reset required)
- Test button

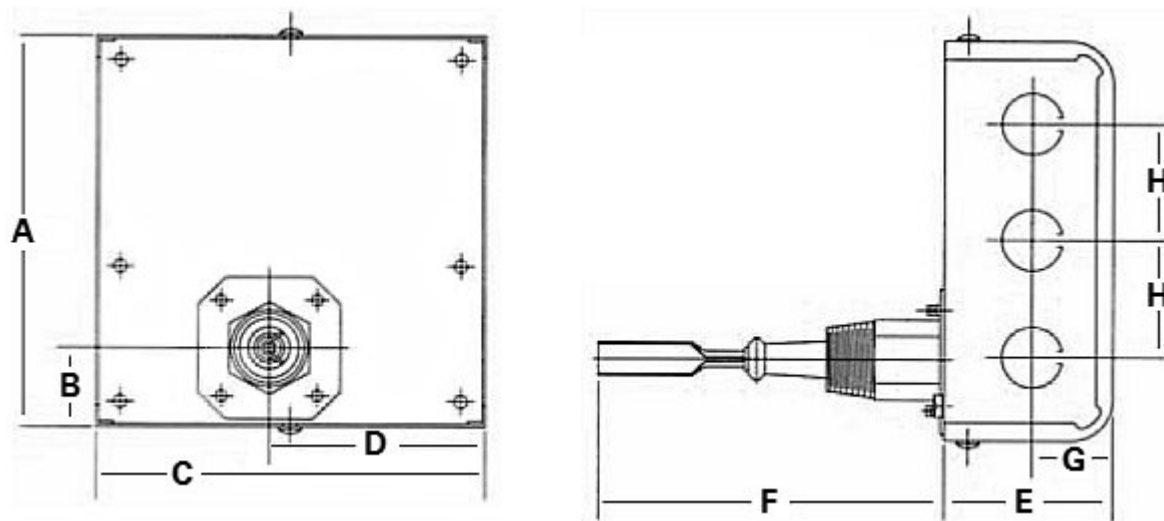
The low water cut-off can be mounted vertically or horizontally.

1.1 Technical Data for Model 650A

Maximum pressure	250 psi	17 bar
Input voltage	120 VAC	60 Hz
Switch ratings	5.8 FLA	34.8 LRA
Switch contacts	SPDT	
Alarm circuit	125 VA @ 120 VAC	Pilot Duty
Certifications	UL listed (CA & US)	

1.2 Dimensional Drawings

LWCO Back and Bottom Views



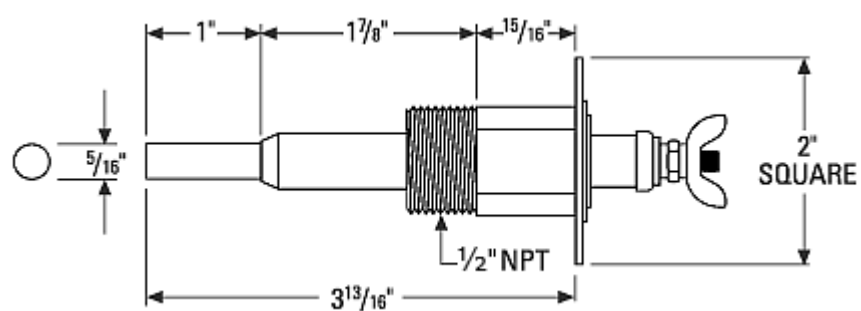
Drawing courtesy of Hydrolevel

Dimensions (approx.)

A	5½"	141 mm
B	1⅛"	27 mm
C	5½"	140 mm
D	3⅛"	78 mm

E	2⅜"	60 mm
F	3⅞"	98 mm
G	1⅛"	29 mm
H	1⅝"	41 mm

Probe Side View



Drawing courtesy of Hydrolevel

System Accessories Data



Pressure Relief Valve

Watts 174A Series

Bronze safety relief valve for protection of hot water boilers and heating systems.

