

Model #: RTHDUB2



Year: 2020

Product Catalog

# Optimus™ Water-Cooled Chillers Model RTHD

150 to 430 (60 Hz) Nominal Tons

125 to 430 (50 Hz) Nominal Tons

Shipping Weight: 10,187 lbs  
Operating Weight: 10,886 lbs

L: 10' 7"  
W: 6'  
H: 6' 4"



March 2020

RLC-PRC020J-EN

TRANE  
TECHNOLOGIES



RTHD U B2 F X U0 U A C2 W 3 L A L D2 A 2 L A L A V X Q A E X A B A

# Model Number Descriptions

## Digits 1, 2, 3, 4 – Chiller Model

RTHD= Water-Cooled Optimus™ Chiller

## Digit 5 – Manufacturing Location

U = Water Chiller Business Unit, Pueblo, CO USA

## Digits 6, 7 – Compressor Frame

- B1 = B1 Compressor
- B2 = B2 Compressor
- C1 = C1 Compressor
- C2 = C2 Compressor
- D1 = D1 Compressor
- D2 = D2 Compressor
- D3 = D3 Compressor (50 Hz only)
- E3 = E3 Compressor (50 Hz only)

## Digits 8 – Unit Power Supply

- A = 200V/60Hz/3Ph power
- C = 230V/60Hz/3Ph power
- D = 380V/60Hz/3Ph power
- F = 460V/60Hz/3Ph power
- H = 575V/60Hz/3Ph power
- R = 380V/50Hz/3Ph power
- T = 400V/50Hz/3Ph power
- U = 415V/50Hz/3Ph power

## Digit 9 – Specials

X = No Specials

## Digit 10, 11 – Design Sequence

\*\* = Factory assigned

## Digit 12 – Agency Listing

- X = No Agency Listing
- U = UL Listed to US and Canadian Safety Standard
- A = IBC Seismically Rated
- B = UL/Canadian and IBC
- C = OSHPD Seismically Rated
- D = UL/Canadian and OSHPD

**Note:** Digit 12 selections A, B, C & D are special order only.

## Digit 13 – Pressure Vessel Code

- A = ASME Pressure Vessel Code
- C = Canadian Code
- D = Australian Code
- L = Chinese Code-Imported Pressure Vessel

## Digits 14, 15 – Evaporator

- B1 = B1 Evaporator
- B2 = B2 Evaporator
- C1 = C1 Evaporator
- C2 = C2 Evaporator
- D1 = D1 Evaporator
- D2 = D2 Evaporator
- D3 = D3 Evaporator
- D4 = D4 Evaporator
- D5 = D5 Evaporator
- D6 = D6 Evaporator
- E1 = E1 Evaporator
- F1 = F1 Evaporator
- F2 = F2 Evaporator
- G1 = G1 Evaporator
- G2 = G2 Evaporator
- G3 = G3 Evaporator

## Digit 16 – Evaporator Tube Type

- A = Enhanced fin copper (all fluids)
- W = Enhanced fin copper (water only)

## Digit 17 – Evaporator Water Pass Configuration

- 2 = 2 Pass
- 3 = 3 Pass
- 4 = 4 Pass

## Digit 18 – Evaporator Water Connection

- L = Left Hand
- R = Right Hand

## Digit 19 – Evaporator Connection Type

A = Standard Grooved Pipe

## Digit 20 – Evaporator Water Side Pressure

- L = 150 psi (10.5 bar)
- H = 300 psi (21 bar)

## Digit 21, 22 – Condenser

- B1 = B1 Condenser
- B2 = B2 Condenser
- D1 = D1 Condenser
- D2 = D2 Condenser
- E1 = E1 Condenser
- E2 = E2 Condenser
- E3 = E3 Condenser
- E4 = E4 Condenser
- E5 = E5 Condenser
- F1 = F1 Condenser
- F2 = F2 Condenser
- F3 = F3 Condenser
- G1 = G1 Condenser
- G2 = G2 Condenser
- G3 = G3 Condenser

