

T^W-CLASS WATER-COOLED CHILLERS
WE design series



SMARDT
GLOBAL #1 IN OIL-FREE CHILLERS

SMARDT

T^W-CLASS CHILLERS

This publication contains information proprietary and confidential to Smardt Chiller Group Inc. and its subsidiary companies ("Smardt"). Any reproduction, disclosure or unauthorized use of this publication is expressly prohibited without written permission from Smardt. Smardt reserves the right to make changes to the product or component design as and when warranted and without notice, in line with user needs or evolution in engineering and manufacturing technologies.

Smardt has exercised its best efforts to ensure that the information contained in this publication is correct at time of printing. However, no warranty, reliability or accuracy is given with respect to the information contained herein, and Smardt is not and shall not be responsible for any error or omission, or liable for the correctness or suitability of the information given. All brand names and product names used in this publication are trademarks, registered trademarks, or trade copyrights of Smardt.

Contents

T ^w -CLASS OVERVIEW5
DESIGN FLEXIBILITY6
HTML INTERFACE8
OPTIONAL FEATURES9
CHILLER NOMENCLATURE	12
CAPACITY RANGE - T ^w -Class (R134A).....	13
TECHNICAL DATA (IMPERIAL).....	14
Lower DP - Non-Economized.....	14
Higher DP - Non-Economized	15
Lower DP - Economized	16
Higher DP - Economized	17
TECHNICAL DATA (METRIC).....	18
Lower DP - Non-Economized.....	18
Higher DP - Non-Economized	19
Lower DP - Economized	20
Higher DP - Economized	21
APPLICATION CONSIDERATIONS.....	22
Chilled Water Requirements	22
Evaporator Water Circuits.....	22
Chilled Water Temperature Limits	22
Flow Safety Interlocks.....	22
INSTALLATION REQUIREMENTS	22
Side Clearances.....	22
Mounting Requirements.....	22
ENGINEERING SPECIFICATIONS.....	23

SMARDT

© 2019, Smardt Chiller Group Inc. All rights reserved.



All Smardt chillers are ETL-listed. Electrical safety for the life of the chiller is a fundamental requirement throughout the company. Smardt evaporators and condensers conform to the ASME pressure vessel codes.

Smardt T-Class energy efficiency performance is certified according to AHRI standard 551/591, as is confirmed by AHRI on its website www.ahrinet.org. The IPLV performance of its chillers always exceeds minimum levels set out by ASHRAE standard 90.1, CSA 743, Eurovent, Australia's MEPS, China's CRAA and others, usually by a very considerable margin. Smardt, in company with the majority of the HVACR industry's leading engineers, considers the use of full-load energy efficiencies to predict any chiller's actual year-round energy-efficiency under US comfort-cooling conditions to be totally misleading, and therefore discourages their use.

Witness tests can be arranged on appropriate notice and for an appropriate fee on Smardt's AHRI-certified test stands in Montreal, Canada; Melbourne, Australia; Plattsburgh, USA and Guangzhou, China.

T^W-CLASS OVERVIEW

Smardt's T^W-Class series of water-cooled chillers are designed to reliably deliver high efficiencies across a wide range of operating conditions. The base range of models, offers multiple performance options, creating an array of combinations to suit any project requirement.

Smardt has brought its extensive experience in oil-free chiller development, sales and service into designing the T^W-Class – a range of water-cooled chillers that deliver the highest level of reliability, outstanding efficiency and the lowest total cost of ownership.

The T^W-Class comes with the same benefits as all Smardt chillers, such as ease of installation, simplicity of operation and maintenance, and lower operating and maintenance costs.



HIGHLIGHTS

- LARGEST CAPACITY RANGE IN OIL-FREE WATER-COOLED CHILLERS.
- TYPICALLY SMALLER FOOTPRINT THAN CHILLERS OF COMPARABLE CAPACITY.
- RESPONSIVE CHILLED WATER CONTROL UNDER ALL CONDITIONS.
- INBUILT REDUNDANCY WITH MULTIPLE COMPRESSORS.
- CLASS LEADING PART-LOAD EFFICIENCIES, ACHIEVING OPTIMUM IPLV IN TOTAL CAPACITY RANGE.
- DESIGNED FOR EASE OF MAINTENANCE AND SERVICEABILITY, FEATURING FIELD-SERVICEABLE COMPRESSORS.
- DUAL-TURBINE COMPRESSION TECHNOLOGY, COUPLED WITH AN ECONOMIZER, DELIVERING CLASS-LEADING PERFORMANCE.
- SMARDT QUALITY, ACCEPTANCE TESTED AND PRE-COMMISSIONED PRIOR TO DELIVERY.
- ENSURING TROUBLE-FREE COMMISSIONING AND START-UP ON EVERY PROJECT.

DESIGN FLEXIBILITY

SMARDT T-CLASS WATER-COOLED CHILLER RANGE - 85 - 1140 TR (300-4000 KWR)

LOWEST LIFETIME OPERATING COSTS

Smardt works hard to minimize the complexity in chiller design and operation, and Smardt simplicity is reflected in low product operating costs. The thinking makes simple sense: no oil, flooded shell-and-tube evaporation, soft start, low power consumption, low maintenance costs and high reliability.

OIL-FREE COMPRESSOR TECHNOLOGY

At the core of all Smardt chillers is an oil-free Turbocor® compressor, featuring magnetic bearing technology. With no oil to compromise heat exchanger performance, and no friction losses associated with conventional compressor bearings, Smardt chillers are able to achieve exceptional full- and part-load efficiencies. This ultra high speed technology eliminates up to 99% of compressor induced vibration, and dramatically reduces the sound levels emitted by the chiller.

ENVIRONMENTALLY RESPONSIBLE

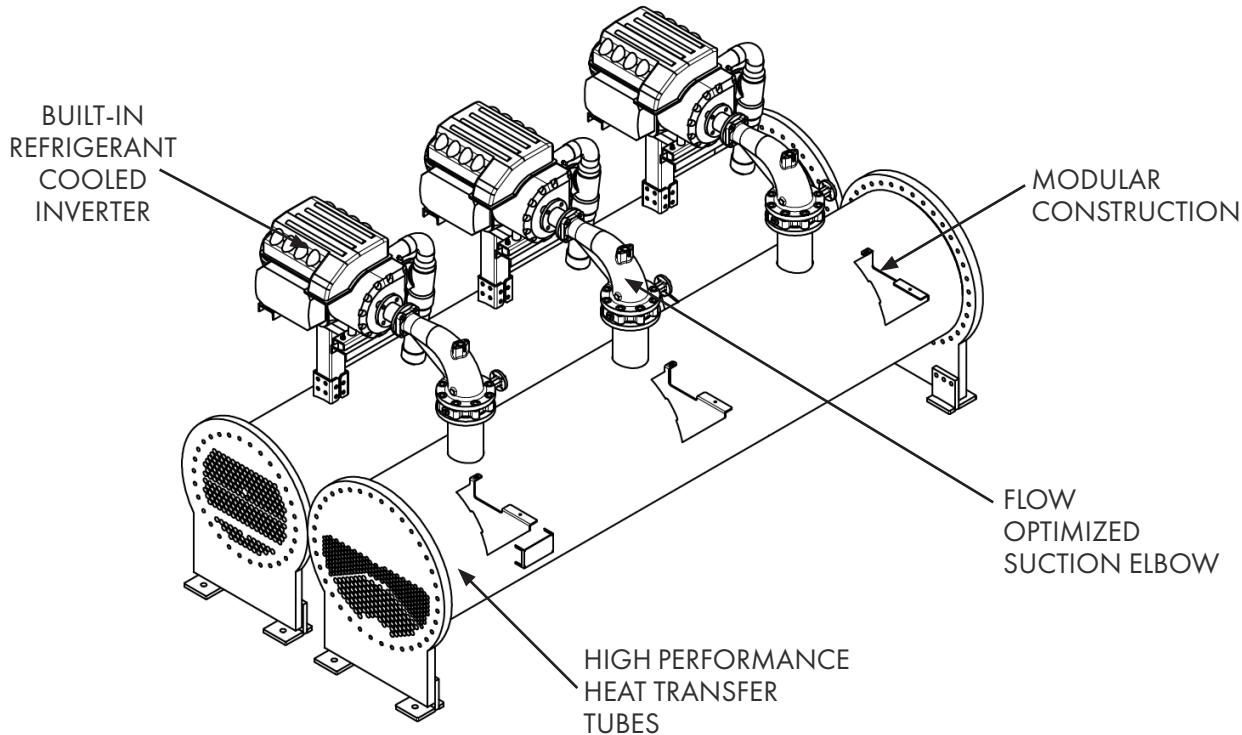
All T^W-Class chillers utilize HFC 134a refrigerant. Additionally the Smardt G-Class range of water-cooled chillers offers a range of low GWP HFO refrigerants, compliant with long term EU F-gas regulations. Please refer to the Smardt G-Class literature for more information.

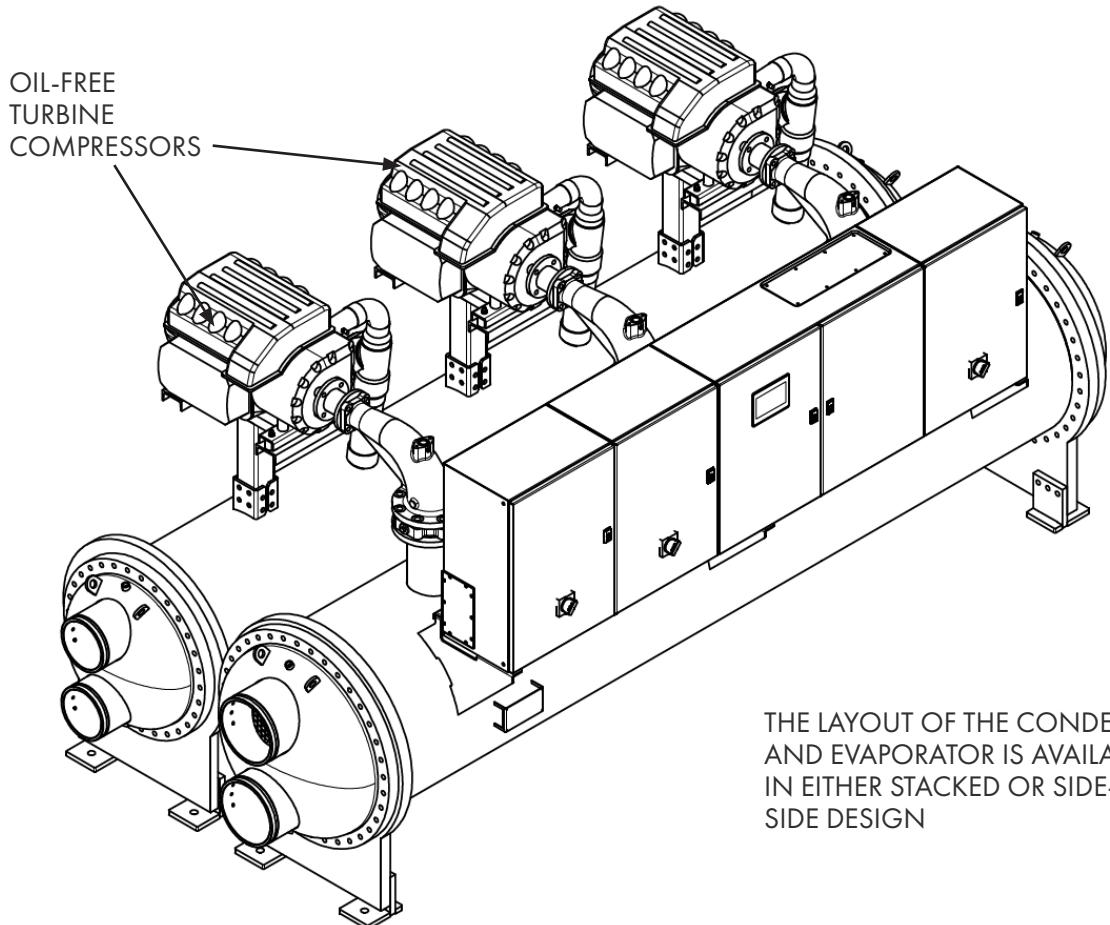
RELIABILITY & REDUNDANCY



With the experience of more than 8000 chillers now installed worldwide, Smardt chillers offer outstanding reliability. On multiple-compressor models, mechanical and electrical isolation provides significant redundancy and fail-safes.

