FRICON USA
THE NEW REFRIGERATION AGE

FMCH-S SERIES, A.1

MEDIUM-SIZED CHILLER

STANDARD SERIES, AIR COOLED CONDENSER

SINGLE OR DUAL SCROLL COMPRESSOR(S)

23-38 TR

AIR CONDITIONING LINE

The FMCH-S: FriconUSA Medium-Sized Chiller, Standard Series, air cooled condenser, is built with the highest quality components in the market, using a Bitzer scroll compressors in capacities from 23 to 38 TR in configurations of a single or dual parallel compressor(s). The quality, high efficiency up to 10.7 EER and excellent IPLV, according to AHRI Standard 550/590, assure our customers reliability, low operating costs and long equipment life.

The most common applications are for the air conditioning of small to medium office buildings, hotels, schools and retail centers.

By using Bitzer scroll compressors with external VFD (Variable Frequency Drive) on the first compressor, we convert this unit into an incredible VRF (Variable Refrigerant Flow) system resulting in a greater adaptability to the thermal load, stabilizing the fluid temperature and maximizes energy savings at partial load.

Standard Ambient Operating Temperature range: +110°F (+43.3°C) to +40°F (4.4°C)
Extended Ambient Operating Temperature range: +125°F (+51.7°C) to -35°F (-37.2°C)*
**See optional packages.*

Application / Leaving Fluid Temperature Range:
A: Air Conditioning: +55°F (+12.8°C) to +15°F (-9.4°C)

AIR CONDITIONING (HVAC) FOR BUILDINGS, SUPERMARKETS, ETC.

STANDARD FEATURES & BENEFITS:

- Single or dual (tandem) Bitzer scroll compressor.
- Aluminum structure with galvanized steel reinforcement, high efficiency condenser with reinforced structure and aluminum micro-channel coils. Its low weight and size reduces the costs of transportation, installation and construction.
- Galvanized, powder coated, acoustically semi-insulated and weatherproof semi-enclosed compressor cabin.
- EcoFriendly; Air cooled micro-channel condenser coil with reduced internal volume requires between 40% to 60% less refrigerant charge and results in a significant reduction of the charge necessary for normal or flooded operations.
- Wide range of applications at different working ambient temperatures.
- Quiet, high efficiency, external rotor motor, two speed, AC type axial fans for a better operation.
- Built-in, Direct Expansion (DX) brazed plate evaporator, one circuit with reduced internal volume requires less refrigerant charge.
- Electronic expansion valve, liquid sight glass and solenoid valve.
- Built-in flow switch.
- Liquid drier with replaceable core and inlet ball valve.
- Flexible joint on discharge line.
- Refrigerant: R-410a
- Factory pre-charged and individually tested.
- UL 508A listed built-in electrical control panel.

DESIGNED • ENGINEERED • ASSEMBLED IN THE USA

c UL us LISTED 508A

ECOFriendly BY FRICONUSA

POWERED BY: Bitzer

STANDARD FEATURES & BENEFITS (CONT.):

- Compressor and fan circuit breakers.
- Voltage and phase-loss monitor with protection module for each compressor.
- Control: 208-230V / 1PH / 60HZ
- Power supply voltage 460V / 3PH / 60HZ with single point power connection.
- Electronic Control System; compressor(s) and condenser fans operational management: alarms, measurement of pressure and temperature variables, 132x64 LCD backlit built-in display with 6-button keypad. Alarm management: 3 alarms for compressor(s) (overload, high/low pressure) and 1 overload alarm for condenser fans.
- Fixed high and low pressure controls on each circuit.
- BMS (Building Management System): ModBus protocol for supervisor or HMI (Human Machine Interface).
- 1-year warranty.

STANDARD OPTIONS:

- Condenser coil with E-Coating for greater resistance to corrosion.
- Protective mesh for the condenser.
- EC type fans with variable speed (for 575V a VFD is used).
- Evaporator option:
  - Remote evaporator
- Built-In, insulated Hydronic Package with TEFC type motors:
  - Recirculation pump
  - Recirculation pump with VFD
  - Recirculation pump & polyethylene buffer tank
  - Recirculation pump with VFD & polyethylene buffer tank
  - Stainless steel recirculation pump*
  - Stainless steel recirculation pump with VFD *
  - Stainless steel recirculation pump & polyethylene buffer tank*
  - Stainless steel recirculation pump with VFD & polyethylene buffer tank*
  - Specially constructed pump and other stainless steel components to pre-cool the water supply for ice makers (flake "FFIM" or cylindrical "FCIM ") or for food process applications.
  - Recirculation pump & stainless steel closed buffer tank with additional expansion tank
  - Recirculation pump w/VFD & stainless steel closed buffer tank with additional expansion tank
  - Stainless steel recirculation pump & stainless steel closed buffer tank with additional expansion tank
  - Stainless steel recirculation pump w/VFD stainless steel closed buffer tank with additional expansion tank

  Note: stainless steel for potable water.
- Different power supply voltage.