## Digit 23 – Condenser Tube Type

- A = Enhanced Fin Copper - 0.028"
- B = Smooth Bore Copper
- C = Smooth Bore CuNi
- D = Enhanced Fin Copper - 0.025"

## Digit 24 – Condenser Water Passes

2 = 2 Pass

## Digit 25 – Condenser Water Connection

- L = Left Hand
- R = Right Hand

## Digit 26 – Condenser Connection Type

- A = Standard Grooved Pipe
- C = Marine
- S = Special

## Digit 27 – Condenser Waterside Pressure

- L = 150 psi (10.5 bar)
- H = 300 psi (21 bar)

## Digit 28 – Condenser Leaving Water Temperature

A = Standard

## Digit 29 – Refrigerant Isolation Valves

- X = No Refrigerant Isolation Valves
- V = With Refrigerant Isolation Valves

## Digit 30 – Oil Cooler

- X = Without Oil Cooler
- C = With Oil Cooler

## Digit 31 – Thermal Insulation

- X = No Insulation
- Q = Factory Installed Insulation

## Digit 32 – Acoustic Insulation

X = No Insulation

## Digit 33 – Label and Literature Language

- C = Spanish
- E = English
- F = French

## Digit 34 – Safety Devices

X = Standard

## Digit 35 – Factory Charge

- A = Refrigerant Charge R-134a
- B = Nitrogen Charge (R-134a Field Supplied)
- C = Refrigerant Charge R-513A
- D = Nitrogen Charge (R-513A Field Supplied)

## Digit 36 – Shipping Package

- A = No Skid (Standard)
- B = Shrink Wrap
- C = Skid
- D = Skid + Shrink Wrap

## Digit 37 – Flow Switch

- X = No Flow Switch
- A = Evaporator (NEMA 1)
- B = Evaporator and Condenser (NEMA 1)



## Model Number Descriptions

D V 171 F 3 U T 7

- C = Evaporator (NEMA 4)
- D = Evaporator and Condenser (NEMA 4)

### Digit 38 – Factory Test

- X = Standard Test
- C = Witness Test
- D = Performance Test

### Digit 39 – Starter Type

- Y = Wye-Delta Closed Transition Starter
- V = Premium AFD

### Digits 40, 41, 42 – Design RLA (for starter)

- \*\*\* = Selection Assigned

### Digit 43 – Power Line Connection Type

- A = Terminal Block
- B = Mechanical Disconnect Switch
- D = Circuit Breaker
- F = High Interrupt Circuit Breaker

### Digit 44 – Max RLA (Starter)

- C = 277 max RLA (Fixed Speed)
- E = 364 max RLA (Fixed Speed)
- G = 126 max RLA (Drive and Panel)
- H = 150 max RLA (Drive and Panel)
- J = 185 max RLA (Drive and Panel)
- K = 234 max RLA (Drive and Panel)
- L = 279 max RLA (Drive and Panel)
- M = 316 max RLA (Drive and Panel)
- N = 366 max RLA (Drive and Panel)
- Q = 397 max RLA (Fixed Speed)
- R = 476 max RLA (Fixed Speed)
- T = 598 max RLA (Fixed Speed)
- U = 779 max RLA (Fixed Speed)
- V = 197 max RLA (Drive and Panel)
- W = 241 max RLA (Drive and Panel)
- X = 292 max RLA (Drive and Panel)
- Y = 367 max RLA (Drive and Panel)
- Z = 446 max RLA (Drive and Panel)
- 1 = 549 max RLA (Drive and Panel)
- 2 = 176 max RLA (Drive and Panel)
- 3 = 223 max RLA (Drive and Panel)
- 4 = 280 max RLA (Drive and Panel)
- 5 = 335 max RLA (Drive and Panel)
- 6 = 411 max RLA (Drive and Panel)
- 7 = 455 max RLA (Drive and Panel)