In the event of a compressor outage, Smardt's controller will automatically adjust its logic to continue serving the chilled water load with the remaining available compressors. Should a compressor require servicing, it can be quickly and easily isolated, even removed, without stopping the chiller.





ADAPTABLE BY DESIGN

Stacked and side-by-side options for all base models.
Customizable configurations to meet space requirements.

SERVICEABILITY

All Smardt chillers are available with refrigerant isolation valves on both sides of serviceable components, to minimize ongoing maintenance requirements. This facilitates servicing without the need to pump down the entire unit, and in most cases can be undertaken while the chiller remains operational. The majority of serviceable components are readily accessible from the perimeter of the unit, with each compressor easily accessible in its weather resistant cover.

COMPACTNESS

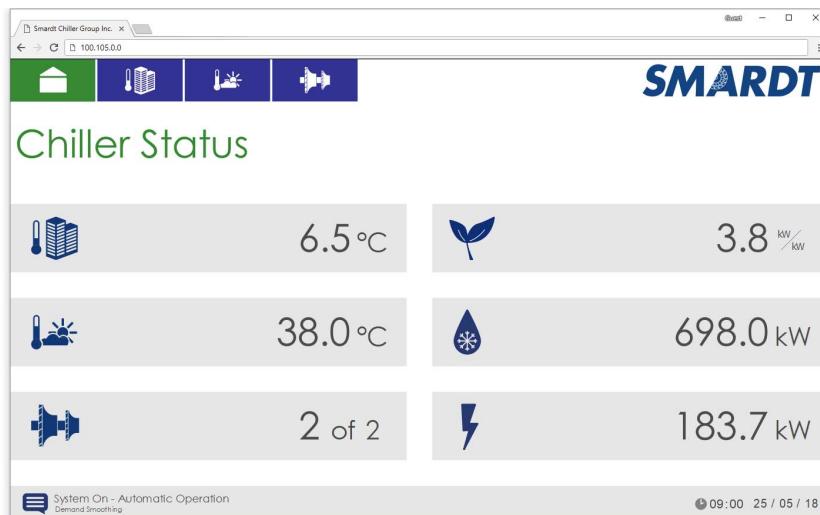
T^W-Class series of chillers offer a small footprint, when compared with oil-free chillers of a comparable capacity. Through the use of larger capacity compressors, in place of multiple smaller compressors, chilled water plants can now experience the efficiency of oil-free without sacrificing space.

CONTROL SYSTEM

Proven across years of industry experience in oil-free chiller operation, Smardt's advanced chiller controller is designed to optimize the performance and capabilities of the T^W-Class chiller range. Capacity can be reduced to as little as 10% of full-load capacity (for some models). Simple integration with BMS (building management systems) via Modbus RTU is provided as an option.

HTML INTERFACE

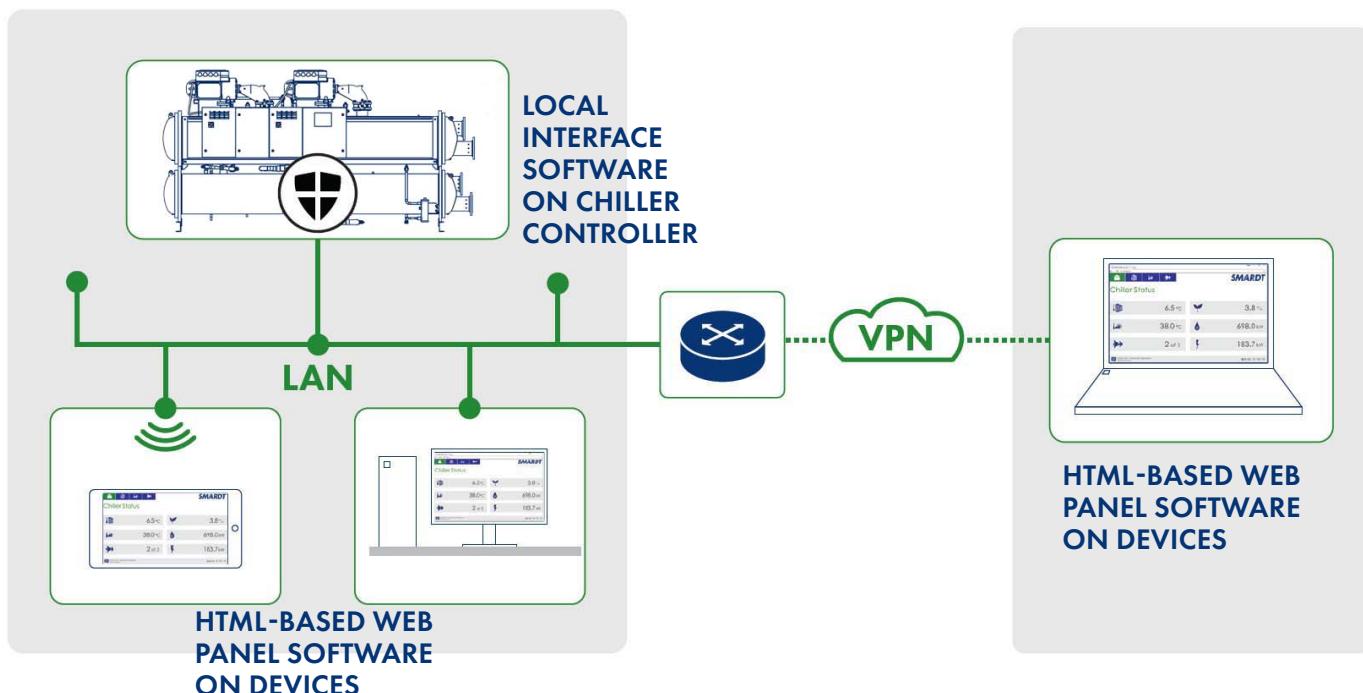
Smardt controls provide a web-based alternative to traditional hardware controls. Using the HTML-based web panel software in combination with the local touchscreen interface display gives the customer both the ease-of-use of a traditional control panel and the flexibility of a web panel. The web panel software is installed on any digital device (e.g., cell phone, tablet or computer) running a web browser with access to the local network or via a secure VPN connection. The interface software is installed on the chiller controller.



REMOTE CONNECTIVITY

All Smardt T^W chillers feature an integrated HTML server that can be configured to deliver real-time monitoring of chiller performance on any web-enabled device connected to the same local area network as the chiller. Remote viewing of this data would also be made possible with a secure VPN connection.

The HTML server features an inbuilt firewall which provides security against unauthorized access to the chiller. The firewall has been independently tested to OSSTMM; which is internationally recognized as best practice in vulnerability assessment and penetration testing.



OPTIONAL FEATURES

The WE range has been designed with an array of options to meet the requirements of your location, application or critical operating environment.

ITEM	DESCRIPTION	STANDARD	OPTIONAL NOTE: ** denotes not available in all locations.
VESSEL OPTIONS			
Tube sheet	Steel tube sheets support a series of copper tubes, arranged in a pattern and on an angle as per the direction of flow of fluids.	Standard hardened mild steel tube sheets	1. Stainless steel condenser and evaporator tube sheets
Water box (condenser and evaporator)	Water boxes are located at the ends of the condenser and evaporator. The number of passes, determines whether water boxes have either 1 or 2 flanged connections or are capped and they redirect flow back into the next pass.	Standard - 145 psi (1MPa) condenser and evaporator water box	1. High pressure - 290 psi (2 MPa) 2. Marine - 145 psi (1MPa) / 290 psi (2MPa) 3. Stainless steel (condenser + evaporator)
Evaporator insulation	All models are fitted with 3/4" (19 mm) insulation and covered with UV protectant.	Standard 3/4" (19 mm) insulation	1. 1 1/2" (38 mm) insulation 2. 1 1/2" (38 mm) insulation aluminum sheathed 3. 2" (50 mm) insulation & aluminum sheathed ** 4. 2 3/4" (57 mm) insulation SS316 sheathed **
Anodes	Protects submerged metal components from corrosion.	No anodes fitted	1. Magnesium anodes added to condenser water box
SERVICEABILITY			
Service isolation valves	Ability to isolate refrigerant charge.	No service valves installed for the refrigerant components	1. Compressor isolation valves only Suction and discharge service valves installed for each individual compressor. Reduces chiller cost upfront, but increases time and cost of future repairs on other refrigeration components such as expansion valves and certain sensors. 2. Service valve package Service valves will be installed either side of all major refrigeration components, such as compressors, expansion valves, and level sensors. Allows for rapid repairs to be carried out, in some instances cutting the total repair time from several days to just hours, due to the ability to isolate individual components, and repair them without evacuating the refrigerant from the entire chiller.
NOISE ATTENUATION			
Sound mitigation	Acoustic insulation added around the compressor discharge lines to reduce the chiller's noise level.	None	1. Discharge line acoustic wrap

