

# RINNAI TANKLESS RACK SYSTEM SUBMITTAL SHEET

Job Name: \_\_\_\_\_

Location: \_\_\_\_\_

Architect/Engineer: \_\_\_\_\_

Wholesaler: \_\_\_\_\_

Model No.: \_\_\_\_\_

Type of Gas: \_\_\_\_\_

BTU/Hr Input: \_\_\_\_\_

Notes: \_\_\_\_\_

## FEATURES AND BENEFITS

- Ultra-efficient condensing technology
- Thermal Efficiency of 96%
- Modulating technology with up to 327:1 turndown (25 units with Multi System Control Board electronic controls)
- 15,200 BTU/H to 5M BTU/H
- 0.26 GPM to 245 GPM hot water flow range
- Ultra Low NOx - complies with South Coast Air Quality Management District 14 ng/J or 20 ppm NOx emission levels Sealed Combustion
- Venting Options:
  - Common Vent System PPTl (Cvent) - 7 units up to 100 ft, 8 units up to 41 ft
  - Concentric PPs - 65 ft max vent length
  - Dual Pipe PPs - 41 ft max vent length
  - PVC/ CPVC - 3" or 4"
- Pre-assembled rack with C199 indoor or outdoor water heaters installed
- Wall-mount or freestanding /floor mount options
- Powder coated black iron gas pipe and copper water manifolds
- Hot water temperatures between 98° F and 185° F
- Flexible stainless steel pipe connections from hot and cold manifold/ water heater connections
- Individual drain tee/drip leg on gas connection for each water heater
- Marine grade powder coated aluminum frame
- TRS fits through standard 32" doorway
- Lifting eyebolts on freestanding racks
- Isolation and pressure relief valves included and installed on each water heater

## OPTIONS

Natural Gas	Freestanding (in-line Wall Mount)
Propane	MSB Electronic Control System (for systems 3 units to 25)
Wall Mount Rack	EZConnect® (for 2 units only)
Freestanding (back-to-back)	



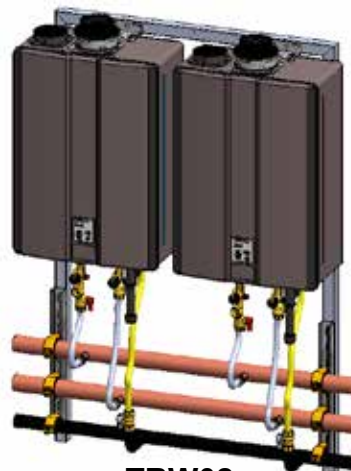
Rinnai America Corporation • 1-800-621-9419 • rinnai.us

©2015 Rinnai America Corporation. Rinnai America Corporation continually updates materials, and as such, content is subject to change without notice. Local, state provincial, federal and national fuel gas codes must be adhered to prior to and upon installation.

# Rinnai®

## 2 UNIT WALL HANGING FRAME

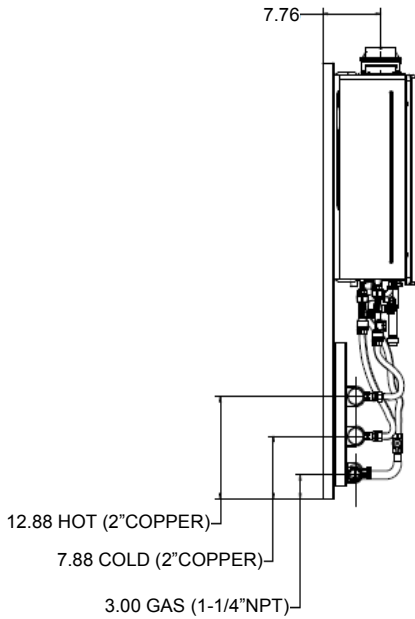
Model	TRW02i	TRW02e
Water Heater Model	RU98i, RUC98i, C199i (NG/LP)	RU9e, C199e (NG/LP)
Crate Dimensions (HxLxD) - in	62 x 55 x 36	
Weight - Fully Assembled - lbs	166	165
Weight - Shipping (total) - lbs	380	379
<b>Rack Frame - Specifications</b>		
Frame Material	14 Gauge Hot Rolled Steel 1.5" Square Tube	16 Gauge Stainless Steel 1.5" Square Tube
Frame Finish	Powder Coat	Stainless
Color	Gray	Stainless
<b>Water &amp; Gas Connections</b>		
Hot Water Trunk Line Diameter	2"	
Cold Water Trunk Line Diameter	2"	
Hot Water Trunk Line Material	Rigid Copper	
Cold Water Trunk Line Material	Rigid Copper	
Water Trunk Connection Type	2" PIPE	
Gas Trunk Line Diameter	1-1/4"	
Gas Trunk Connection Type	1-1/4" MNPT	
Gas Trunk Line Material	Sch 40 Steel	
Gas Branch Line Material	PVC Over CSST	
<b>Electric Requirements</b>		
Voltage	AC 120 Volts—60 Hz	
Maximum Current (Amperes)	8	
<b>BTU and Flow Rates for RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)</b>		
Number of Tankless Water Heaters	2	
Flow rate @ 70°F rise (gpm)	10.8	
Flow rate @ 100°F rise (gpm)	7.6	
Minimum input rate (Btuh)	15,200	
Maximum input rate (Btuh)	398,000	