1.0 Technical Data for Model 0274849

Set pressure	75	psig		
Certified capacity *1	2,055,000	Btu/hr		
Maximum temperature	250	°F	121	°C
Connections				
Inlet size	1	inch NPT Female		
Outlet size	1	inch NPT Female		
Dimensions				
Height	5¾	inches	144	mm
Length	3	inches	76	mm
Weight	1.9	lbs	0.9	kg

Notes:

*1 Steam pressure discharge capacity as tested and rated by the National Board of Boiler and Pressure Vessel Inspectors.

System Accessories Data



Neutralization Unit

JJM® Model NB-6

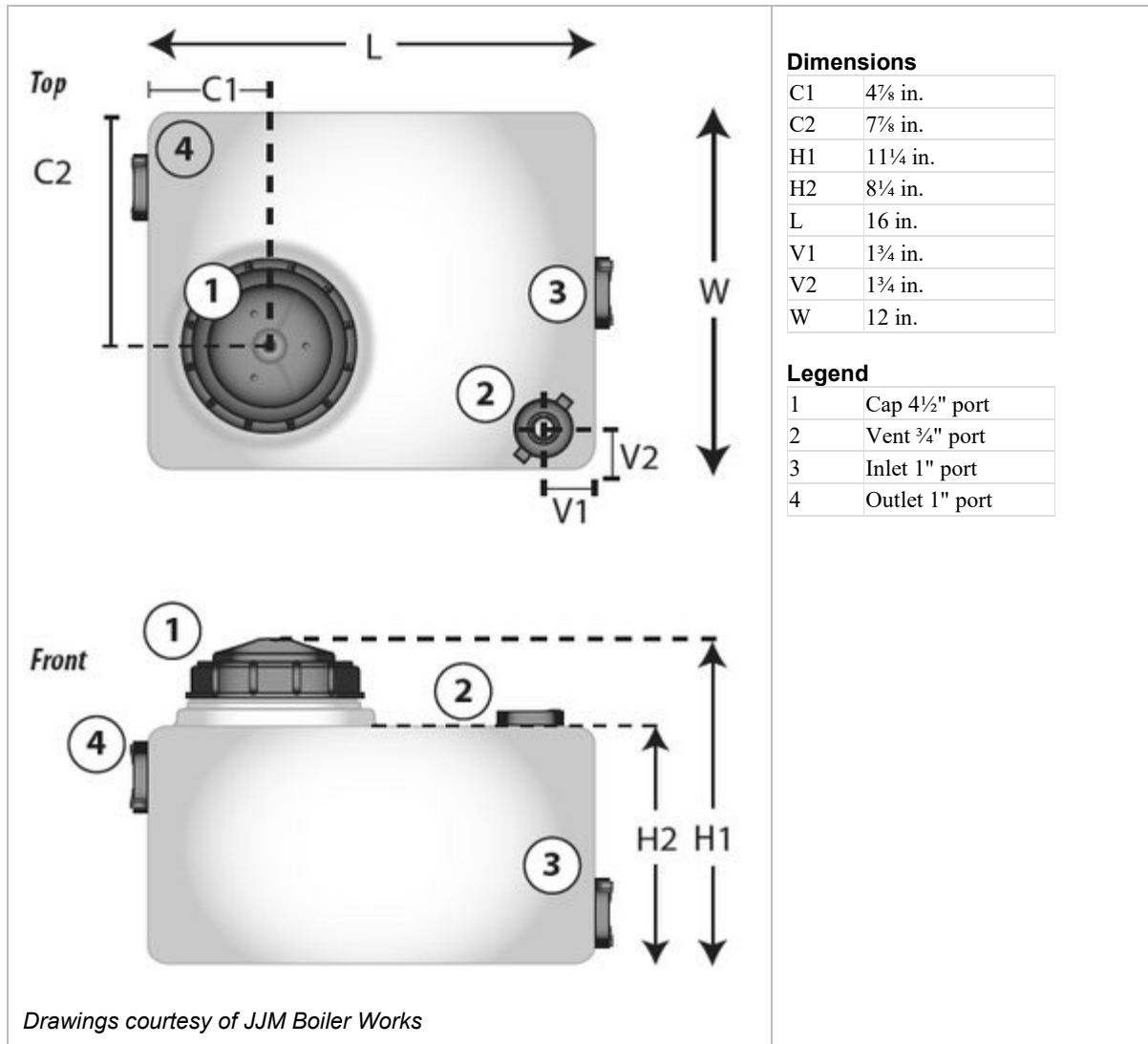
Refillable neutralization tank with granular pellets designed to neutralize aggressive condensate produced by gas-fired condensing boilers.