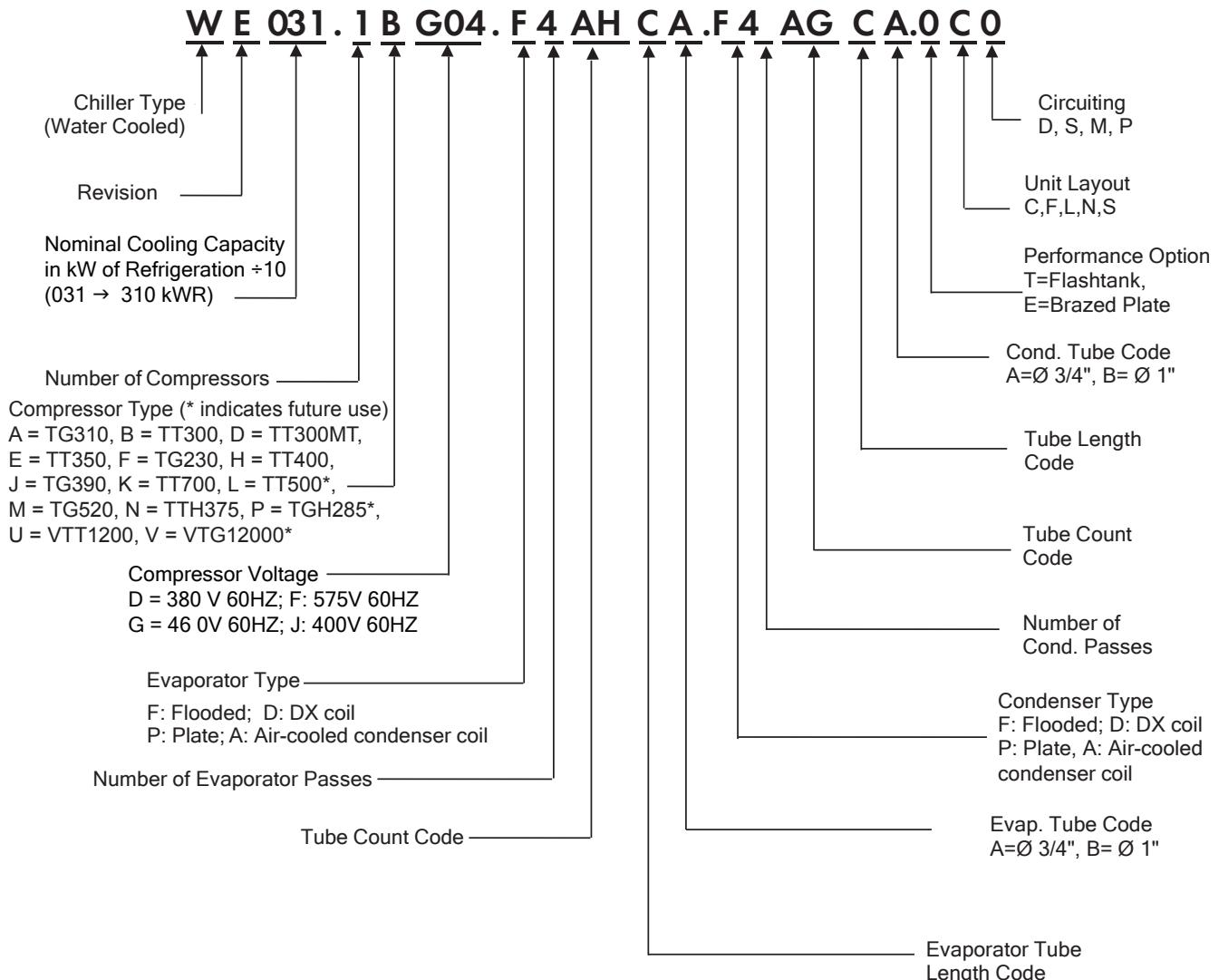
OPTIONAL FEATURES

ITEM	DESCRIPTION	STANDARD	OPTIONAL NOTE: ** denotes not available in all locations.
PERFORMANCE AND EFFICIENCY			
Economizer	Smardt economizers offer a cost-effective solution to achieve improved efficiency and increased capacity.	-	1. Brazed plate heat exchanger 2. Flash tank economizer
Smardt Lift	Smardt Lift will enable the chiller to run at full load and at enhanced efficiencies when supplying chilled water temperatures that are close to the condenser temperature. This is extremely beneficial in both high temperature chilled water applications, e.g. datacentres with 68 °F (20 °C) supply temperature, or in seasonal operation when the condenser temperature is similar to the design chilled water condition.	-	1. Smardt Lift
Smardt Restart	Designed for critical installations, Smardt Restart allows the chiller to resume operation in as little as 20 seconds following power supply restoration.	Smardt Restart	1. Smardt Restart - fast restart kit for more critical applications, such as datacentres, hospitals and industrial processes. Please consider adding Smardt restart, which further shortens this time to less than 20 seconds.
ELECTRICAL OPTIONS			
Harmonic filter	Determines existence of harmonic currents across the frequency spectrum and creates "anti-currents" to reduce the harmonics to acceptable levels.	Harmonic filter not installed	Active harmonic filter options available: 50, 75, 100, 150, 200, 250 or 300 amps Passive harmonic filters are available upon request Consult Smardt Sales to determine sufficient reduction in THD to comply with requirement(s).
Mains Isolator (Disconnect Switch)	Ensures electrical circuit is completely de-energized for service or maintenance.	Only available in certain locations as standard	Main switch (160, 250, 400, 630, 800, 1000, 1250, 1600, 2000 amps)**
Surge protection	Inserted in the alternating current (AC) utility line to prevent damage to electronic equipment from voltage transients.	No surge protection	1. Surge suppressor
Electrical enclosure	Provides personal protection and houses components from elements.	Standard electrical cabinets included with all units	1. Interior units are steel, corrosion-resistant paint 2. For outdoor applications, stainless steel cabinets are painted for additional corrosion protection.
Power monitoring	This option includes the installation of a class 0.5 power meter in the control panel, to provide a more accurate power reading made available through the Smardt controller to any HLI.	No power monitoring	1. Energy monitoring

OPTIONAL FEATURES

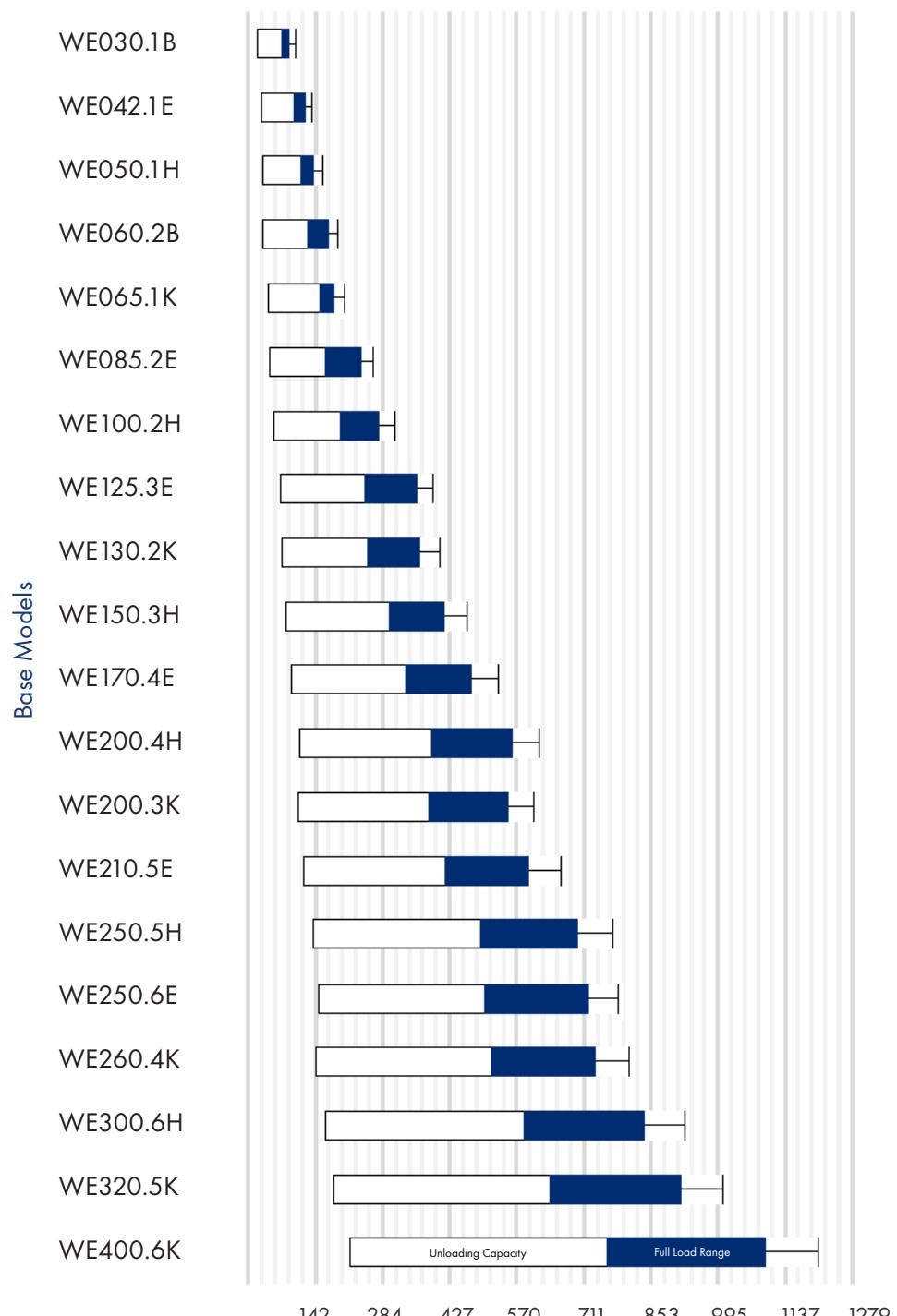
ITEM	DESCRIPTION	STANDARD	OPTIONAL NOTE: ** denotes not available in all locations.
CONTROLS			
Controller	Smardt controller facilitates control of the chiller and compressors, and some trending capabilities.	Smardt controller	
Interface	Smardt touchscreen is designed to make the interface simpler and easier to navigate.	HTML ready device interface	1. 7" (178 mm) touchscreen 2. 13" (330 mm) touchscreen
HLI Protocol	Smardt HLI protocol facilitates communication between the chiller and your building management system, and has the ability of supporting four common BAS protocols.	No communication card	1. BACnet HLI - MSTP 2. BACnet HLI - TCP/IP 3. Modbus HLI - RTU 4. Modbus HLI - TCP/IP

CHILLER NOMENCLATURE



CAPACITY RANGE - T^W-CLASS (R134A)

The T^W-Class range has been designed to meet a wide variety of applications, with full-load capacities of units with R134a, ranging from 85 TR up to 1140 TR (300 kW_R up to 4000 kW_R).

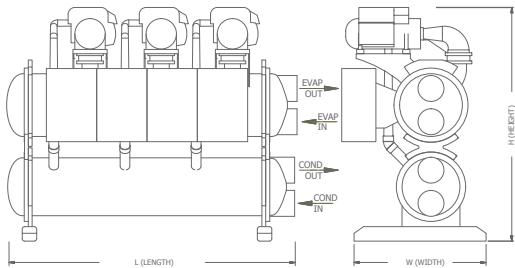


Note: Available cooling capacity will vary with operating conditions and chiller configuration. Capacities shown are based on standard AHRI conditions.