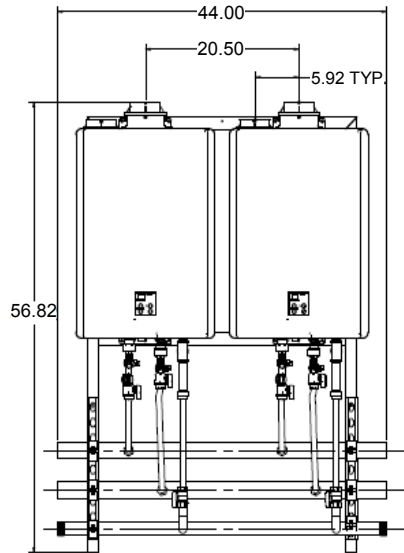
**TRW02**

## 2 UNIT WALL HANGING FRAME

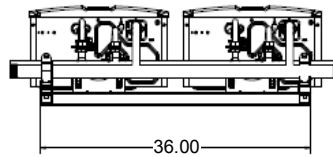
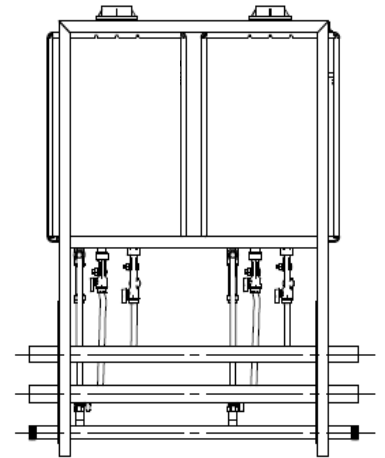
**LEFT**