1.0 Technical Data

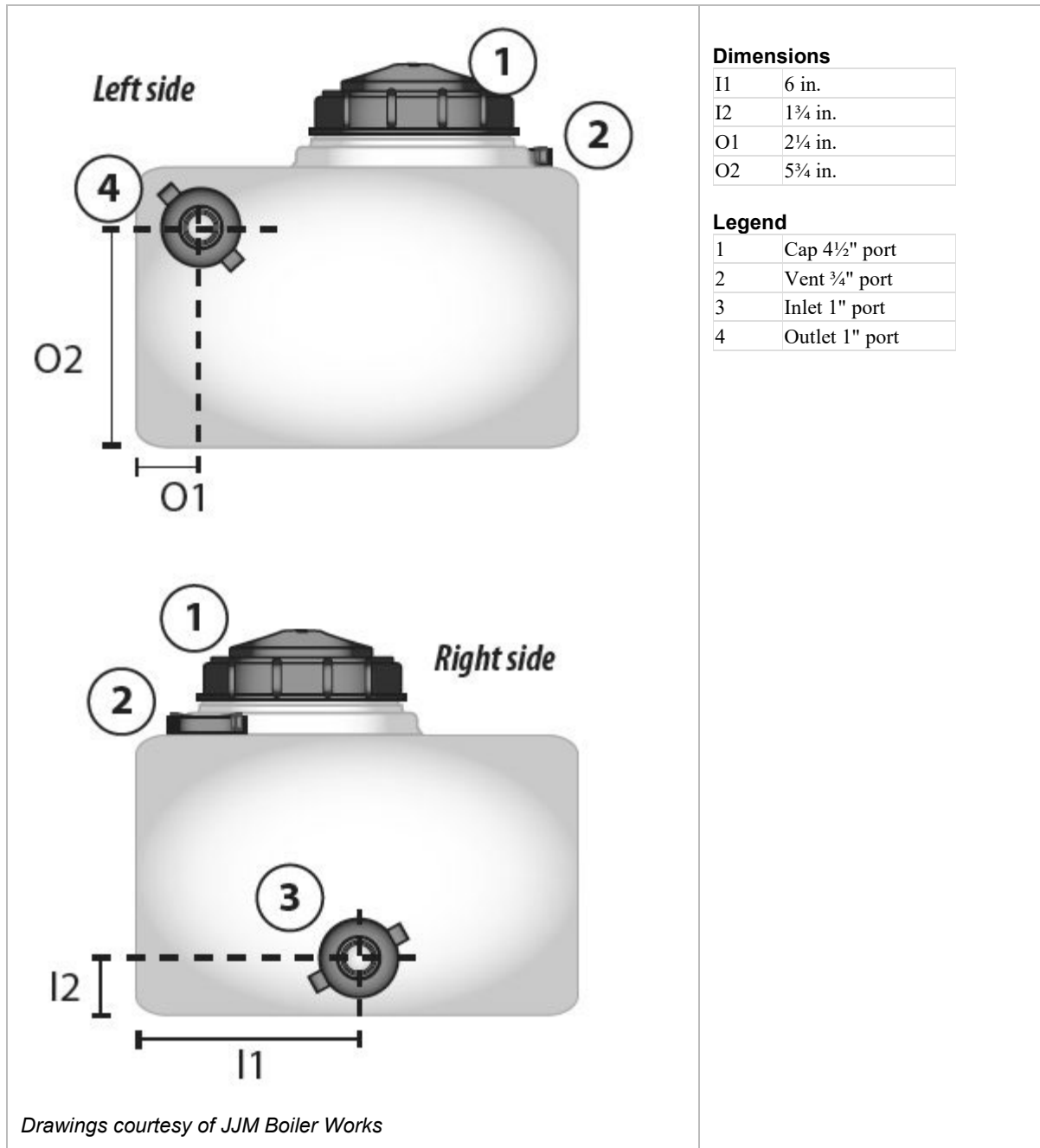
Max. flow rate	45	GPH	170	L/h
Max. heating unit input rating	6,000	MBH	1,757	kW
Tank temperature rating (constant)	140	°F	60	°C
Dimensions				
Length	16	inches	406	mm
Width	12	inches	305	mm
Height	11¼	inches	286	mm
Connections / ports				
Inlet port	1	inch	NPT Female	
Outlet port	1	inch	NPT Female	
Vent	3/4	inch	NPT Female	
Fill port (with twist off cap)	5	inch		
Mounting				
Tank mounting options	Floor mounted (horizontally)			
Materials				
Neutralizing granulate (pellets)	Magnesium Oxide			
Neutralization tank	Polypropylene			