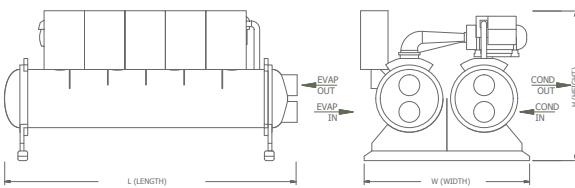
TECHNICAL DATA (IMPERIAL)

LOWER DP - NON-ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN



SIDE-BY-SIDE (S) DESIGN

WE Line R134A		WE030.1H.F4HBBA. F4AMBA.ONX	WE042.1E.F4HBBA. F4AVBA.ONX	WE050.1H.F4HBBA. F4ANFA.ONX	WE060.2B.F2AEFA. F2ANFA.ONX	WE065.1K.F4HQBA. F4BNBA.ONX	WE085.2E.F2ALFA. F2AXFA.ONX	WE100.2H.F2AQFA. F2BDFA.ONX	WE125.3E.F2AWFA. F2BPFA.ONX	WE130.2K.F2AYFA. F2BSFA.ONX	WE150.3H.F2BEFA. F2BYFA.ONX	WE170.4E.F2AQHB. F2BYHA.OSX	WE200.4H.F2IDHA. F2CJHA.OSX	WE200.3K.F2IDHA. F2CJHA.ONX	WE210.5E.F2AWKB. F2BDKB.OSX	WE250.5H.F2BCKB. F2BILKB.OSX	WE260.4K.F2IRHA. F2DHHA.OSX	WE320.5K.F2BMKB. F2CBKB.OSX	WE300.6H.F2BEKB. F2BVKB.OSX	WE400.6K.F2BTKB. F2CPKB.OSX	
Cooling capacity ⁽¹⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	56	78	88	57	113	79	90	79	115	90	79	89	113	77	88	78	113	89	113	113
COP (cold)		0.67	0.67	0.65	0.34	0.63	0.34	0.33	0.24	0.32	0.22	0.17	0.16	0.21	0.13	0.13	0.11	0.16	0.11	0.13	0.11
IPLV value		10.45	10.16	10.49	10.3	10.22	10.2	10.5	10.14	10.37	10.46	10.25	10.64	10.34	10.33	10.64	10.33	10.53	10.62	10.59	10.56
Cooling capacity ⁽²⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	55	76	87	55	111	77	88	77	112	88	77	87	111	76	87	76	111	87	111	111
COP (cold)		0.64	0.64	0.62	0.33	0.61	0.32	0.32	0.22	0.31	0.21	0.16	0.16	0.20	0.13	0.13	0.11	0.15	0.10	0.12	0.10
ESEER value		9.98	9.78	10.1	9.93	9.65	10.1	10.4	9.95	10.13	10.27	10.08	10.42	10.05	10.1	10.39	10.14	10.32	10.41	10.32	10.24
Cold water flow rate ⁽¹⁾	gpm	189	265	309	378	404	529	618	794	809	928	1058	1237	1213	1323	1547	1587	1617	1856	2022	2426
Cooling water flow ⁽¹⁾	gpm	229	320	374	458	490	640	749	961	979	1123	1281	1498	1469	1602	1872	1922	1958	2247	2448	2937
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure drop evaporator ⁽¹⁾	psi	5	6	6	5	6	5	5	6	5	5	4	5	5	4	4	5	5	5	5	
Pressure drop condenser ⁽¹⁾	psi	5	5	5	4	5	4	3	4	3	3	6	5	5	4	4	5	4	4	4	
Voltage V-Ph-Hz																					
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A																				
Length	in	82.0	83.5	83.5	115.9	88.0	118.9	118.9	120.4	123.4	123.4	151.0	152.5	152.5	185.5	187.0	187.0	155.5	188.5	190.0	193.0
Width	in	50.7	52.8	52.8	48.7	58.7	52.8	52.8	54.7	58.7	58.7	85.4	87.4	60.7	89.7	94.1	94.1	96.4	100.2	104.1	106.5
Height	in	83.8	89.8	90.9	81.6	101.8	92.7	94.9	97.9	101.8	105.2	77.3	79.6	107.3	81.9	84.3	84.3	86.2	88.6	90.6	
Sound pressure level at 1m distance	dB(A)	77.5	77.9	80.9	80.5	85	80.9	83.9	82.7	88	85.6	84	86.9	89.8	84.9	87.8	85.7	91	88.6	92	92.8
Empty weight	lbs	4345	5589	5970	5661	7496	7888	8459	9833	10132	11321	13869	14991	14176	17059	19074	19749	17950	21367	22648	26193
Charge weight	lbs	335	395	441	459	725	637	708	838	1105	1098	1442	1539	1539	2092	2407	2407	1978	2698	3080	3503
Operational weight	lbs	5860	7562	8133	7372	10728	10589	11422	13283	14107	15860	19165	20959	20144	24392	27412	28087	25706	31081	33484	38504

⁽¹⁾ IPLV-Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

⁽²⁾ ESEER Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

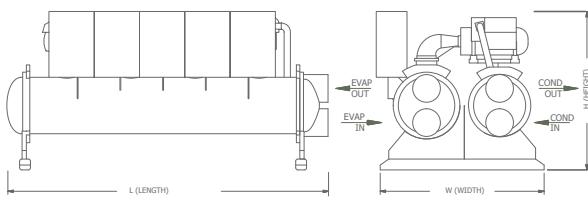
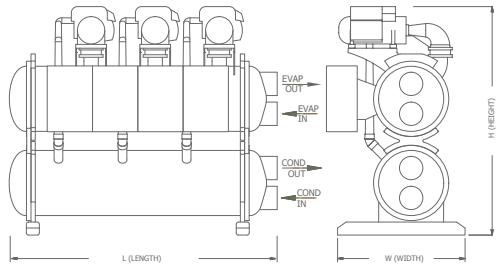
COP (Coefficient Of Performance) power in kW (cooling) per kW of drive power (energy consumption)

Max./min. ambient temperature: 113/41 °F, refrigerant R134a.

TECHNICAL DATA (IMPERIAL)

HIGHER DP - NON-ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN

SIDE-BY-SIDE (S) DESIGN

WE Line R134A		WE030.1B.F4HABA. F4AGBA.ONX	WE042.1E.F4HCBBA. F4ANBA.ONX	WE050.1H.F4HFBA. F4ATBA.ONX	WE060.2B.F2ACFA. F2ALFA.ONX	WE065.1K.F4HHLBA. F4BCBAA.ONX	WE085.2E.F2AHFFA. F2AVFFA.ONX	WE100.2H.F2ALFA. F2BHFFA.ONX	WE125.3E.F2ASEA. F2BDFFA.ONX	WE130.2K.F2AUFA. F2BRFFA.ONX	WE150.3H.F2AXFA. F2BDFFA.ONX	WE170.4E.F2PHHA. F2BKHA.ONX	WE200.4H.F2HUHA. F2BUHA.ONX	WE200.3K.F2HUHA. F2BUHA.ONX	WE210.5E.F2AMKB. F2AZKB.ONX	WE250.5H.F2ARKB. F2BFKB.ONX	WE260.4K.F2ARKB. F2BFKB.ONX	WE300.6H.F2AUKB. F2BPKB.ONX	WE320.5K.F2AYKB. F2BVKB.ONX	WE400.6K.F2BEKB. F2CFKB.ONX	
Cooling capacity ⁽¹⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	57	80	90	58	115	80	91	87	115	93	80	91	115	79	90	79	115	91	115	115
COP (cold)		0.668	0.666	0.645	0.337	0.629	0.336	0.327	0.243	0.316	0.222	0.167	0.163	0.211	0.133	0.129	0.111	0.158	0.108	0.126	0.105
IPLV value		10.27	9.998	10.33	10.17	10.04	10.1	10.39	9.834	10.32	10.19	10.14	10.45	10.16	10.2	10.5	10.21	10.37	10.49	10.44	10.42
Cooling capacity ⁽²⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	56	77	88	56	112	78	89	84	113	90	78	88	113	77	88	77	113	88	113	113
COP (cold)		0.652	0.646	0.628	0.328	0.615	0.326	0.318	0.234	0.309	0.214	0.163	0.158	0.206	0.129	0.126	0.108	0.155	0.105	0.123	0.103
ESEER value		9.90	9.71	10.0	9.86	9.57	9.99	10.29	9.73	10.11	10.12	10.03	10.33	9.98	10.04	10.33	10.08	10.25	10.36	10.26	10.18
Cold water flow rate ⁽¹⁾	gpm	189	265	309	378	404	529	618	794	809	928	1058	1237	1213	1323	1547	1587	1617	1856	2022	2426
Cooling water flow ⁽¹⁾	gpm	229	320	374	458	490	640	749	961	979	1123	1281	1498	1469	1602	1872	1922	1958	2247	2448	2937
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure loss evaporator ⁽¹⁾	psi	9	9	8	8	8	7	7	7	7	7	9	9	9	9	8	9	9	9	9	9
Pressure loss condenser ⁽¹⁾	psi	8	8	8	5	8	4	4	5	3	7	8	8	8	5	5	5	5	4	4	4
Voltage V-Ph-Hz		400-3-50 with / without neutral conductor																			
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A	< 5																			
Length	in	80.5	82.0	83.5	115.9	83.5	117.4	118.9	118.9	120.4	120.4	148.0	151.0	151.8	182.5	182.5	182.5	184.0	185.5	188.5	
Width	in	48.7	50.7	52.8	48.7	52.8	50.7	52.8	52.8	54.7	54.7	75.5	81.4	58.7	85.4	85.4	85.4	91.8	96.4	101.7	
Height	in	81.6	86.6	86.9	81.6	94.9	89.4	90.9	94.9	97.9	96.9	73.0	77.3	101.8	77.3	77.3	77.3	79.6	81.9	86.2	
Sound pressure level at 1m distance	dB(A)	77.5	77.9	80.9	80.5	85	80.9	83.8	82.8	88	85.6	83.9	86.9	89.8	84.9	87.8	85.7	91	88.6	92	92.8
Empty weight	lbs	3975	4378	5556	5540	6365	6398	7932	9284	9259	9467	11894	13133	12262	15637	16202	14991	15726	19008	19861	22630
Charge weight	lbs	357	408	399	538	483	536	633	719	802	827	999	1451	1451	1980	1764	1539	1764	2086	2332	2729
Operational weight	lbs	5373	5986	7518	7273	8677	8594	10554	12330	12910	12725	15849	18036	17167	20567	22880	20959	22403	25699	28567	32866

⁽¹⁾ IPLV-Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

⁽²⁾ ESEER Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

COP (Coefficient Of Performance) power in kW (cooling) per kW of drive power (energy consumption)

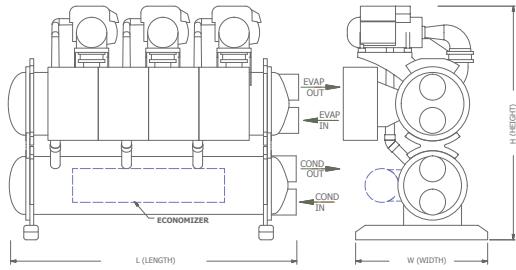
Max./min. ambient temperature: 113/41 °F, refrigerant R134a.