### Digit 45 – Under/Over Voltage Protection

- X = None
- U = With Under/Over Voltage Protection

### Digit 46 – Operator Interface

- T = Tracer AdaptiView™ TD7 Display

### Digit 47 – Digital Communication Interface

- X = None
- 5 = LCI-C (LonTalk®) Interface
- 7 = BACnet® MS/TP
- 8 = Modbus™ Interface

### Digit 48 – External Water & Current-Limit Setpoint

- X = None
- 2 = 2–10 Vdc input
- 4 = 4–20 mA input

### Digit 49 – External Base Loading

- X = None
- 2 = 2–10 Vdc input
- 4 = 4–20 mA input

### Digit 50 – Ice Making

- X = None
- A = Ice Making with Relay
- B = Ice Making without Relay

### Digit 51 – Programmable Relays

- X = None
- R = With Programmable Relays

### Digit 52 – Chilled Water Reset

- X = Chilled Water Reset - Return Water
- T = Chilled Water Reset - Outdoor Air Temperature

### Digit 53 – Control Outputs

- X = None
- D = Chiller Differential Pressure & Percent RLA
- P = Condenser Pressure (% HPC) & Percent RLA
- V = Condenser Regulating Valve Control & Percent RLA

### Digits 54 – Refrigerant Monitor Input

- X = None
- A = 100 ppm / 4-20 mA
- B = 1000 ppm / 4-20 mA
- C = 100 ppm / 2-10 Vdc
- D = 1000 ppm / 2-10 Vdc

### Digit 55 – Condenser Leaving Hot Water Temp Control

- X = None
- H = Hot Water Temp Control

### Digits 56, 57, 58 – AFD Output Amps

- 000 = Not Applicable (wye-delta starter)
- \*\*\* = Selection Assigned (when AFD option selected)



# General Data

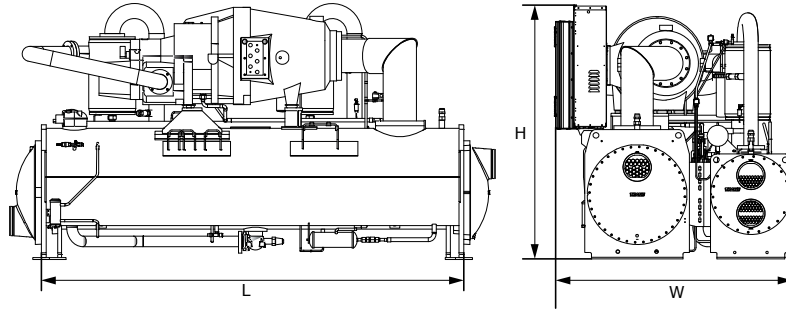
Table 1. General data

Description	Units	Unit Configuration <sup>(a)</sup>									
		B1B1B1	B1C1D1	B2B2B2	B2C2D2	C1D5E4	C1D6E5	C1E1F1	C2D3E3		
<b>GENERAL</b>											
	RefrigerantType		R-134a or R-513A								
	Refrigerant Charge	lb	410	490	410	490	490	490	525	490	
kg		186	222	186	222	222	222	238	222		
Wye-delta starter with R-134a <sup>(b)</sup>	Oil Type	OIL48									
	Oil Charge (c)	gal	4.5	4.5	4.5	4.5	6	6	10	6	
		L	17	17	17	17	23	23	38	23	
Wye-delta starter R513A <sup>(b)</sup>	Oil Type	OIL315									
	Oil Charge (c)	gal	4.5	4.5	4.5	4.5	6	6	10	6	
		L	17	17	17	17	23	23	38	23	
AFD Starter (b)	Oil Type	OIL315									
	Oil Charge	gal	7.5	7.5	7.5	7.5	10	10	11	10	
		L	28.5	28.5	28.5	28.5	38	38	42	38	
<b>EVAPORATOR</b>											
	Water Storage	gal	41	55	45	58	52	45	82	78	
		L	155	208	170	220	197	170	310	295	
<b>2-pass</b>	Connection size	in	8	8	8	8	8	8	8	8	
		mm	200	200	200	200	200	200	200	200	
	Min Flow - Water	gpm	253	320	288	347	351	293	450	486	
		l/s	16	18	22	22	21	18	28	31	
	Min Flow - Freeze Inhibitor	gpm	303	346	346	375	422	352	487	584	
		l/s	19	22	22	24	27	22	31	37	
Maximum Flow	gpm	1104	1412	1266	1531	1542	1287	1980	2131		
	l/s	70	89	80	97	97	81	125	134		
<b>3-pass</b>	Connection size	in	6	6	6	6	8	8	8	8	
		mm	150	150	150	150	200	200	200	200	
	Min Flow - Water	gpm	168	213	192	232	234	196	300	324	
		l/s	11	13	12	15	15	12	19	20	
	Min Flow - Freeze Inhibitor	gpm	200	254	233	276	281	233	357	389	
		l/s	13	16	15	17	18	15	23	25	
Maximum Flow	gpm	736	941	844	1022	1028	860	1320	1417		
	l/s	46	59	53	65	65	54	83	89		