**FRONT**



**BACK**

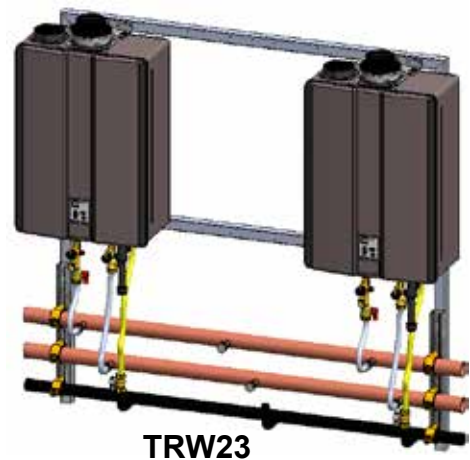


**BOTTOM**

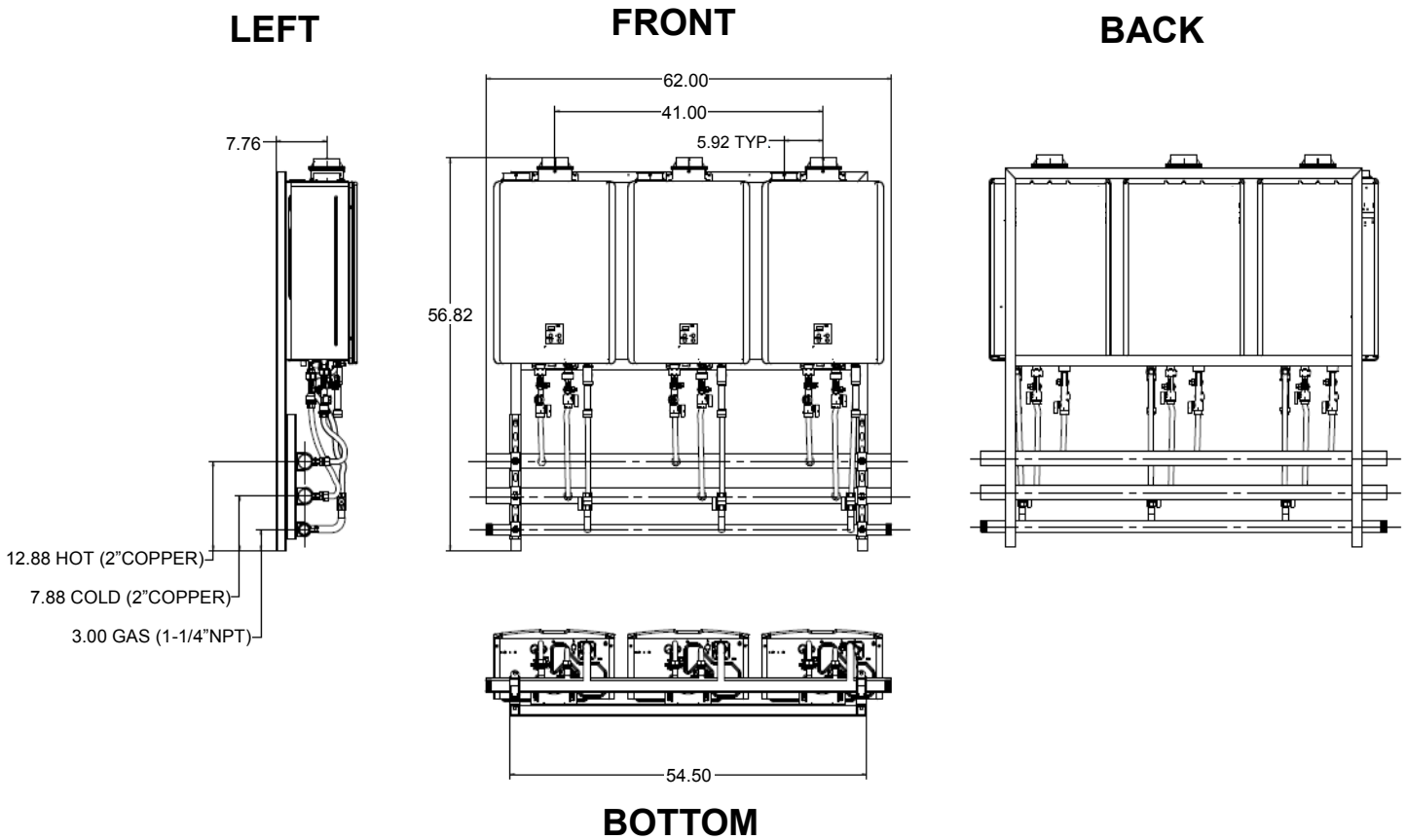
Model	Configuration	Illustration
TRW02		

## 3 UNIT WALL HANGING FRAME

Model	TRW03i	TRW03e	TRW23i	TRW23e
Water Heater Model	RU98i, RUC98i, C199i (NG/LP)	RU98e, C199e (NG/LP)	RU98i, RUC98i, C199i (NG/LP)	RU98e, C199e (NG/LP)
Crate Dimensions (HxLxD) - in	62 x 75 x 36		62 x 75 x 36	
Weight - Fully Assembled - lbs	244	239	182	178
Weight - Shipping (total) - lbs	458	453	396	392
<b>Rack Frame - Specifications</b>				
Frame Material	14 Gauge Hot Rolled Steel 1.5" Square Tube	16 Gauge Stainless Steel 1.5" Square Tube	14 Gauge Hot Rolled Steel 1.5" Square Tube	16 Gauge Stainless Steel 1.5" Square Tube
Frame Finish	Powder Coat	Stainless	Powder Coat	Stainless
Color	Gray	Stainless	Gray	Stainless
<b>Water &amp; Gas Connections</b>				
Hot Water Trunk Line Diameter	2"			
Cold Water Trunk Line Diameter	2"			
Hot Water Trunk Line Material	Rigid Copper			
Cold Water Trunk Line Material	Rigid Copper			
Water Trunk Connection Type	2" PIPE			
Gas Trunk Line Diameter	1-1/4"			
Gas Trunk Connection Type	1-1/4" MNPT			
Gas Trunk Line Material	Sch 40 Steel			
Gas Branch Line Material	PVC Over CSST			
<b>Electric Requirements</b>				
Voltage	AC 120 Volts—60 Hz			
Maximum Current (Amperes)	12		8	
<b>BTU and Flow Rates for RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)</b>				
Number of Tankless Water Heaters	3		2	
Flow rate @ 70°F rise (gpm)	16.2		10.8	
Flow rate @ 100°F rise (gpm)	11.4		7.6	
Minimum input rate (Btuh)	15,200		15,200	
Maximum input rate (Btuh)	597,000		398,000	