1.1 Dimensional Drawings

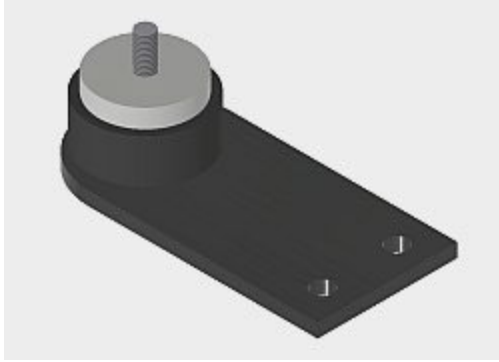
Neutralization Unit Top and Front Views



Neutralization Unit Left and Right Views



System Accessories Data



Seismic Bracket Kit

For Vitocrossal 200, CI2 Series

Full product manuals:



[Installation Instructions](#)

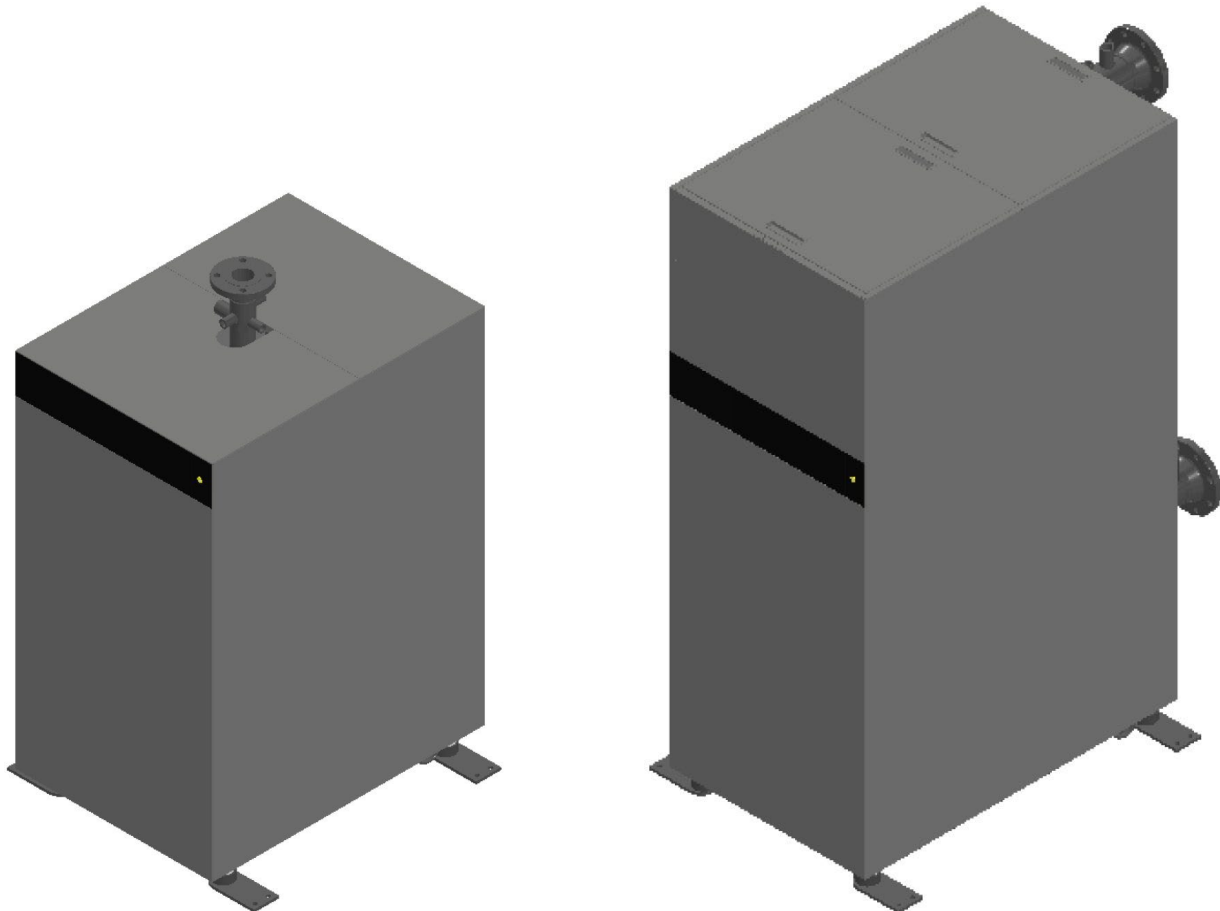


[Seismic Certificate](#)

1.0 Product Description

The easy to install kit contains four certified seismic mounts, designed to quickly thread into the base of the Vitocrossal 200 CI2 series of boilers, using pre-installed female threaded receiver mounts located in the boiler frame.