## Dimensions – Units with AFD Option

**Note:** Overall unit dimensions for units with the AFD option are shown in the below table. All other dimensions are the same as standard unit dimensions specified in “Unit Dimensions – Standard (Wye-Delta Starter),” p. 34.

**Figure 7. Overall unit dimensions - units with AFD option**



**Table 8. Overall dimensions – units with AFD option<sup>(a)</sup>**

Unit Configuration <sup>(b)</sup>	AFD D1H Frame						AFD D2H Frame					
	Length (L)		Width (W)		Height (H)		Length (L)		Width (W)		Height (H)	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
B1B1B1	107.6	2734	71.3	1811	75.6	1920	107.6	2733	71.3	1811	80.8	2052
B1C1D1	125.9	3198	71.3	1811	75.6	1920	125.9	3198	71.3	1811	80.8	2052
B2B2B2	107.6	2734	71.3	1811	75.6	1920	107.6	2733	71.3	1811	80.8	2052
B2C2D2	125.9	3198	71.3	1811	75.6	1920	125.9	3198	71.3	1811	80.8	2052
C1D5E4	107.6	2734	74.5	1893	78.3	1989	107.6	2734	74.5	1893	83.5	2121
C1D6E5	107.6	2734	74.5	1893	78.3	1989	107.6	2734	74.5	1893	83.5	2121
C1E1F1	125.9	3198	74.4	1891	78.3	1989	125.9	3198	74.4	1891	83.5	2121
C2D3E3	107.6	2734	74.5	1893	78.3	1989	107.6	2734	74.5	1893	83.5	2121
C2D4E4	107.6	2734	74.5	1893	78.3	1989	107.6	2734	74.5	1893	83.5	2121
C2F2F3	125.9	3198	74.2	1886	78.7	1999	125.9	3198	74.2	1886	84.3	2141
D1D1E1	-	-	-	-	-	-	107.6	2734	74.5	1893	83.5	2121
D1F1F2	-	-	-	-	-	-	125.9	3198	74.2	1885.7	84.3	2141
D1G1G1	-	-	-	-	-	-	125.9	3289	76.7	1948	87.3	2217
D1G2G2	-	-	-	-	-	-	125.9	3289	76.7	1948	87.3	2217
D2D2E2	-	-	-	-	-	-	107.6	2734	74.5	1893	83.5	2121
D2F2F3	-	-	-	-	-	-	125.9	3198	74.2	1886	84.3	2141
D2G2G1	-	-	-	-	-	-	125.9	3289	76.7	1948	87.3	2217
D2G3G3	-	-	-	-	-	-	125.9	3289	76.7	1948	87.3	2217
D3D2E2	-	-	-	-	-	-	107.6	2734	74.5	1893	83.5	2121
D3F2F3	-	-	-	-	-	-	125.9	3198	74.2	1886	84.3	2141
D3G2G1	-	-	-	-	-	-	125.9	3289	76.7	1948	87.3	2217
E3D2E2	-	-	-	-	-	-	107.6	2734	74.5	1893	83.5	2121
E3F2F3	-	-	-	-	-	-	125.9	3198	74.2	1886	84.3	2141
E3G2G1	-	-	-	-	-	-	125.9	3289	76.7	1948	87.3	2217
E3G3G3	-	-	-	-	-	-	125.9	3289	76.7	1948	87.3	2217