SMARDT

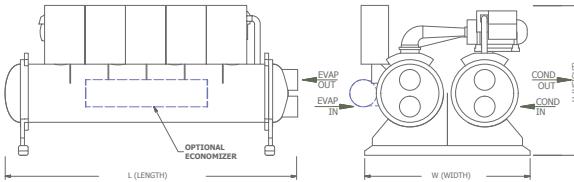
TECHNICAL DATA (IMPERIAL)

LOWER DP - ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN



SIDE-BY-SIDE (S) DESIGN

WE Line		WE030.1B.F4HBBBA. F4AMBA.TNX	WE042.1E.F4HFBAA. F4AVBA.TNX	WE050.1H.F4HQBA. F4BBBA.TNX	WE060.2B.F2AEFA. F2ANFA.TNX	WE065.1K.F4HQBA. F4BNBA.TNX	WE085.2E.F2AIFA. F2AXFA.TNX	WE100.2H.F2AQFA. F2BDFA.TNX	WE125.3E.F2AWFA. F2BPFa.TNX	WE130.2K.F2AYFA. F2BSFA.TNX	WE150.3H.F2BEFA. F2BYFA.TNX	WE170.4E.F2AQHB. F2BYHA.TSX	WE200.4H.F2JDHA. F2CJHA.TSX	WE200.3K.F2JDHA. F2CJHA.TNX	WE210.5E.F2AWKB. F2BDKB.TSX	WE250.5H.F2BCKB. F2BCKB.TSX	WE250.6E.F2BCKB. F2BLKB.TSX	WE260.4K.F2JRHA. F2DHHA.TSX	WE300.6H.F2BEKB. F2BVKB.TSX	WE320.5K.F2BMKB. F2CBKB.TSX	WE400.6K.F2BTKB. F2CPKB.TSX
R134a																					
Cooling capacity ⁽¹⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	53	73	84	52	108	72	83	72	108	83	72	82	107	71	82	71	107	82	107	107
COP (cold)		0.615	0.609	0.599	0.304	0.592	0.301	0.298	0.201	0.296	0.198	0.150	0.147	0.194	0.118	0.117	0.099	0.146	0.098	0.117	0.098
IPLV value		10.51	10.22	10.56	10.61	10.29	10.42	10.74	10.35	10.56	10.69	10.47	10.89	10.64	10.56	10.88	10.57	10.78	10.86	10.83	10.76
Cooling capacity ⁽²⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	52	71	82	51	106	70	81	70	106	81	70	80	105	69	80	69	105	81	105	105
COP (cold)		0.605	0.596	0.587	0.298	0.581	0.294	0.291	0.196	0.290	0.194	0.147	0.144	0.191	0.116	0.115	0.097	0.143	0.096	0.115	0.096
ESEER value		10.06	9.889	10.22	10.18	9.745	10.29	10.61	10.18	10.33	10.52	10.36	10.69	10.44	10.4	10.68	10.4	10.58	10.7	10.59	10.49
Cold water flow rate ⁽¹⁾	gpm	189	265	309	378	404	529	618	794	809	928	1058	1237	1213	1323	1547	1587	1617	1856	2022	2426
Cooling water flow ⁽¹⁾	gpm	229	320	374	458	490	640	749	961	979	1123	1281	1498	1469	1602	1872	1922	1958	2247	2448	2937
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure loss evaporator ⁽¹⁾	psi	5	6	6	5	6	5	5	6	5	5	4	5	5	4	4	4	5	5	5	5
Pressure loss condenser ⁽¹⁾	psi	5	5	5	3	5	3	3	4	3	3	5	5	5	4	4	4	5	4	4	4
Voltage V-Ph-Hz																					
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A																				
Length	in	82.0	83.5	83.5	115.9	88.0	118.9	118.9	120.4	123.4	123.4	151.0	152.5	152.5	185.5	187.0	187.0	155.5	188.5	190.0	193.0
Width	in	50.7	52.8	52.8	48.7	58.7	52.8	52.8	54.7	58.7	58.7	85.4	87.4	60.7	89.7	94.1	94.1	96.4	100.2	104.1	106.5
Height	in	83.8	89.8	90.9	81.6	101.8	92.7	94.9	97.9	101.8	105.2	77.3	79.6	107.3	81.9	84.3	84.3	84.3	86.2	88.6	90.6
Sound pressure level at 1m distance	dB(A)	77.4	77.8	80.7	80.3	84.9	80.7	83.6	82.5	87.8	85.4	83.7	86.7	89.6	84.7	87.6	85.5	90.8	88.4	91.8	92.6
Empty weight	lbs	4469	5710	6094	6061	7619	8285	8858	10304	10531	11795	14343	15468	14647	17533	19548	20276	18424	21894	23124	26720
Charge weight	lbs	364	423	472	580	754	761	831	1003	1226	1261	1625	1724	1704	2275	2590	2610	2161	2903	3263	3708
Operational weight	lbs	6010	7714	8287	7890	10880	11111	11945	13920	14628	16495	19824	21621	20781	25049	28071	28819	26363	31815	34141	39238

⁽¹⁾ IPLV-Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

⁽²⁾ ESEER Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

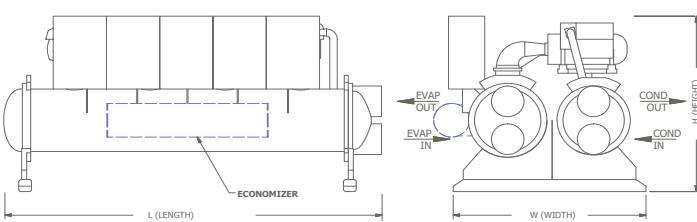
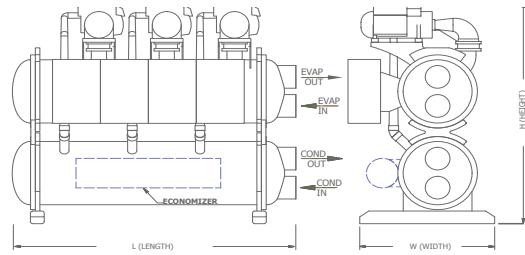
COP (Coefficient Of Performance) power in kW (cooling) per kW of drive power (energy consumption)

Max./min. ambient temperature: 113/41 °F, refrigerant R134a.

TECHNICAL DATA (IMPERIAL)

HIGHER DP - ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN

SIDE-BY-SIDE (S) DESIGN

WE Line		WE030.1.F4HABA. F4AGBA.TNX	WE042.1.E.F4HCBA. F4ANBA.TNX	WE050.1H.F4HFBA. F4ATBA.TNX	WE060.2B.F2ACFA. F2ALFA.TNX	WE065.1K.F4H1BA. F4BCBA.TNX	WE085.2E.F2AHFA. F2AVFA.TNX	WE100.2H.F2AFLA. F2AZFA.TNX	WE125.3E.F2ASFA. F2BHFA.TNX	WE130.2K.F2AUFA. F2BRFA.TNX	WE150.3H.F2AXFA. F2BDFA.TNX	WE170.4E.F21PHFA. F2BKHA.TSX	WE200.3K.F2HUHA. F2BUHA.TSX	WE210.5E.F2AMKB. F2AZKB.TSX	WE250.5H.F2ARKB. F2BFKB.TSX	WE250.6E.F2ARKB. F2BFKB.TSX	WE300.6H.F2AUKB. F2BPKB.TSX	WE320.5K.F2AYKB. F2BVKB.TSX	WE400.6KF2BEKB. F2CFKB.TSX		
R134A																					
Cooling capacity ⁽¹⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	54	74	85	53	110	73	85	74	109	86	73	84	109	72	83	72	109	84	109	109
COP (cold)		0.630	0.622	0.611	0.309	0.603	0.306	0.303	0.208	0.298	0.205	0.152	0.150	0.199	0.121	0.119	0.101	0.150	0.100	0.119	0.099
IPLV value		10.34	10.05	10.4	10.48	10.11	10.31	10.62	10.15	10.52	10.4	10.35	10.69	10.45	10.43	10.74	10.44	10.61	10.73	10.68	10.61
Cooling capacity ⁽²⁾	TR	85	119	140	171	183	239	279	358	365	419	478	558	548	597	698	717	730	838	913	1095
Power Consumption	kW	52	72	83	51	107	71	82	72	106	83	71	82	106	70	81	70	106	82	106	106
COP (cold)		0.614	0.605	0.595	0.301	0.588	0.296	0.294	0.201	0.291	0.198	0.148	0.146	0.194	0.118	0.116	0.098	0.146	0.097	0.116	0.097
ESEER value		10.01	9.81	10.15	10.11	9.658	10.23	10.55	10.05	10.31	10.36	10.31	10.6	10.35	10.34	10.62	10.34	10.5	10.65	10.52	10.43
Cold water flow rate ⁽¹⁾	gpm	189	265	309	378	404	529	618	794	809	928	1058	1237	1213	1323	1547	1587	1617	1856	2022	2426
Cooling water flow ⁽¹⁾	gpm	229	320	374	458	490	640	749	961	979	1123	1281	1498	1469	1602	1872	1922	1958	2247	2448	2937
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure loss evaporator ⁽¹⁾	psi	9	9	8	8	8	7	7	7	7	9	9	9	9	8	9	9	9	9	9	9
Pressure loss condenser ⁽¹⁾	psi	8	8	8	4	8	4	4	3	7	8	8	8	5	5	5	5	5	4	4	4
Voltage V-Ph-Hz		400-3-50 with / without neutral conductor																			
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A	< 5																			
Length	in	80.5	82.0	83.5	115.9	83.5	117.4	118.9	118.9	120.4	120.4	148.0	151.0	151.8	182.5	182.5	182.5	182.5	184.0	185.5	188.5
Width	in	48.7	50.7	52.8	48.7	52.8	50.7	52.8	52.8	54.7	54.7	75.5	81.4	58.7	85.4	85.4	85.4	85.4	91.8	96.4	101.7
Height	in	81.6	86.6	86.9	81.6	94.9	89.4	90.9	94.9	97.9	96.9	73.0	77.3	101.8	77.3	77.3	77.3	77.3	79.6	81.9	86.2
Sound pressure level at 1m distance	dB(A)	77.3	77.8	80.7	80.2	84.9	80.7	83.6	82.4	87.8	85.4	83.7	86.7	89.6	84.7	87.6	85.5	90.8	88.4	91.8	92.6
Empty weight	lbs	4098	4502	5679	5937	6488	6797	8329	9758	9658	9941	12368	13607	12736	16111	16676	17403	16200	19537	20335	23157
Charge weight	lbs	388	439	428	661	514	657	756	882	926	990	1184	1634	1614	2163	1949	1969	1949	2291	2515	2934
Operational weight	lbs	5525	6140	7670	7793	8832	9112	11074	12965	13431	13360	16508	18695	17802	21226	23541	24288	23065	26431	29224	33598

⁽¹⁾ IPLV-Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

⁽²⁾ ESEER Conditions: chilled water 44.6/53.6 °F, ambient temperature 95 °F, without glycol

COP (Coefficient Of Performance) power in kW (cooling) per kW of drive power (energy consumption)

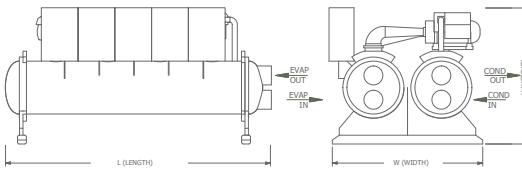
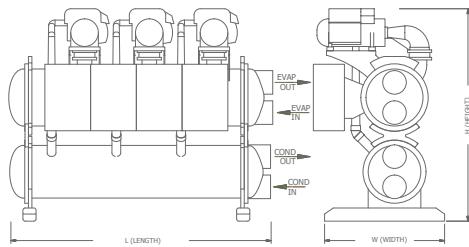
Max./min. ambient temperature: 113/41 °F, refrigerant R134a.