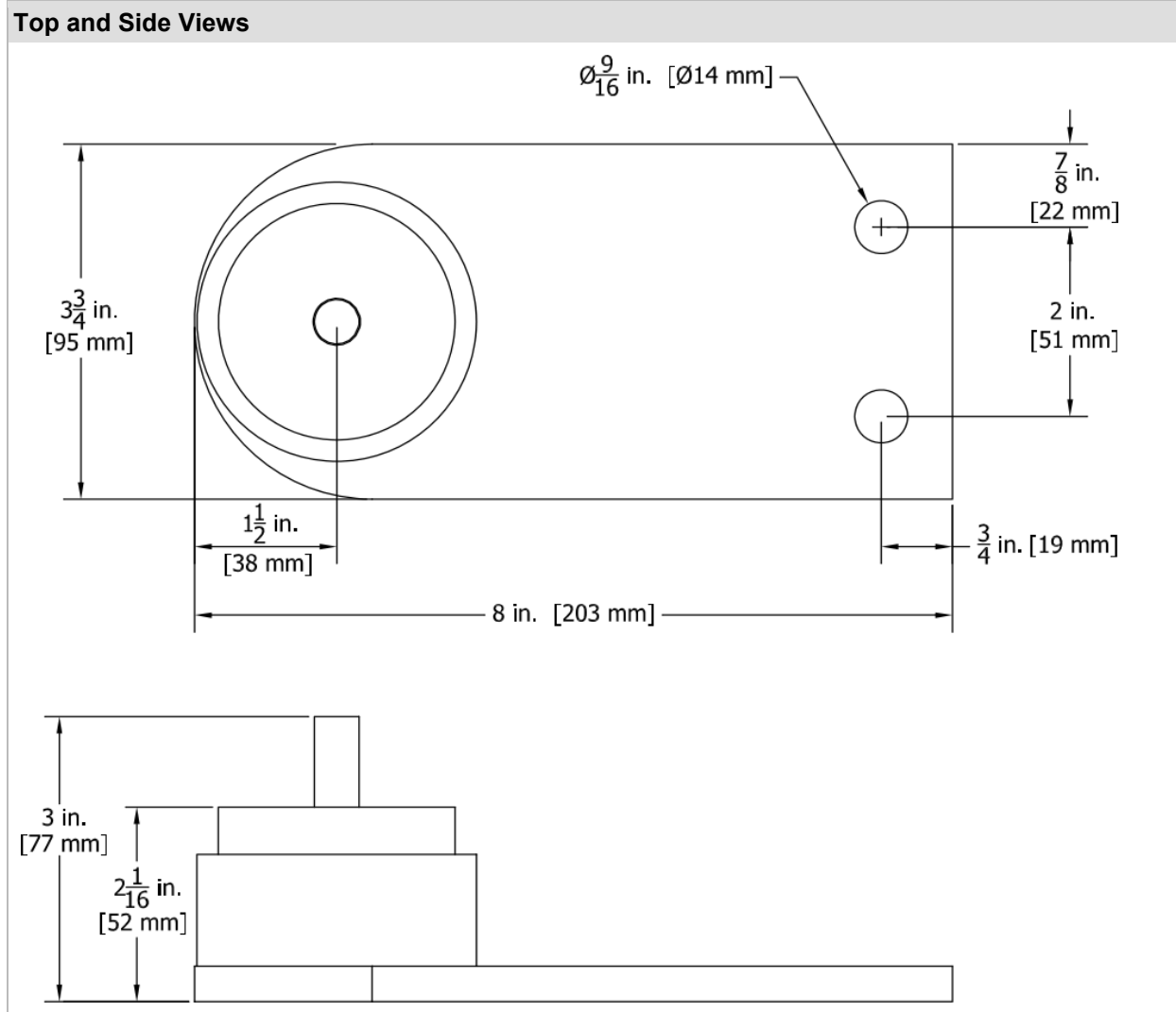
The seismic brackets are certified to comply with Canadian seismic requirements as specified in the National Building Code of Canada 2015 and the U.S. seismic requirements as specified in the International Building Code 2018 (IBC 2018/ASCE7-16).



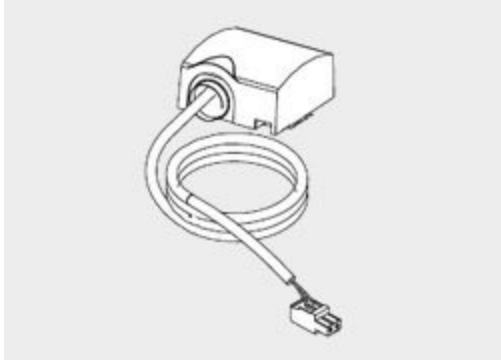
1.1 Technical Data

Seismic isolator plate material	ASTM A36 steel with Hi-Gloss Baked Enamel Finish
Shear block material	Natural Rubber with a Shore A Durometer Value of 43
Anchor bolts	Hilti Kwik Bolt TZ2 Expansion anchor (KB-TZ ½ x 5.5) supplied

1.2 Dimensional Drawings



System Accessories Data



Supply Temperature Sensor

Viessmann NTC 10K strap-on sensor, used to monitor the temperature of a water supply pipe.