For an even more efficient unit, ask about our Premium Series! PREMIUM SERIES

ADDITIONAL OPTIONS:

- VRF (Variable Refrigerant Flow) package to maximize the efficiency and capacity adaptability to the demand:
  - VRF-II*: VFD (Variable Frequency Drive). Infinite capacity control on the first compressor (60~125%).

    **Certain limitations apply*
- HGB (Hot Gas Bypass) package for adjustable capacity reduction (10~100%):
  - HGB-I: PWM (Pulse Wide Modulation).
  - HGB-II: Continuous Modulation with electronic hot gas valve.
- FECC (Fully Enclosed Compressor Cabin) package for better soundproofing:
  - FECC-I: Fully enclosed metal compressor cabin.
  - FECC-II: Same as FECC-I with internal convoluted acoustic foam panel lining.
- Refrigerant and oil evacuated for non-hazardous shipping.
- LAOP (Low Ambient Operation Package) required for operation below +40°F:
  - LAOP-I: +110°F (+43.3°C) to +10°F (-12.2°C), Includes: split condenser with variable speed fan on the first fan section and electrical antifreeze heater on the evaporator.
  - LAOP-II: +110°F (+43.3°C) to -20°F (-28.9°C), Includes: same as LAOP-I plus liquid receiver and flooded condenser with head pressure control valve.
  - LAOP-III*: +110°F (+43.3°C) to -35°F (-37.2°C), Includes: Same as LAOP-II plus insulated liquid receiver with electric heater, thermally insulated compressor cabin and control panel with ventilated heating.

    **Requires FECC-II (Fully Enclosed Compressor Cabin) package.*
- HAOP (High Ambient Operation Package) required for operation above +110°F:
  - HAOP-I: +125°F (+51.7°C) to +40°F (4.4°C), Includes: air exhaust duct to the condenser plenum for cooling of the control panel and filter for the air inlet.
- MDS (Main Disconnect Switch).
- Electronic Control System:
  - BACnet Communication board.
  - Remote LCD display.
  - Local or remote touch screen display.
  - Energy Management Module.
- Extended 5-year compressor warranty (U.S. only).

Single Compressor

Dual Compressors

REFERENCE

1. Compressor(s)
2. Micro-channel condenser
3. Fans
4. Electrical control panel
5. Electronic Control System
6. Brazed plate evaporator
7. Electronic expansion valve
8. Access doors
9. Protective mesh (optional)

SUBJECT TO CHANGE ACCORDING TO ACCESSORIES/OPTIONS. PLEASE CONSULT THE FACTORY FOR SPECIFIC INFORMATION.

NOMENCLATURE

MODEL

FMCH	S	A.1	A	0380	D	2	1	1	0	41	2

F: FRICONUSA
M: MEDIUM-SIZED
CH: CHILLER

SERIES (EFFICIENCY)
S: STANDARD

CONDENSER TYPE & VERSION
A: AIR COOLED, 1: VERSION 1

APPLICATIONS / OUTPUT FLUID TEMPERATURE RANGE
A: AIR CONDITIONING: +55°F (+13.0°C) TO +15°F (-9.2°C)
GLYCOL USED FOR APPLICATION/TEMPERATURE BELOW 40°F

SIZE / CAPACITY
SEE TECHNICAL DATA TABLE FOR SELECTION

CHARACTERISTIC (COMPRESSOR QUANTITY)
S: SINGLE **D:** DUAL
ONE REFRIGERATION CIRCUIT FOR BOTH OPTIONS

COMPRESSOR BRAND & TYPE
2: BITZER SCROLL **S:** SPECIAL COMPRESSOR

VOLTAGE
1: 208-230V / 3PH / 60HZ
2: 460V / 3PH / 60HZ
3: 575V / 3PH / 60HZ
4: 220V / 3PH / 50HZ
5: 380V / 3PH / 50HZ
9: 380V / 3PH / 60HZ
S: SPECIAL VOLTAGE