SMARDT

TECHNICAL DATA (METRIC)

LOWER DP - NON-ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN

SIDE-BY-SIDE (S) DESIGN

WE Line R134A		WE030.1B.F4HBBBA. F4AMBA.ONX	WE042.1E.F4HBA. F4AVBA.ONX	WE050.1H.F4HJB. F4BBBA.ONX	WE060.2B.F2AEFA. F2ANFA.ONX	WE065.1K.F4HQBA. F4BNBA.ONX	WE085.2E.F2ALFA. F2AXFA.ONX	WE100.2H.F2AQFA. F2BDFA.ONX	WE125.3E.F2AVFA. F2BPPA.ONX	WE130.2K.F2AYFA. F2BSFA.ONX	WE150.3H.F2BEFA. F2BYFA.ONX	WE170.4E.F2AQHB. F2BYHA.OSX	WE200.4H.F2JDHA. F2CJHA.OSX	WE210.5E.F2AWKB. F2BDKB.OSX	WE250.5H.F2BCKB. F2BLKB.OSX	WE250.6E.F2BCKB. F2BLKB.OSX	WE260.4K.F2IRHA. F2DHHA.OSX	WE300.6H.F2BEKB. F2BVKB.OSX	WE320.5K.F2BMKB. F2CBKB.OSX	WE400.6K.F2BTKB. F2CPKB.OSX	
Cooling capacity ⁽¹⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	55.6	77.7	88.4	56.6	112.9	79.0	90.1	79.1	114.5	89.9	79.0	88.7	113.0	77.4	88.4	77.5	113.1	88.9	113.1	113.4
COP (cold)		5.39	5.40	5.55	5.30	5.69	5.32	5.45	5.31	5.61	5.46	5.32	5.54	5.68	5.42	5.56	5.42	5.68	5.52	5.68	5.663
IPLV value		10.45	10.16	10.49	10.29	10.22	10.20	10.50	10.14	10.37	10.46	10.25	10.64	10.34	10.33	10.64	10.33	10.53	10.62	10.59	10.56
Cooling capacity ⁽²⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	54.7	76.0	86.7	55.4	111.0	77.0	87.9	77.1	112.2	87.8	77.2	86.9	111.1	75.9	86.7	76.0	111.2	87.1	111.2	111.4
COP (cold)		5.49	5.52	5.67	5.41	5.79	5.45	5.59	5.45	5.72	5.59	5.44	5.65	5.78	5.53	5.66	5.53	5.77	5.64	5.78	5.764
ESEER value		9.98	9.78	10.12	9.93	9.65	10.05	10.35	9.95	10.13	10.27	10.08	10.42	10.05	10.10	10.39	10.14	10.32	10.41	10.32	10.24
Cold water flow rate ⁽¹⁾	m3/h	51.5	72.1	84.3	103.0	110.2	144.2	168.5	216.3	220.4	252.8	288.3	337.1	330.6	360.4	421.4	432.5	440.7	505.6	550.9	661.1
Cooling water flow ⁽¹⁾	m3/h	62.3	87.3	102.0	124.7	133.4	174.5	204.1	261.8	266.8	306.1	349.1	408.1	400.2	436.4	510.1	523.6	533.6	612.2	667.0	800.4
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure loss evaporator ⁽¹⁾	bar	0.37	0.40	0.40	0.37	0.38	0.37	0.36	0.38	0.35	0.33	0.25	0.37	0.36	0.31	0.30	0.31	0.36	0.37	0.32	0.36
Pressure loss condenser ⁽¹⁾	bar	0.36	0.36	0.35	0.25	0.34	0.25	0.24	0.25	0.23	0.24	0.38	0.36	0.35	0.27	0.27	0.28	0.35	0.26	0.25	0.26
Voltage V-Ph-Hz																					
400-3-50 with / without neutral conductor																					
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A																				
Length	mm	2083	2121	2121	2945	2235	3021	3021	3059	3135	3135	3835	3873	3873	4712	4750	4750	3950	4788	4826	4902
Width	mm	1289	1340	1340	1238	1492	1340	1340	1390	1492	1492	2168	2221	1543	2278	2391	2391	2448	2545	2643	2704
Height	mm	2128	2280	2310	2072	2586	2355	2410	2486	2586	2673	1964	2021	2725	2081	2142	2142	2189	2251	2302	
Sound pressure level at 1m distance	dB(A)	77.5	77.9	80.9	80.5	85	80.9	83.9	82.7	88	85.6	84	86.9	89.8	84.9	87.8	85.7	91	88.6	92	92.8
Empty weight	kg	1971	2535	2708	2568	3400	3578	3837	4460	4596	5135	6291	6800	6430	7738	8652	8958	8142	9692	10273	11881
Charge weight	kg	152	179	200	208	329	289	321	380	501	498	654	698	698	949	1092	1092	897	1224	1397	1589
Operational weight	kg	2658	3430	3689	3344	4866	4803	5181	6025	6399	7194	8693	9507	9137	11064	12434	12740	11660	14098	15188	17465

⁽¹⁾ IPLV-Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

⁽²⁾ ESEER Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

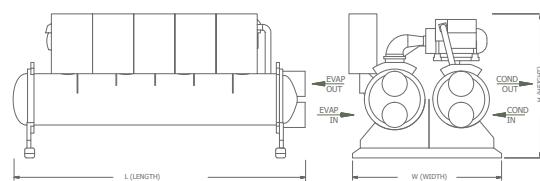
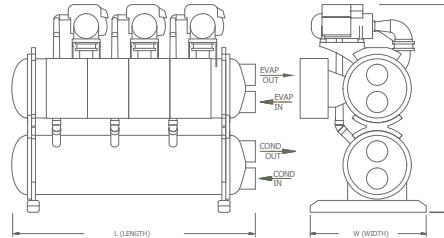
COP (Coefficient Of Performance) power in kW (cooling) per kW of drive power (energy consumption)

Max./ min. ambient temperature: 45 / 5 °C, refrigerant R134a.

TECHNICAL DATA (METRIC)

HIGHER DP - NON-ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN

SIDE-BY-SIDE (S) DESIGN

WE Line R134A		WE030.1B.F4HABA. F4AGBA.ONX	WE042.1E.F4HCBA. F4ANBA.ONX	WE050.1H.F4HFBA. F4ATBA.ONX	WE060.2B.F2ACFA. F2ALFA.ONX	WE065.1K.F4HLBA. F4BCBA.ONX	WE085.2E.F2AHFA. F2AVFA.ONX	WE100.2H.F2ALFA. F2AZFA.ONX	WE125.3E.F2ASFA. F2BHFA.ONX	WE130.2K.F2AUFA. F2BRFA.ONX	WE150.3H.F2AXFA. F2BDFA.ONX	WE170.4E.F2PHFA. F2BKHA.OSX	WE200.4H.F2HUHA. F2BUHA.OSX	WE200.3K.F2HUHA. F2BUHA.ONX	WE210.5E.F2AMKB. F2BFKB.OSX	WE250.5H.F2ARKB. F2AZKB.OSX	WE250.6E.F2ARKB. F2BFKB.OSX	WE300.6H.F2AUKB. F2BPKB.OSX	WE320.5K.F2AYKB. F2BVKB.OSX	WE400.6K.F2BEKB. F2CFKB.OSX	
Cooling capacity ⁽¹⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	57.0	79.5	90.1	57.5	114.8	80.2	91.4	87.2	115.3	92.9	80.0	90.9	115.3	79.3	90.3	79.4	90.7	115.1	115.2	
COP (cold)		5.27	5.29	5.45	5.21	5.59	5.24	5.37	4.82	5.57	5.29	5.25	5.40	5.57	5.30	5.44	5.29	5.56	5.42	5.58	5.57
IPLV value		10.27	10.0	10.33	10.17	10.04	10.10	10.39	9.83	10.32	10.19	10.14	10.45	10.16	10.20	10.50	10.21	10.37	10.49	10.44	10.42
Cooling capacity ⁽²⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	55.6	77.1	87.7	56.0	112.2	77.8	88.8	83.7	112.8	89.7	77.6	88.4	112.6	77.2	88.0	77.3	112.8	88.3	112.5	112.7
COP (cold)		5.40	5.44	5.58	5.36	5.72	5.40	5.53	5.02	5.70	5.47	5.41	5.56	5.7	5.44	5.58	5.43	5.69	5.56	5.71	5.70
ESEER value		9.90	9.71	10.04	9.86	9.57	9.99	10.29	9.73	10.11	10.12	10.03	10.33	9.98	10.04	10.33	10.08	10.25	10.36	10.26	10.18
Cold water flow rate ⁽¹⁾	m³/h	51.5	72.1	84.3	103.0	110.2	144.2	168.5	216.3	220.4	252.8	288.3	337.1	330.6	360.4	421.4	432.5	440.7	505.6	550.9	661.1
Cooling water flow ⁽¹⁾	m³/h	62.3	87.3	102.0	124.7	133.4	174.5	204.1	261.8	266.8	306.1	349.1	408.1	400.2	436.4	510.1	523.6	533.6	612.2	667.0	800.4
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure loss evaporator ⁽¹⁾	bar	0.64	0.60	0.54	0.53	0.55	0.49	0.49	0.48	0.45	0.47	0.65	0.63	0.60	0.59	0.57	0.60	0.62	0.63	0.60	0.60
Pressure loss condenser ⁽¹⁾	bar	0.57	0.58	0.55	0.32	0.53	0.29	0.31	0.32	0.23	0.49	0.58	0.56	0.54	0.33	0.32	0.34	0.35	0.34	0.31	0.31
Voltage V-Ph-Hz																					
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A																				
Length	mm	2045	2083	2121	2945	2121	2983	3021	3021	3059	3059	3759	3835	3855	4635	4635	4635	4635	4673	4712	4788
Width	mm	1238	1289	1340	1238	1340	1289	1340	1340	1390	1390	1918	2068	1492	2168	2168	2168	2168	2331	2448	2582
Height	mm	2072	2200	2208	2072	2410	2270	2310	2410	2486	2461	1854	1964	2586	1964	1964	1964	1964	2021	2081	2189
Sound pressure level at 1m distance	dB(A)	77.5	77.9	80.9	80.5	85	80.9	83.8	82.8	88	85.6	83.9	86.9	89.8	84.9	87.8	85.7	91	88.6	92	92.8
Empty weight	kg	1803	1986	2520	2513	2887	2902	3598	4211	4200	4294	5395	5957	5562	7093	7349	6800	7133	8622	9009	10265
Charge weight	kg	162	185	181	244	219	243	287	326	364	375	453	658	658	898	800	698	800	946	1058	1238
Operational weight	kg	2437	2715	3410	3299	3936	3898	4787	5593	5856	5772	7189	8181	7787	9329	10378	9507	10162	11657	12958	14908

⁽¹⁾ IPLV-Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

⁽²⁾ ESEER Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

COP (Coefficient Of Performance) power in kW (cooling) per kW of drive power (energy consumption)

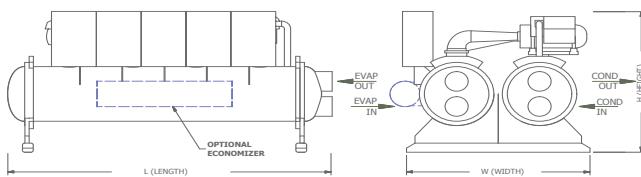
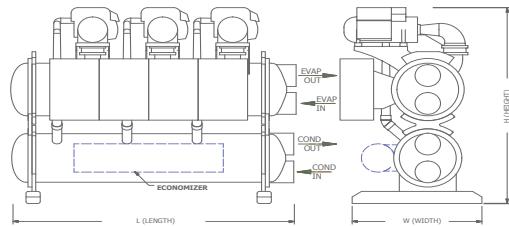
Max./ min. ambient temperature: 45 / 5 °C, refrigerant R134a.