## 3 UNIT WALL HANGING FRAME



Model	Configuration	Illustration
TRW03		
TRW23		

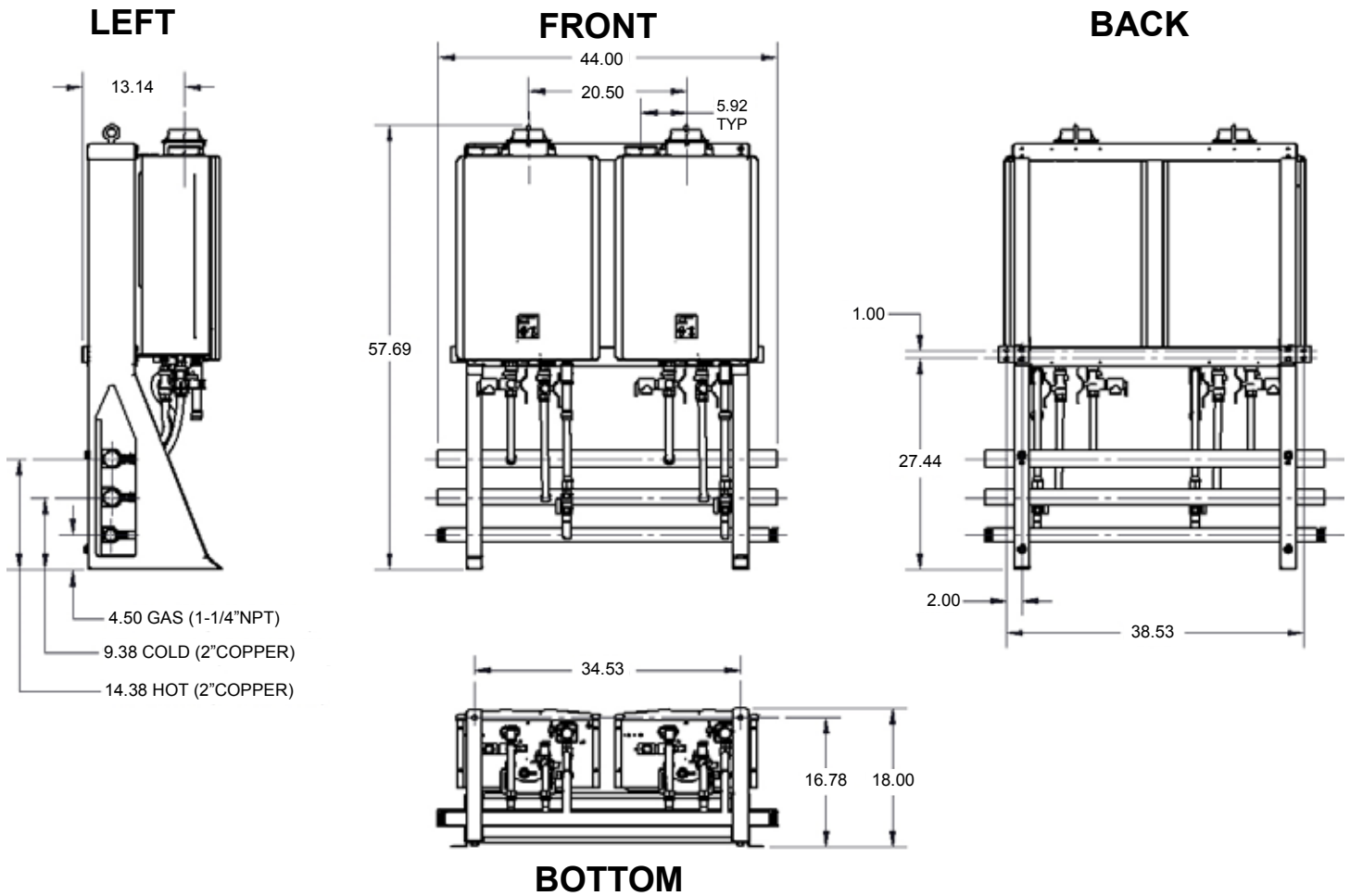
## 2 UNIT WALL MOUNT FRAME



<b>Model</b>	<b>TRS02ILW</b>
Water Heater Model	RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)
Crate Dimensions (HxLxD) - in	62 x 55 x 36
Weight - Fully Assembled - lbs	204
Weight - Shipping (total) - lbs	400
<b>Rack Frame - Specifications</b>	
Frame Rail Type	Sheet Metal
Frame Material	Aluminum (0.090 5052-H32)
Frame Finish	Powder Coat
Color	Gray
<b>Water &amp; Gas Connections</b>	
Hot Water Trunk Line Diameter	2"
Cold Water Trunk Line Diameter	2"
Hot Water Trunk Line Material	Rigid Copper
Cold Water Trunk Line Material	Rigid Copper
Water Trunk Connection Type	2" PIPE
Gas Trunk Line Diameter	1-1/4"
Gas Trunk Connection Type	1-1/4" MNPT
Gas Trunk Line Material	Sch 40 Steel
Gas Branch Line Material	PVC Over CSST
<b>Electric Requirements</b>	
Voltage	AC 120 Volts—60 Hz
Maximum Current (Amperes)	8
<b>BTU and Flow Rates for RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)</b>	
Number of Tankless Water Heaters	2
Flow rate @ 70°F rise (gpm)	10.8
Flow rate @ 100°F rise (gpm)	7.6
Minimum input rate (Btuh)	15,200
Maximum input rate (Btuh)	398,000



**TRS02ILW**

### 2 UNIT WALL MOUNT FRAME



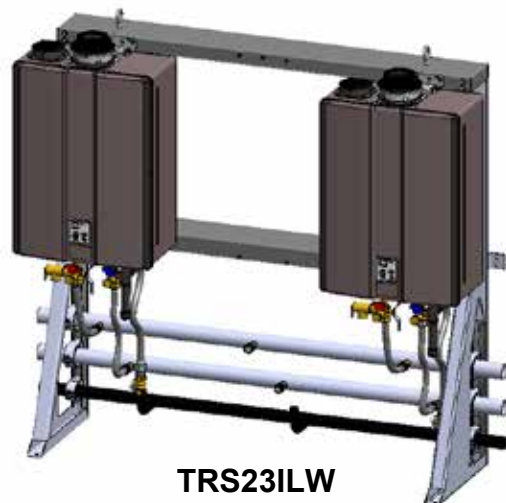
Model	Configuration	Illustration
TRW02		

## 3 UNIT WALL MOUNT FRAME

Model	TRS03ILW	TRS23ILW
Water Heater Model	RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)	
Crate Dimensions (HxLxD) - in	62 x 75 x 36	
Weight - Fully Assembled - lbs	291	218
Weight - Shipping (total) - lbs	487	414
<b>Rack Frame - Specifications</b>		
Frame Rail Type	Sheet Metal	
Frame Material	Aluminum (0.090 5052-H32)	
Frame Finish	Powder Coat	
Color	Gray	
<b>Water &amp; Gas Connections</b>		
Hot Water Trunk Line Diameter	2"	
Cold Water Trunk Line Diameter	2"	
Hot Water Trunk Line Material	Rigid Copper	
Cold Water Trunk Line Material	Rigid Copper	
Water Trunk Connection Type	2" PIPE	
Gas Trunk Line Diameter	1-1/4"	
Gas Trunk Connection Type	1-1/4" MNPT	
Gas Trunk Line Material	Sch 40 Steel	
Gas Branch Line Material	PVC Over CSST	
<b>Electric Requirements</b>		
Voltage	AC 120 Volts—60 Hz	
Maximum Current (Amperes)	12	8
<b>BTU and Flow Rates for RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)</b>		
Number of Tankless Water Heaters	3	2
Flow rate @ 70°F rise (gpm)	16.2	10.8
Flow rate @ 100°F rise (gpm)	11.4	7.6
Minimum input rate (Btuh)	15,200	15,200
Maximum input rate (Btuh)	597,000	398,000