REFRIGERANT
41: R-410a **SR**: SPECIAL REFRIGERANT

OPTIONAL BUILT-IN, INSULATED HYDRONIC PACKAGE WITH TEFC TYPE MOTORS:
0: NONE
1: RECIRCULATION PUMP
2: RECIRCULATION PUMP W/VFD
3: RECIRCULATION PUMP & POLY BUFFER TANK
4: RECIRCULATION PUMP W/VFD & POLY BUFFER TANK
5: SS RECIRCULATION PUMP
6: SS RECIRCULATION PUMP W/VFD
7: SS RECIRCULATION PUMP & POLY BUFFER TANK
8: SS RECIRCULATION PUMP W/VFD & POLY BUFFER TANK
A: RECIRCULATION PUMP & SS CLOSED BUFFER TANK WITH ADDITIONAL EXPANSION TANK
B: RECIRCULATION PUMP W/VFD & SS CLOSED BUFFER TANK WITH ADDITIONAL EXPANSION TANK
C: SS RECIRCULATION PUMP & SS CLOSED BUFFER TANK WITH ADDITIONAL EXPANSION TANK
D: SS RECIRCULATION PUMP W/VFD SS CLOSED BUFFER TANK WITH ADDITIONAL EXPANSION TANK
S: SPECIAL HYDRONIC PACKAGE
POLY: POLYETHYLENE
SS: STAINLESS STEEL FOR POTABLE WATER

EVAPORATOR OPTION
1: BUILT-IN, DX BRAZED PLATE **2:** REMOTE, DX BRAZED PLATE **S:** SPECIAL EVAPORATOR

CONDENSER, PROTECTION OPTION & FAN TYPE *MCHX: MICRO-CHANNEL CONDENSER*
1: MCHX & AC FAN
2: MCHX WITH E-COATING & AC FAN
3: MCHX & EC FAN
4: MCHX WITH E-COATING & EC FAN
5: MCHX WITH MESH PROTECTION & AC FAN
6: MCHX WITH E-COATING, MESH PROTECTION & AC FAN
7: MCHX WITH MESH PROTECTION & EC FAN
8: MCHX WITH E-COATING, MESH PROTECTION & EC FAN

TECHNICAL DATA - APPLICATION / LEAVING FLUID TEMPERATURE RANGE

SINGLE OR DUAL SCROLL COMPRESSOR(S)

R-410a

A: AIR CONDITIONING: +55°F (+13.0°C) TO +15°F (-9.2°C)

	MODEL		COMPRESSOR			FAN			CAPACITIES IN TR @ 95°F AMBIENT R410A LEAVING FLUID TEMPERATURE									ELECRICAL DATA 60HZ						MECHANICAL DATA													
										WATER			GLYCOL					230 VOLT		460 VOLT		575 VOLT†		CENTRIFUGAL PUMP			CONNECTIONS AND WATER TANK CAPACITY			REFRIGERANT CHARGE		APROX DRY WEIGHT.		FRAME TYPE
	SIZE		QTY	BITZER	QTY	AC TYPE			55 °F	50°F	44°F	38°F	32°F	27°F	21°F	15°F		RLA COMP.	SYSTEM MCA	RLA COMP.	SYSTEM MCA	RLA COMP.	SYSTEM MCA	HP	HEAD PRESSURE PSI	FLOW		In/ Out in.	gal.	(l)	LB	(KG)	LB	(KG)	
	UNIT	HP		MODEL		CFM			13.0°C	9.8°C	6.5°C	3.4°C	0.2°C	-2.9°C	-6.1°C	-9.2°C										GPM	M3H							
SINGLE COMPRESSOR	A-0230-S	25	1	GSD 80295	2	19000	CAP.		27.1	**25.0**	**22.8**	20.9	**19.1**	17.4	**15.8**	**14.1**		85.1	117.0	40.7	56.3	32.6	44.6	2	Up to 35	52.6	11.9	2	55	(208)	20.5	(10.0)	1,592	(683)	A
							EER		12.0	**11.4**	**10.5**	9.9	**9.1**	8.5	**7.8**	**7.0**																		
	A-0300-S	32	1	GSD 80385	2	22750	CAP.		34.4	**31.8**	**29.0**	26.9	**24.5**	22.4	**20.3**	**18.2**		106.2	147.2	53.1	73.8	42.5	58.8	2	Up to 35	67.7	15.4	2 1/2	55	(208)	26.1	(12.8)	1,655	(712)	A
							EER		11.2	10.5	**9.8**	9.4	8.6	8.1	7.4	6.7																		
	A-0330-S	35	1	GSD 80421	2	26500	CAP.		37.3	**34.4**	**31.4**	28.8	**26.4**	23.9	**21.9**	**19.7**		102.8	146.7	51.4	75.2	41.1	59.0	3	Up to 35	73.6	16.7	2 1/2	55	(208)	28.3	(13.9)	1,654	(711)	A
							EER		11.1	10.5	**9.7**	9.1	8.5	7.8	7.3	6.7																		
	A-0370-S*	40	1	GSD 80485	2	37000	CAP.		43.3	**40.0**	**36.7**	33.7	**30.7**	27.9	**25.5**	**23.1**		128.2	181.9	64.1	91.1	51.3	72.9	5	45	84.4	19.2	2 1/2	55	(208)	33.0	(16.0)	1,661	(714)	B
							EER		11.6	11.0	**10.2**	9.6	8.9	8.2	7.6	7.0																		