SMARDT

TECHNICAL DATA (METRIC)

LOWER DP - ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN

SIDE-BY-SIDE (S) DESIGN

WE Line		WEO30.1B.F4HBBA. F4AMB.A.TNX	WEO42.1E.F4HBBA. F4AVBA.TNX	WE050.1H.F4HBBA. F4BBBA.TNX	WE060.2B.F2AEFA. F2ANFA.TNX	WE065.1K.F4HQBA. F4BNBA.TNX	WE085.2E.F2AIFA. F2AXFA.TNX	WE100.2H.F2AQFA. F2BDFA.TNX	WE125.3E.F2AWFA. F2BPFA.TNX	WE130.2K.F2AYFA. F2BSFA.TNX	WE150.3H.F2BEFA. F2BYFA.TNX	WE170.4E.F2AQHB. F2BYHA.TSX	WE200.4H.F2JDHA. F2CJHA.TSX	WE200.3K.F2JDHA. F2CJHA.TNX	WE210.5E.F2AWKB. F2BDKB.TSX	WE250.5H.F2BCKB. F2BLKB.TSX	WE250.6E.F2BCKB. F2BLKB.TSX	WE300.6H.F2BEKB. F2BVKB.TSX	WE320.5K.F2BMKB. F2CBKB.TSX	WE400.6K.F2BTKB. F2CPKB.TSX	
R134a																					
Cooling capacity ⁽¹⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	52.5	72.7	83.6	51.9	108.0	71.9	83.2	71.9	108.2	83.1	71.6	81.9	106.5	70.6	81.8	70.7	106.6	82.2	106.8	107.0
COP (cold)		5.72	5.78	5.87	5.78	5.94	5.85	5.9	5.84	5.93	5.91	5.87	5.60	6.03	5.946	6.01	5.94	6.02	5.97	6.01	6
IPLV value		10.51	10.22	10.56	10.61	10.29	10.42	10.74	10.35	10.56	10.69	10.47	10.89	10.64	10.56	10.88	10.57	10.78	10.86	10.83	10.76
Cooling capacity ⁽²⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	51.6	71.2	81.9	50.8	106.0	70.1	81.2	70.2	105.7	81.1	70.0	80.2	104.5	69.3	80.2	69.3	104.6	80.5	104.7	104.9
COP (cold)		5.82	5.9	6	5.91	6.05	6.0	6.05	5.99	6.07	6.05	6.0	6.12	6.14	6.06	6.13	6.06	6.14	6.1	6.13	6.12
ESEER value		10.06	9.89	10.22	10.18	9.75	10.29	10.61	10.18	10.34	10.52	10.36	10.69	10.44	10.40	10.68	10.40	10.58	10.70	10.59	10.50
Cold water flow rate ⁽¹⁾	m³/h	51.5	72.1	84.3	103.0	110.2	144.2	168.5	216.3	220.4	252.8	288.3	337.1	330.6	360.4	421.4	432.5	440.7	505.6	550.9	661.1
Cooling water flow ⁽¹⁾	m³/h	62.3	87.3	102.0	124.7	133.4	174.5	204.1	261.8	266.8	306.1	349.1	408.1	400.2	436.4	510.1	523.6	533.6	612.2	667.0	800.4
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure loss evaporator ⁽¹⁾	bar	0.37	0.40	0.40	0.37	0.38	0.37	0.36	0.38	0.35	0.33	0.25	0.37	0.36	0.31	0.30	0.31	0.36	0.37	0.32	0.36
Pressure loss condenser ⁽¹⁾	bar	0.35	0.35	0.34	0.24	0.34	0.24	0.23	0.25	0.23	0.24	0.37	0.36	0.34	0.27	0.26	0.28	0.34	0.26	0.25	0.26
Voltage V-Ph-Hz																					
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A																				
Length	mm	2083	2121	2121	2945	2235	3021	3021	3059	3135	3135	3835	3873	3873	4712	4750	4750	3950	4788	4826	4902
Width	mm	1289	1340	1340	1238	1492	1340	1340	1390	1492	1492	2168	2221	1543	2278	2391	2391	2448	2545	2643	2704
Height	mm	2128	2280	2310	2072	2586	2355	2410	2486	2586	2673	1964	2021	2725	2081	2142	2142	2189	2251	2302	
Sound pressure level at 1m distance	dB(A)	77.4	77.8	80.7	80.3	84.9	80.7	83.6	82.5	87.8	85.4	83.7	86.7	89.6	84.7	87.6	85.5	90.8	88.4	91.8	92.6
Empty weight	kg	2027	2590	2764	2749	3456	3758	4018	4674	4777	5350	6506	7016	6644	7953	8867	9197	8357	9931	10489	12120
Charge weight	kg	165	192	214	263	342	345	377	455	556	572	737	782	773	1032	1175	1184	980	1317	1480	1682
Operational weight	kg	2726	3499	3759	3579	4935	5040	5418	6314	6635	7482	8992	9807	9426	11362	12733	13072	11958	14431	15486	17798

⁽¹⁾ IPLV-Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

⁽²⁾ ESEER Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

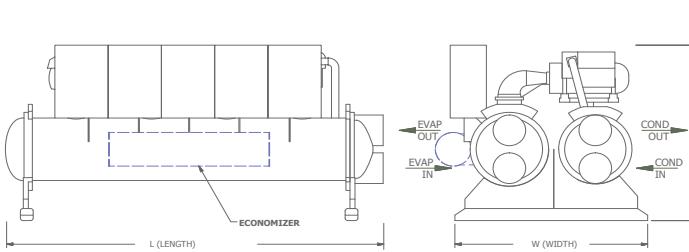
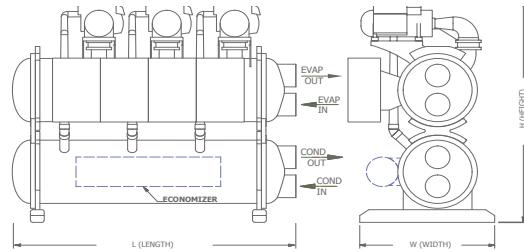
COP (Coefficient Of Performance) power in kW (cooling) per kW of drive power (energy consumption)

Max./ min. ambient temperature: 45 / 5 °C, refrigerant R134a.

TECHNICAL DATA (METRIC)

HIGHER DP - ECONOMIZED

(Anticipating differential pressure (DP) drop in a chilled water circuit is an important factor in effective chiller design. Please consult the technical data tables and your Smardt sales representative to select the appropriate product for your project requirements.)



STACKED (N) DESIGN

SIDE-BY-SIDE (S) DESIGN

WE Line		WE030.1B.F4HABA. F4AGBA.TNX	WE042.1E.F4HBCA. F4ANBA.TNX	WE050.1H.F4HFBAA. F4ATBA.TNX	WE060.2B.F2ACFA. F2AIFA.TNX	WE065.1K.F4HIBA. F4BCBA.TNX	WE085.2E.F2AHFA. F2AVFA.TNX	WE100.2H.F2AIFA. F2AZFA.TNX	WE125.3E.F2ASFA. F2BHFA.TNX	WE130.2K.F2AUFA. F2BRFA.TNX	WE150.3H.F2AXFA. F2BDFA.TNX	WE170.4E.F2PHFA. F2BKHA.TSX	WE200.4H.F2HUHA. F2BUHA.TSX	WE210.5E.F2AMKB. F2AZKB.TSX	WE250.5H.F2ARKB. F2BFKB.TSX	WE260.4K.F2ARKB. F2BFKB.TSX	WE300.6H.F2AUKB. F2BPKB.TSX	WE320.5K.F2AYKB. F2BVKB.TSX	WE400.6K.F2BEKB. F2CHKB.TSX		
R134A																					
Cooling capacity ⁽¹⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	53.7	74.3	85.3	52.8	110.0	73.0	84.6	74.4	108.7	86.0	72.6	83.9	109.0	72.1	83.4	72.2	109.2	83.7	108.7	108.9
COP (cold)		5.585	5.649	5.754	5.686	5.834	5.757	5.807	5.642	5.904	5.708	5.785	5.852	5.892	5.822	5.885	5.816	5.88	5.864	5.904	5.898
IPLV value		10.34	10.05	10.40	10.48	10.11	10.31	10.62	10.15	10.52	10.40	10.35	10.69	10.45	10.43	10.74	10.44	10.61	10.73	10.68	10.61
Cooling capacity ⁽²⁾	kW	300	420	491	600	642	840	982	1260	1284	1473	1680	1964	1926	2100	2455	2520	2568	2946	3210	3852
Power Consumption	kW	52.4	72.3	83.0	51.4	107.4	70.8	82.0	72.1	106.1	83.0	70.5	81.5	106.1	70.3	81.3	70.3	106.3	81.5	106.1	106.2
COP (cold)		5.73	5.81	5.92	5.84	5.98	5.93	5.99	5.83	6.05	5.92	5.96	6.02	6.05	5.98	6.04	5.97	6.04	6.03	6.05	6.05
ESEER value		10.01	9.81	10.15	10.11	9.66	10.23	10.55	10.05	10.31	10.36	10.31	10.60	10.35	10.34	10.62	10.34	10.50	10.65	10.52	10.43
Cold water flow rate ⁽¹⁾	m ³ /h	51.5	72.1	84.3	103.0	110.2	144.2	168.5	216.3	220.4	252.8	288.3	337.1	330.6	360.4	421.4	432.5	440.7	505.6	550.9	661.1
Cooling water flow ⁽¹⁾	m ³ /h	62.3	87.3	102.0	124.7	133.4	174.5	204.1	261.8	266.8	306.1	349.1	408.1	400.2	436.4	510.1	523.6	533.6	612.2	667.0	800.4
Compressor number	Pieces	1	1	1	2	1	2	2	3	2	3	4	4	3	5	5	6	4	6	5	6
Pressure loss evaporator ⁽¹⁾	bar	0.64	0.60	0.54	0.53	0.55	0.49	0.49	0.48	0.45	0.47	0.65	0.63	0.60	0.59	0.57	0.60	0.62	0.63	0.60	0.60
Pressure loss condenser ⁽¹⁾	bar	0.56	0.57	0.54	0.31	0.52	0.28	0.30	0.31	0.23	0.48	0.57	0.55	0.53	0.32	0.32	0.33	0.34	0.33	0.30	0.31
Voltage V-Ph-Hz																					
Rated current max	A	145	210	170	290	196	420	340	630	392	510	840	680	588	1050	850	1260	784	1020	980	1176
Starting current each	A																				
Length	mm	2045	2083	2121	2945	2121	2983	3021	3021	3059	3059	3759	3835	3855	4635	4635	4635	4635	4673	4712	4788
Width	mm	1238	1289	1340	1238	1340	1289	1340	1340	1390	1390	1918	2068	1492	2168	2168	2168	2168	2331	2448	2582
Height	mm	2072	2200	2208	2072	2410	2270	2310	2410	2486	2461	1854	1964	2586	1964	1964	1964	1964	2021	2081	2189
Sound pressure level at 1m distance	dB(A)	77.3	77.8	80.7	80.2	84.9	80.7	83.6	82.4	87.8	85.4	83.7	86.7	89.6	84.7	87.6	85.5	90.8	88.4	91.8	92.6
Empty weight	kg	1859	2042	2576	2693	2943	3083	3778	4426	4381	4509	5610	6172	5777	7308	7564	7894	7348	8862	9224	10504
Charge weight	kg	176	199	194	300	233	298	343	400	420	449	537	741	732	981	884	893	884	1039	1141	1331
Operational weight	kg	2506	2785	3479	3535	4006	4133	5023	5881	6092	6060	7488	8480	8075	9628	10678	11017	10462	11989	13256	15240

⁽¹⁾ IPLV-Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

⁽²⁾ ESEER Conditions: chilled water 7/12 °C, condenser water 30/35 °C; without glycol

COP

power in kW (cooling) per kW of drive power (energy consumption)

Max./ min. ambient temperature: 45 / 5 °C, refrigerant R134a.