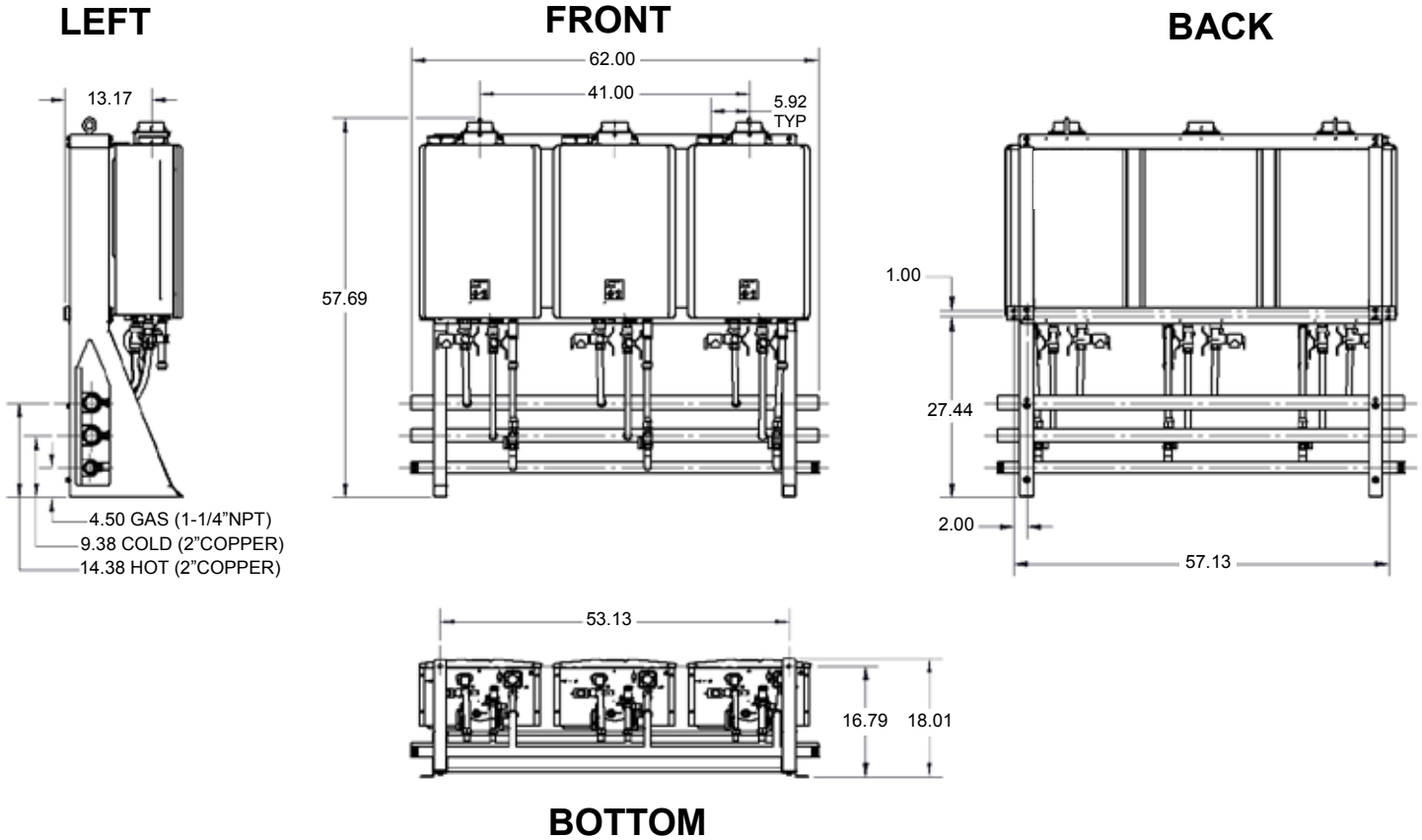
**TRS03ILW**



**TRS23ILW**



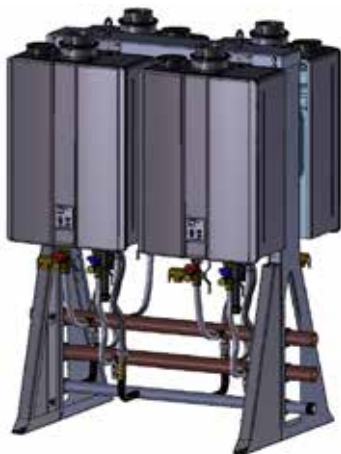
### 3 UNIT WALL MOUNT FRAME



Model	Configuration	Illustration
TRS03ILW		
TRS23ILW		

## 4 UNIT FREE STANDING FRAME

Model	TRS04	TRS03	TRS02	TRS02IL
Water Heater Model	RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)			
Crate Dimensions (HxLxD) - in	62 x 55 x 36			
Weight - Fully Assembled - lbs	357	284	210	208
Weight - Shipping (total) - lbs	553	480	406	404
<b>Rack Frame - Specifications</b>				
Frame Rail Type	Sheet Metal			
Frame Material	Aluminum (0.090 5052-H32)			
Frame Finish	Powder Coat			
Color	Gray			
<b>Water &amp; Gas Connections</b>				
Hot Water Trunk Line Diameter	2"			
Cold Water Trunk Line Diameter	2"			
Hot Water Trunk Line Material	Rigid Copper			
Cold Water Trunk Line Material	Rigid Copper			
Water Trunk Connection Type	2" PIPE			
Gas Trunk Line Diameter	1-1/4"			
Gas Trunk Connection Type	1-1/4" MNPT			
Gas Trunk Line Material	Sch 40 Steel			
Gas Branch Line Material	PVC Over CSST			
<b>Electric Requirements</b>				
Voltage	AC 120 Volts—60 Hz			
Maximum Current (Amperes)	16	12	8	8
<b>BTU and Flow Rates for RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)</b>				
Number of Tankless Water Heaters	4	3	3	2
Flow rate @ 70°F rise (gpm)	21.6	16.2	16.2	10.8
Flow rate @ 100°F rise (gpm)	15.2	11.4	11.4	7.6
Minimum input rate (Btuh)	15,200			
Maximum input rate (Btuh)	796,000	597,000	597,000	398,000