(a) Dimensions vary with AFD frame size. D1H frame size used on units with model number digit 44 = V, W, X, 2, 3, 4, G, H or J. D2H frame size used with model number digit 44 = Y, Z, 1, 5, 6, 7, K, L, M or N.

(b) Unit configuration digits 1, 2 - compressor code (also shown in unit model number digits 6, 7); digits 3, 4 - evaporator code (unit model number digits 14, 15); digits 5, 6 - condenser code (unit model number digits 21, 22).

**Table 11. Weights — units with AFD option<sup>(a)</sup>**

Unit Configuration <sup>(b)</sup>	Shipping Weight				Operating Weight			
	AFD D1H Frame		AFD D2H Frame		AFD D1H Frame		AFD D2H Frame	
	lbs	kg	lbs	kg	lbs	kg	lbs	kg
B1B1B1	9526	4321	9664	4384	10101	4582	10239	4645
B1C1D1	10071	4568	10209	4631	10787	4893	10925	4956
B2B2B2	9636	4371	9774	4434	10251	4650	10389	4713
B2C2D2	10187	4621	10325	4684	10886	4938	11024	5001
C1D5E4	13206	5990	13344	6053	13904	6307	14043	6370
C1D6E5	13014	5903	13153	5966	13631	6183	13770	6246
C1E1F1	14949	6781	15088	6844	16801	7621	16940	7684
C2D3E3	14235	6457	14374	6520	15278	6930	15417	6993
C2D4E4	13206	5990	13344	6053	13907	6308	14046	6371
C2F2F3	17055	7736	17194	7799	18446	8367	18585	8430
D1D1E1	-	-	14815	6720	-	-	15756	7147
D1F1F2	-	-	16559	7511	-	-	17910	8124
D1G1G1	-	-	18973	8606	-	-	20873	9468
D1G2G2	-	-	19480	8836	-	-	21438	9724
D2D2E2	-	-	14934	6774	-	-	15944	7232
D2F2F3	-	-	17194	7799	-	-	18594	8434
D2G2G1	-	-	19072	8651	-	-	21074	9559
D2G3G3	-	-	19881	9018	-	-	22013	9985
D3D2E2	-	-	14934	6774	-	-	15944	7232
D3F2F3	-	-	17194	7799	-	-	18594	8434
D3G2G1	-	-	19023	8629	-	-	21023	9536
E3D2E2	-	-	15093	6846	-	-	16100	7303
E3F2F3	-	-	17337	7864	-	-	18728	8495
E3G2G1	-	-	19173	8697	-	-	21173	9604
E3G3G3	-	-	20036	9088	-	-	22169	10056

**Notes:**

1. All weights +/- 3%
2. Shipping weights include standard 150 psig water boxes, refrigerant charge and oil charge.
3. Operating weights include refrigerant, oil and water charges.
4. AFD frame size determined by unit selection. See submittal for information.

(a) Weights vary with AFD frame size. D1H frame size used on units with model number digit 44 = G, H, J, V, W, X, 2, 3, or 4. D2H frame size used with model number digit 44 = K, L, M, N, Y, Z, 1, 5, 6, or 7.

(b) Unit configuration digits 1, 2 - compressor code (also shown in unit model number digits 6, 7); digits 3, 4 - evaporator code (unit model number digits 14, 15); digits 5, 6 - condenser code (unit model number digits 21, 22).