SMARDT

APPLICATION CONSIDERATIONS

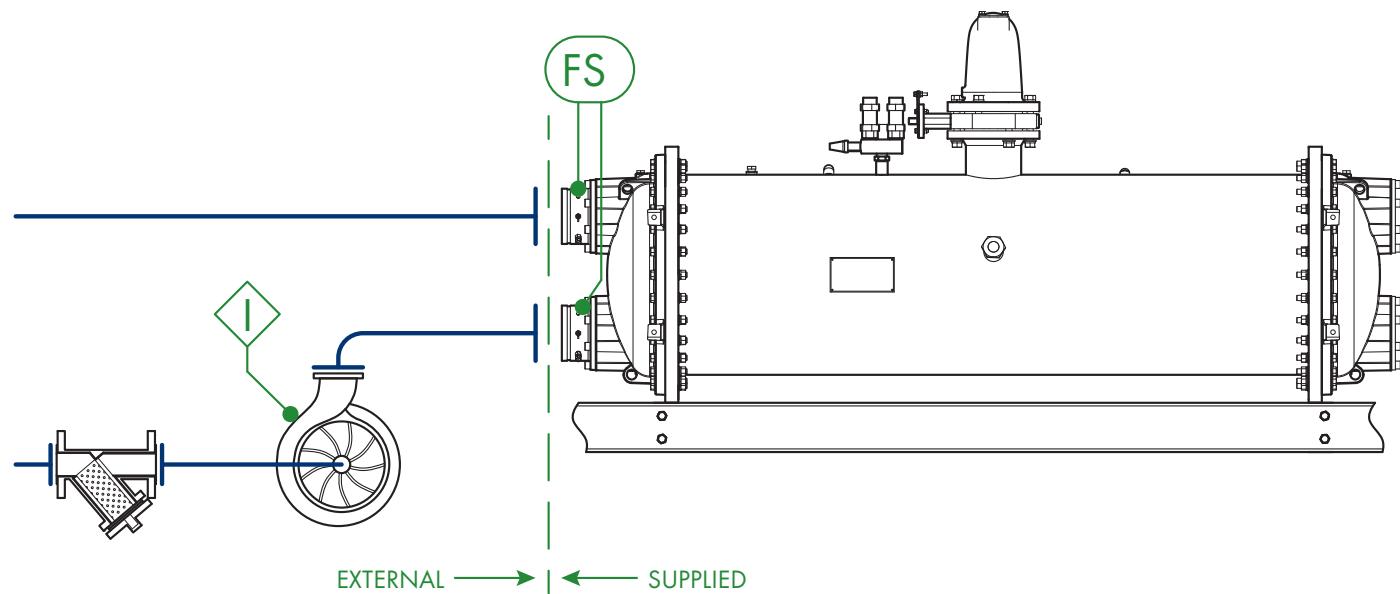
CHILLED WATER REQUIREMENTS

All external pipework must be self-supporting, and aligned to prevent strain and distortion on the chiller's headers and couplings.

EVAPORATOR WATER CIRCUITS

The chiller performance and efficiency can be adversely affected by contaminants in the water circuit. To prevent tube damage, it is recommended that a cleanable 20-mesh strainer should be installed in the evaporator water inlet piping.

The water circuit should be arranged so that the pumps discharge through the evaporator, with the return water to the chiller connected to the lower connection of the evaporator.



INSTALLATION REQUIREMENTS

SIDE CLEARANCES

A nominal clearance of 47" (1200 mm) around all four sides of the water-cooled chiller and 18" (450 mm) above the chiller is required.

A clearance equal to the length of the evaporator is recommended at either end of the vessel for service access requirements.

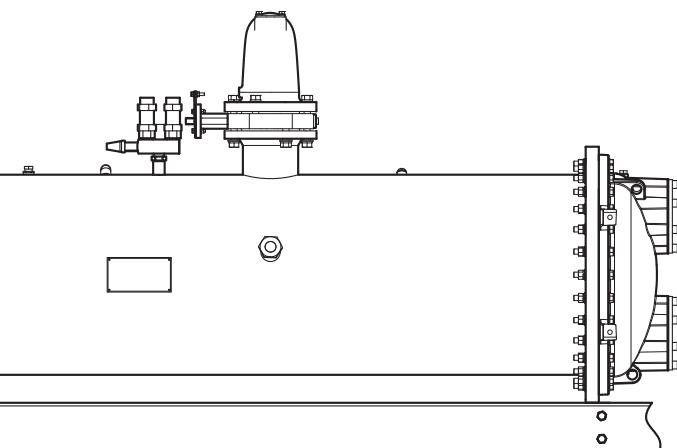
Contact Smardt for advice on restrictive installations needs, please contact a Smardt representative at sales@smardt.com.

CHILLED WATER TEMPERATURE LIMITS

T^W-Class chillers are optimized for chilled water temperatures between 40 °F (4 °C) and 71 °F (22 °C). For applications outside this range, please consult your local sales representative. A cleanable 20-mesh strainer should be installed on the inlet side of the evaporator.

FLOW SAFETY INTERLOCKS

Flow switches (FS) enable the chiller to shutdown in the event of low or high flow through the evaporator. Flow switches are fitted as standard on all Smardt chillers. An additional field-supplied chilled water pump interlock, or a VSD interlock signal is required on all installations. If the chiller is intended for an application using variable chilled water flow, please confirm the appropriate cut off point with Smardt.



MOUNTING REQUIREMENTS

The chiller shall be installed on a flat surface, with a minimum 3" (75 mm) flange width around the perimeter of the base frame. Refer to individual product information for these dimensions.

Waffle pads can be used in place of spring mounts for most installations requiring structural isolation.

ENGINEERING SPECIFICATIONS

DESCRIPTION

Microprocessor controlled, electric water chiller using R134a (T^w-Class) or R1234ze (G-Class) refrigerant, oil-free, two stage centrifugal variable speed compressor and high efficiency corrosion resistant condenser.

QUALITY ASSURANCE

Construction shall comply with relevant country codes; vessels shall be manufactured in accordance with PED code, CE, and ASME section VIII. Units shall be run tested at the factory prior to shipment as part of commissioning process).

COMPRESSOR(S)

The compressor(s) shall be an oil-free semi-hermetic two stage direct driven variable speed centrifugal. Compressor(s) shall be equipped with discharge and suction shutoff (isolating) valves for mechanical isolation as an option.

Capacity control shall be provided by variable speed drive and inlet guide vanes, capable of reducing unit capacity to below 10% of full-load.

Compressor(s) shall start unloaded and current inrush shall be limited by control to less than 5 amps.

Motor cooling shall be provided by an integrated liquid refrigerant injection system controlled by the compressor(s). The compressor(s) shall require no oil lubrication.

EVAPORATOR AND CONDENSER

Shell and tube design shall be provided with seamless copper tubes mechanically expanded into boiler quality mild steel tube sheets with mild steel water boxes.

The shell shall be formed from carbon steel plate, designed, tested and stamped in accordance with PED, CE and ASME safety codes for unfired pressure vessels. The water tubes shall be rated to a pressure to suit the installation but in any case be not less than 145 psi (10 bar). The shells shall be insulated with 3/4" (19 mm) insulation covered with UV protectant.

A water drain connection and single bulb well shall be provided for low temperature cutout, load limit thermostat and temperature controller.

REFRIGERATION COMPONENTS

Pressure relief valves shall be provided on the evaporator to allow for either to be isolated without the introduction of any safety hazard.

Each compressor can be optionally fitted with discharge and suction isolation valves. Electronic expansion and Level sensors valves shall be provided.

Evaporator shall be fitted with a sight glass to allow for visual inspection of the tubes. Isolatable components shall be accompanied by a service port to allow for localized refrigerant reclaim.

STANDARD CONTROLS, INTERLOCKS & SAFETIES

Provide and mount in the chiller control cubicle, the interlocks, time delays, capacity control, safety controls, relays, connections for interlocks with external pumps and flow switches necessary for safe and satisfactory operation and for restarting the chiller set immediately upon restoration of interrupted power supply.

Unit controls shall include the following minimum components:

- Microprocessor control with non-volatile memory
- Power and control circuit terminal blocks
- ON/OFF control switch
- Temperature sensors installed to measure cooler entering and leaving fluid temperatures
- Sensors for suction and discharge pressure and temperature

Unit controls shall include the following functions as standard:

- Capacity control based on leaving chilled water, entering chilled water, heat recovery (cw out or a heat recovery dual bundle temperature) or suction pressure control.

Unit controls shall include the following display variables as part of the user interface:

- General operational data including entering and leaving chilled water temperatures, chilled water set point, ambient air temperature, time and date, active timers, system demand, chiller status, active faults and alarms.
- Compressor data including communication integrity, active alarms, actual compressor(s) demand, impeller speed, IGV position, active pressure ratio, suction pressure, discharge pressure, active power input, desired power input, 3 phase amps, surge RPM, choke RPM.
- Control system shall allow software upgrade without the need for new hardware.
- Controller shall include contacts for interfacing to the BMS via optional high level standard communication protocol interface: Modbus™ TCP/IP native, Modbus™ RTU R-485, LonTalk®, FT-10 module, BACnet™, MSTP, BACnet™,IP, for the following functions: Summary fault, Start/Stop, Chilled water flow interlock, Chiller water reset and Demand limit.

Unit shall be equipped to provide the following protection

- Low chilled water temperature
- Power supply error
- Compressor motor thermal or electrical overload
- Phase loss
- High and low pressure
- Loss of chilled water flow

ELECTRICAL

- Unit primary electrical power supply shall enter unit at a single location.
- Unit shall operate on 3-phase power at local voltage and frequency.
- Control voltage shall be 24 VDC.
- Unit shall be shipped with factory control and power wiring installed.
- Power factor shall be greater than 0.9 (compressors only) at full design load.
- EMI filtration, enhanced low frequency harmonic mitigation (optional).





AMERICAS

CANADA

1800 Trans Canada Highway
Dorval Quebec H9P1H7
T +1 514 426 8989
E sales.na@smardt.com

USA

22 Colorado Street Bldg 2815
Plattsburgh NY 12903
T +1 518 324 5741
E sales.na@smardt.com

BRAZIL

Smardt-Transcalor
Av. Eldorado, 187 – Jardim Ruyce – Diadema
SP – Brasil – CEP: 09961-470
T +55 11 4351-4089 / 4351-3803
E contato@transcalor.com.br

EUROPE, MIDDLE EAST, AFRICA

GERMANY

Bahnhofstraße 74 D73240 Wendlingen
T +49 7024 79429 0
E sales.eu@smardt.com

UNITED KINGDOM

10A Burrell Way,
Thetford, Norfolk IP24 3RW
T +44 1842 824830
E sales.uk@smardt.com

ASIA PACIFIC

AUSTRALIA

144 Colchester Road
Bayswater North VIC 3153
T +61 3 9761 7905
E sales.au@smardt.com

CHINA

Mei Xing Industrial Park
No. 30 Dong Zhong Road ETDD Guangzhou
T +86 20 8205 7161
E sales.cn@smardt.com

SINGAPORE

438A Alexandra Road #08-11
Alexandra Technopark 119967
T +65 6273 1120
E sales.as@smardt.com