A: AIR CONDITIONING: +55°F (+13.0°C) TO +15°F (-9.2°C)

	MODEL		COMPRESSOR			FAN			CAPACITIES IN TR @ 95°F AMBIENT R410A LEAVING FLUID TEMPERATURE									ELECRICAL DATA 60HZ						MECHANICAL DATA													
										WATER			GLYCOL					230 VOLT		460 VOLT		575 VOLT†		CENTRIFUGAL PUMP			CONNECTIONS AND WATER TANK CAPACITY			REFRIGERANT CHARGE		APROX DRY WEIGHT.		FRAME TYPE
	SIZE		QTY	BITZER	QTY	AC TYPE			55 °F	50°F	44°F	38°F	32°F	27°F	21°F	15°F		RLA COMP.	SYSTEM MCA	RLA COMP.	SYSTEM MCA	RLA COMP.	SYSTEM MCA	HP	HEAD PRESSURE PSI	FLOW		In/ Out in.	gal.	(l)	LB	(KG)	LB	(KG)	
	UNIT	HP		MODEL		CFM			13.0°C	9.8°C	6.5°C	3.4°C	0.2°C	-2.9°C	-6.1°C	-9.2°C										GPM	M3H							
DUAL COMPRESSORS	A-0240-D	25	2	GSD 60154 + GSD 60154	2	19000	CAP.		27.6	**25.3**	**23.3**	21.3	**19.5**	17.7	**16.0**	**14.5**		48.5	119.7	48.5	60.3	24.4	43	2	Up to 35	55.21	12.5	2	55	(208)	22.7	(10.3)	2,184	(993)	A
							EER		12.1	**11.4**	**10.7**	9.9	**9.3**	8.6	**7.8**	**7.3**																		
	A-0290-D	30	2	GSD 60182 + GSD 60182	2	22750	CAP.		32.4	**29.9**	**27.5**	25.2	**22.9**	20.9	**18.8**	**17.1**		57.7	144.2	57.7	72.4	28.9	54.1	2	Up to 35	65.1	14.8	2 ½	55	(208)	26.7	(12.1)	2,244	(1,020)	A
							EER		11.6	11.0	**10.4**	9.8	9.0	8.4	7.6	7.1																		
	A-0320-D	35	2	GSD 60120 + GSD 80295	2	26500	CAP.		37.5	**34.6**	**31.6**	29.0	**26.6**	24.1	**22.0**	**19.8**		40.4	165	85.1	82.1	21.2	64.1	3	Up to 35	73.13	16.6	2 ½	55	(208)	30.7	(13.9)	2,480	(1,127)	A
							EER		11.3	10.6	**9.8**	9.2	8.7	7.9	7.4	6.7																		
	A-0380-D*	40	2	GSD 60182 + GSD 80295	2	37000	CAP.		43.9	**40.2**	**36.9**	33.9	**30.8**	28.0	**25.5**	**23.0**		57.7	185.7	85.1	89.9	51.3	71.1	5	45	85.9	19.5	2 ½	55	(208)	35.8	(16.3)	2,496	(1,135)	B
							EER		11.8	11.0	**10.3**	9.7	8.9	8.2	7.6	7.0																		

** Models with 900mm EC Fan as Standard (for 575V a VFD is used).*

Compressor RLA: Rated Load Amperage (RLA)estimated to the full load of the compressor RLA = Maximum Continuous Current (MCC) /1.56
Compressor MCC: Maximum Continuous Current (MCC) of the compressor(s)

MCA: Minimum Circuit Amperage (MCA) = RLA of the largest compressor X 1.25 + SUM RLA others compressor(s) + Total FLA Fans +Control panel load
FLA Fan: Full Load Amperage (FLA) of the fans

CAPACITY CORRECTION FACTORS

Ambient Temperature in °F	60	65	70	75	80	85	90	95	100	105	110	115*	120*	125*
Capacity Factor R-410A	1.28	1.25	1.22	1.19	1.15	1.10	1.05	**1.00**	0.98	0.96	0.92	0.88	0.84	0.8

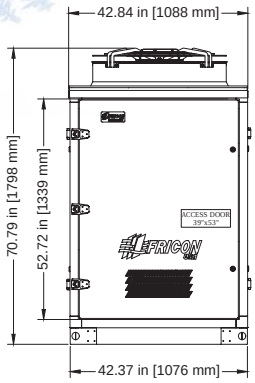
HAOP (High Ambient Operation Package) required for operation above +110°F

‡ Multiply capacity by .83 when used with 50 Hz power.