**TRS04**



**TRS03**

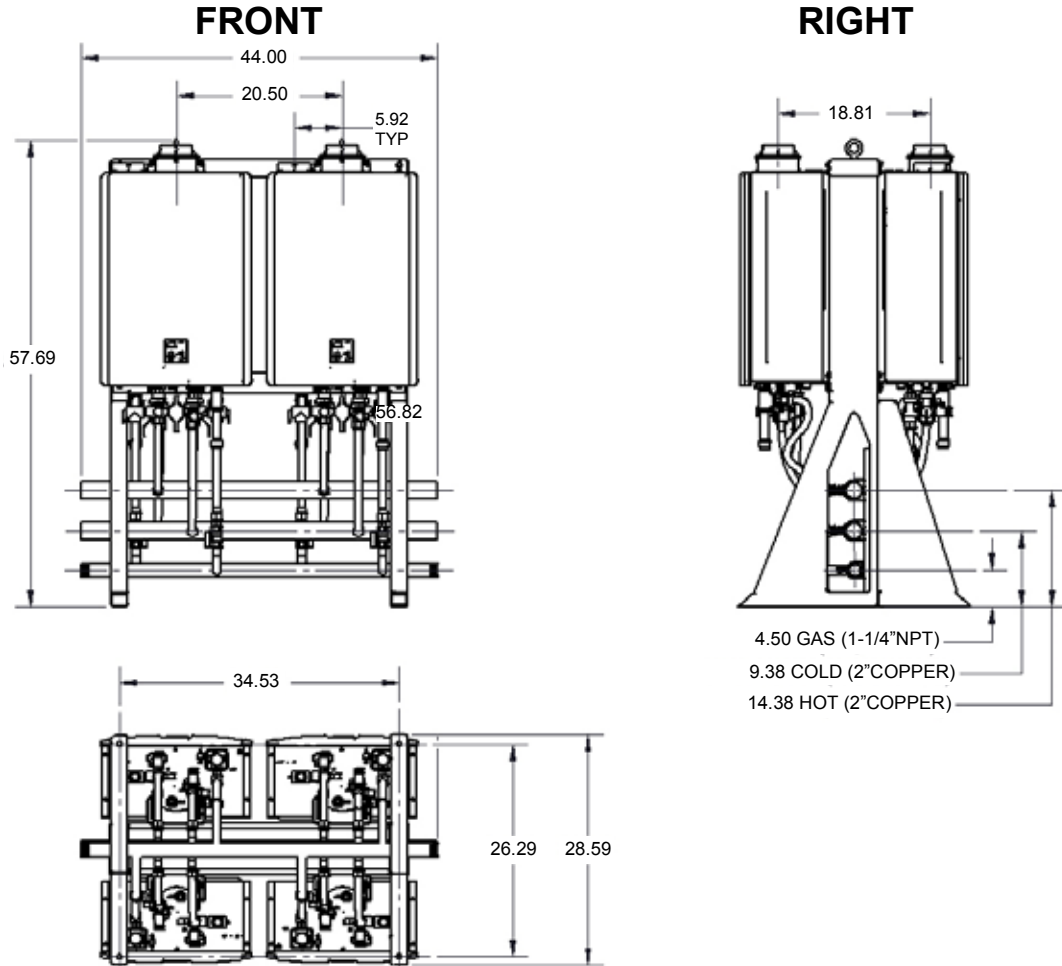


**TRS02**



**TRS02IL**

## 4 UNIT FREE STANDING FRAME



### BOTTOM

Model	Configuration	Illustration
TRS04		
TRS03		
TRS02IL	Inline (facing same direction) 	
TRS02	Back to Back 	

## 6 UNIT FREE STANDING FRAME

Model	TRS06	TRS05	TRS46	TRS36	TRS03IL	TRS23IL
Water Heater Model	RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)					
Crate Dimensions (HxLxD) - in	62 x 75 x 36					
Weight - Fully Assembled - lbs	526	452	378	284	284	210
Weight - Shipping (total) - lbs	722	649	576	480	480	406
<b>Rack Frame - Specifications</b>						
Frame Rail Type	Sheet Metal					
Frame Material	Aluminum (0.090 5052-H32)					
Frame Finish	Powder Coat					
Color	Gray					
<b>Water &amp; Gas Connections</b>						
Hot Water Trunk Line Diameter	2-1/2"			2"		
Cold Water Trunk Line Diameter	2-1/2"			2"		
Hot Water Trunk Line Material	Rigid Copper					
Cold Water Trunk Line Material	Rigid Copper					
Water Trunk Connection Type	2-1/2" PIPE			2" PIPE		
Gas Trunk Line Diameter	1-1/2"			1-1/4"		
Gas Trunk Connection Type	1-1/2" MNPT			1-1/4" MNPT		
Gas Trunk Line Material	Sch 40 Steel					
Gas Branch Line Material	PVC Over CSST					
<b>Electric Requirements</b>						
Voltage	AC 120 Volts—60 Hz					
Max Current (Amperes)	24	20	16	12	12	8
<b>BTU and Flow Rates for RU98i, RUC98i, C199i, RU98e, C199e (NG/LP)</b>						
Number of Tankless Water Heaters	6	5	3	4	2	
Flow rate @ 70°F rise (gpm)	32.4	27.0	16.2	21.6	10.8	
Flow rate @ 100°F rise (gpm)	22.8	19.0	11.4	15.1	7.6	
Minimum input rate (Btuh)	15,200					
Maximum input rate (Btuh)	1,194,000	995,000	597,000	796,000	398,000	