1.0 Technical Data

Sensor type	NTC 10K ohms @ 77°F (25°C)		
Supplied with:			
– Cable length (ready to plug in)	19.7 ft	6 m	
– Strapping band			
Permissible ambient temperature			
– During operation	32 to 212 °F	0 to 100 °C	
– During storage and transport	-4 to +158 °F	-20 to +70 °C	

1.1 Dimensional Drawings

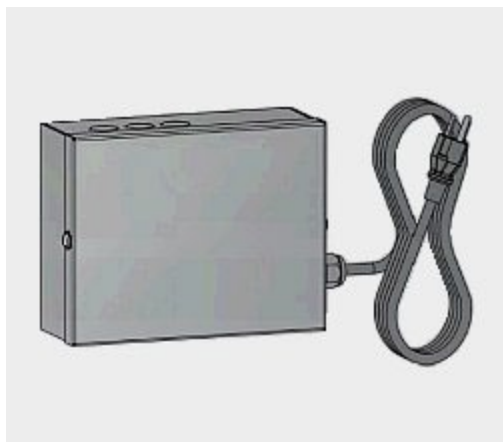
Sensor Front View

A 3D perspective line drawing of a rectangular sensor unit. The unit is shown from a front-left perspective. A cable is connected to the left side of the unit, ending in a small rectangular connector. Dimension lines with arrows indicate the following measurements: 'D' for depth (top edge), 'H' for height (right edge), and 'W' for width (bottom edge).

Dimensions

D	1.7 in.	42 mm
H	2.4 in.	60 mm
W	2.6 in.	66 mm

System Accessories Data



Wago BACnet/IP Gateway

For BMS communication with heating systems via BACnet

Full product manuals:



[Technical Data \(with Vitocrossal 200\)](#)



[Technical Data \(with Vitodens 200-W\)](#)



[Installation and Service Instructions](#)

1.0 Product Description

The Wago BACnet/IP gateway is used to connect Viessmann control units to BACnet systems. For supported devices and other valid product documentation, see www.viessmann.ca/en/products/system-technology/wago-gateway.html.

The gateway enables system users to utilise the following functions in conjunction with a BACnet system:

- Transferring heating system operating states.
- Setting heating system parameters.
- Relaying fault and maintenance messages.

The Wago BACnet/IP wall-mounted gateway comes in the following configuration:

- Mounted in a housing, with 6.5 ft (2m) cord and 120V plug.