TRS06

TRS05

TRS03IL

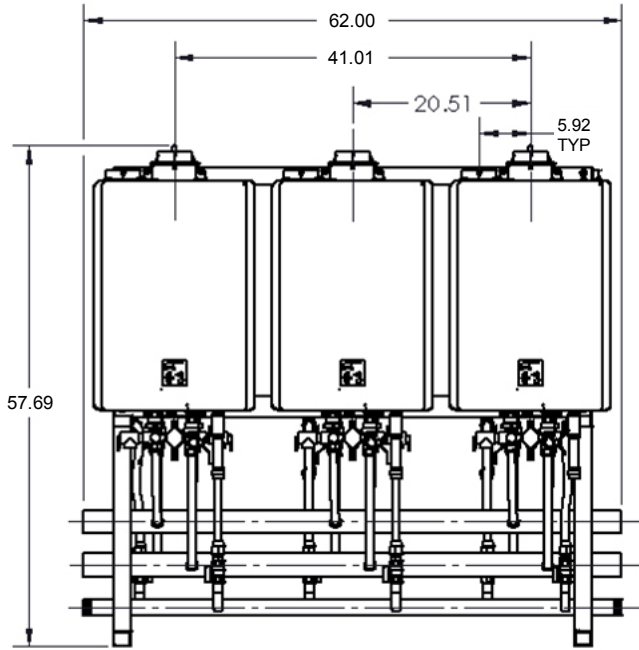
TRS36

TRS46

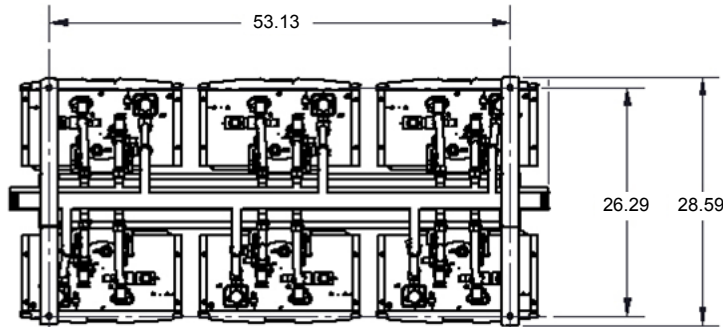
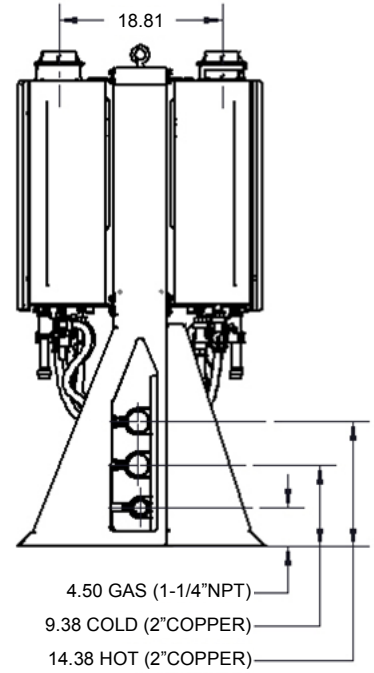
TRS23IL

## 6 UNIT FREE STANDING FRAME

### FRONT



### RIGHT

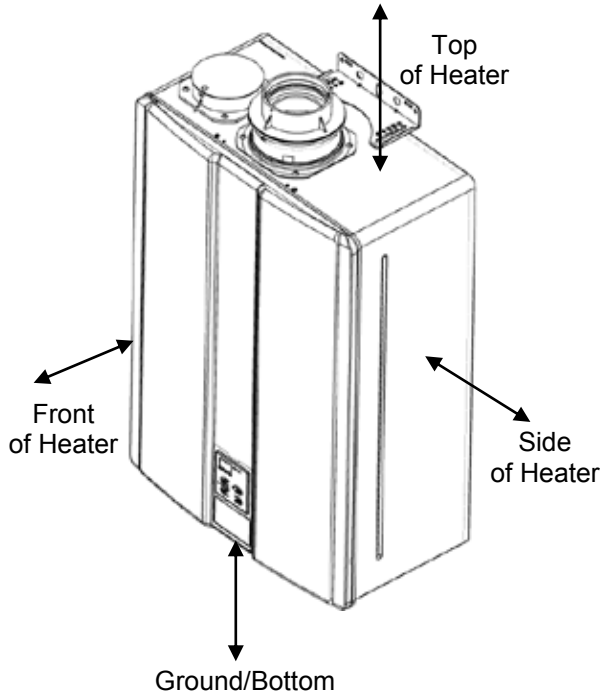


### BOTTOM

Model	Configuration	Illustration	Model	Configuration	Illustration
TRS06			TRS06		
TRS05			TRS46		
TRS03IL			TRS23IL		

## Clearances

Install the rack system so that the clearances shown below (specified for the water heater in the RUC98i and RU98e installation manual) are followed.