1.1 Technical Data for Wago BACnet/IP Gateway

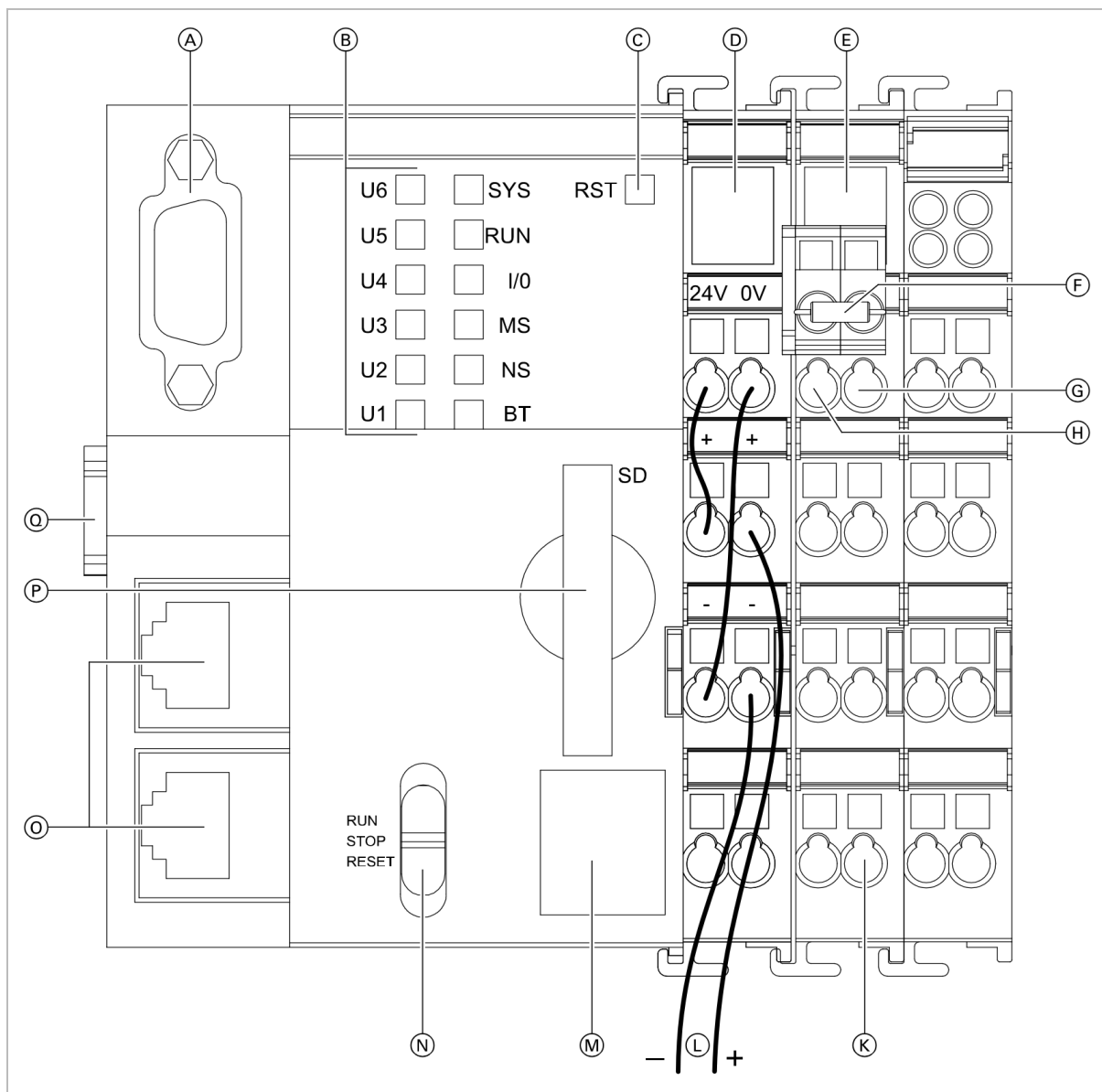
Power supply	24 VDC
Max. power consumption	116 mA
Nominal rating	2.8 W
Permissible ambient temperature	
– During operation	32 to 104°F (0 to 40°C)
– During storage and transport	-4 to +140°F (-20 to +60°C)
Dimensions (without enclosure)	
Height	4 in. (100 mm)
Width	4 in. (100 mm)
Depth	2¾ in. (72 mm)

1.3 Technical Data for Power Supply Unit

Rated voltage	100 to 240 VAC
Rated frequency	50 to 60 Hz
Rated current	1.34 A
Output voltage	24 VDC
Permissible ambient temperature	
– During operation	32 to 104°F (0 to 40°C)
– During storage and transport	-40 to +185°F (-40 to +85°C)
Dimensions (without enclosure)	
Height	3½ in. (90 mm)
Width	2¼ in. (54 mm)
Depth	2¼ in. (56 mm)

1.4 Connection Diagrams

Connections and Operating Elements



Legend

A	Serial interface
B	LED status indicators
C	Reset button RST
D	Status LED for supply voltage
E	Status LED for CAN bus interface
F	Plug-in attachment with terminator
G	CAN low, for looping through the CAN bus
H	CAN high, for looping through the CAN bus
K	CAN bus shield
L	24V supply voltage connection
M	Do not open!
N	Operating mode switch (Run / Stop / Reset)
O	Service interface: LAN connection to PC/laptop or BACnet/IP connection
P	Memory card slot

Q	Fixing for mounting on the top-hat rail
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