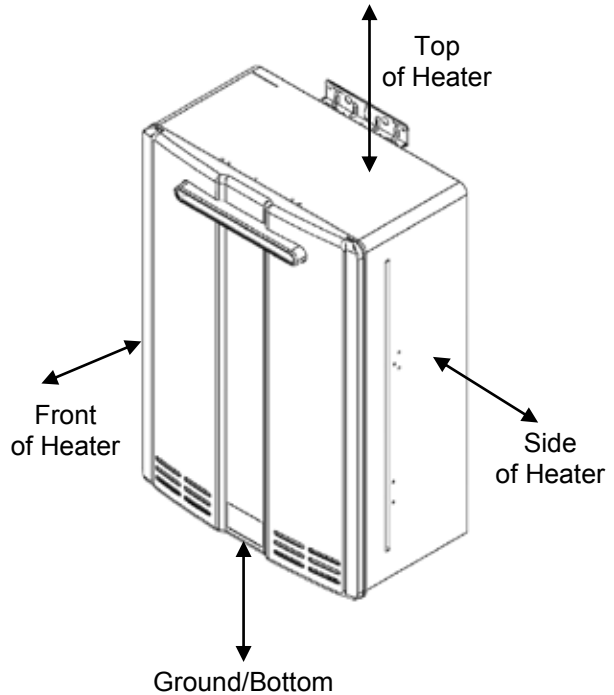
**Indoor models: RU98i, RUC98i, C199i**

	to Combustibles inches (mm)	to Non- Combustibles inches (mm)
<b>Top of Heater</b>	6 * (152)	2 *(51)
<b>Back of Heater</b>	0 (zero)	0 (zero)
<b>Front of Heater</b>	6 (152)	6 (152)
<b>Sides of Heater</b>	2 (51)	1/2 (13)
<b>Ground/Bottom</b>	12 (305)	12 (305)
<b>Vent</b>	0 (zero)	0 (zero)

\* 0 inches from vent components and condensate drain line.

The clearance for servicing is 24 inches in front of the water heater.

For closet installation, clearance is 6 inches (152 mm) from the front.



**Outdoor models: RU98e, C199e**

	to Combustibles inches (mm)	to Non- Combustibles inches (mm)
<b>Top of Heater</b>	12 (305)	2 (51)
<b>Back of Heater</b>	0 (zero)	0 (zero)
<b>Front (panel)</b>	24 (610)	0 (zero)
<b>Front (exhaust)</b>	24 (610)	24 (610)
<b>Sides of Heater</b>	6 (152)	1/8 (3.2)
<b>Ground/Bottom</b>	12 (305)	2 (51)

The clearance for servicing is 24 inches in front of the water heater.

## MSB Control System and EZConnect

- Each MSB-M board will connect up to 5 water heaters using the MSB-C1 kits.
- Up to 5 MSB-M boards can be connected together with communication cables (MSB-C2 kits) allowing up to 25 water heaters to operate as a single system.
- An MSB system could have an operating range of 15,200 BTU to as great as 5 million BTU. In terms of flow rate, 0.4 gpm to 245 gpm.
- When multiple water heaters are operating, they will attempt to supply equal amounts of hot water.
- The temperature setting for all of the connected water heaters is controlled by the temperature controller connected to the water heater with the Master MSB Board. Temperature controllers connected to the other units will provide maintenance codes for their respective units.
- If a water temperature over 140 degree F is desired, then an MCC-91-2 controller needs to be connected to Master Control Board
- The order in which each water heater operates is occasionally rotated to ensure equal usage among the entire system.
- Detailed installation instructions are provided with each of the kits.

NOTE: For tankless only systems, reference MSB installation instructions to ensure distance between racks do not exceed MSB communication cable length.

\* The Rinnai EZConnect™ is specifically designed for connecting only 2 water heaters.

No. of water heaters	Number of Components Required		
	MSB-M	MSB-C1	MSB-C2
2*	1	NA	NA
3	1	1	NA
4	1	2	NA
5	1	3	NA
6	2	2	1
7	2	3	1
8	2	4	1
9	2	5	1
10	2	6	1
11	3	5	2
12	3	6	2
13	3	7	2
14	3	8	2
15	3	9	2
16	4	8	3
17	4	9	3
18	4	10	3
19	4	11	3
20	4	12	3
21	5	11	4
22	5	12	4
23	5	13	4
24	5	14	4
25	5	15	4

### MSB-M kit includes

- Control board
- Cable A (23 in, 585 mm)
- Cable B (9.8 ft, 3 m)
- Brackets, ties, and screws
- Instructions

### MSB-C1 kit includes

- Cable B (9.8 ft, 3 m)
- Brackets, ties, and screws
- Instructions

### MSB-C2 kit includes

- MSB Cable (26.2 ft, 8 m)
- Terminal connectors
- Instructions





# A tradition of **TRUE RELIABILITY.**

For nearly 100 years, we at Rinnai have been fiercely committed to delivering nothing less than a superior experience at every touch point.

Beyond manufacturing the highest quality products, our people stand behind all that we make—before, during and long after installation. From the 24/7/365 technical support for professionals, to our national network of independent installers, to on-staff engineers who can assist with choosing the right products and sizes—we're inspiring confidence right along with the comfort our solutions provide.



# **Rinnai**®

Learn more about Rinnai high-performance Tankless Water Heaters,  
Hybrid Water Heating Systems, Boilers, Vent-Free Fan Convectors  
and EnergySaver® Direct Vent Wall Furnaces at:

**[rinnai.us](http://rinnai.us)**

Rinnai America Corporation • 103 International Drive, Peachtree City, GA 30269  
1-800-621-9419 • [rinnai.us](http://rinnai.us)

©2015 Rinnai America Corporation. Rinnai America Corporation continually updates materials, and as such, content is subject to change without notice. Local, state provincial, federal and national fuel gas codes must be adhered to prior to and upon installation.