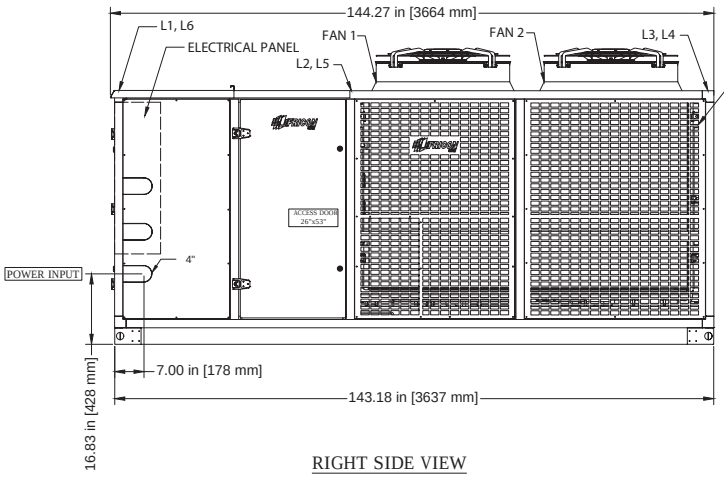
All capacities are calculated at 20°F return gas temperature and dew point values

FRAME TYPE / DRAWINGS REFERENCE

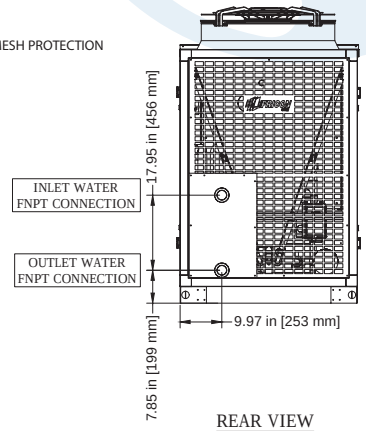
A) Single scroll compressor, 800mm AC type fans



FRONT VIEW

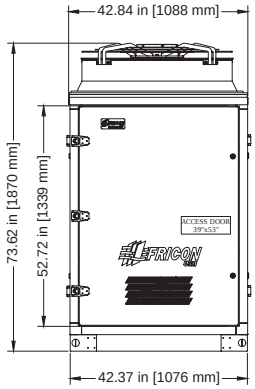


RIGHT SIDE VIEW

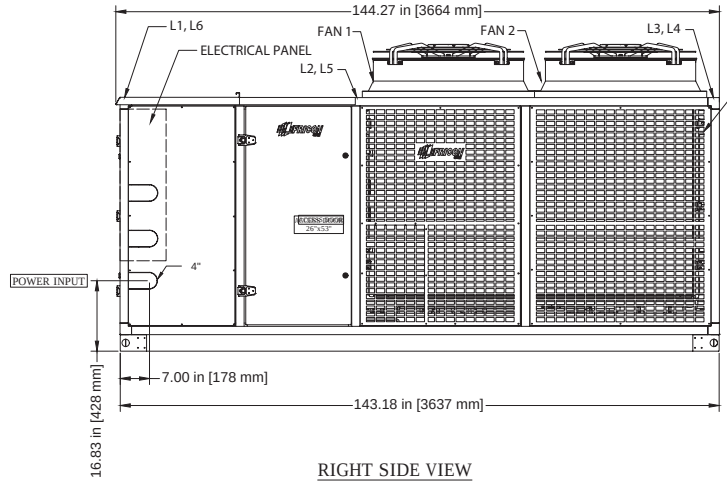


REAR VIEW

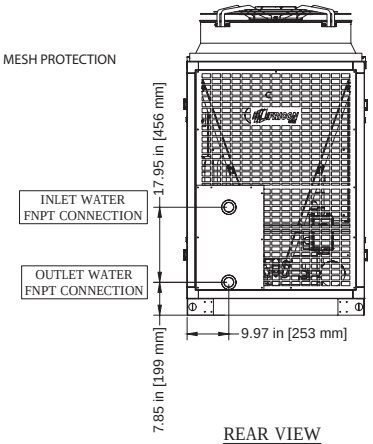
B) Single scroll compressor, 900mm EC type fans



FRONT VIEW



RIGHT SIDE VIEW

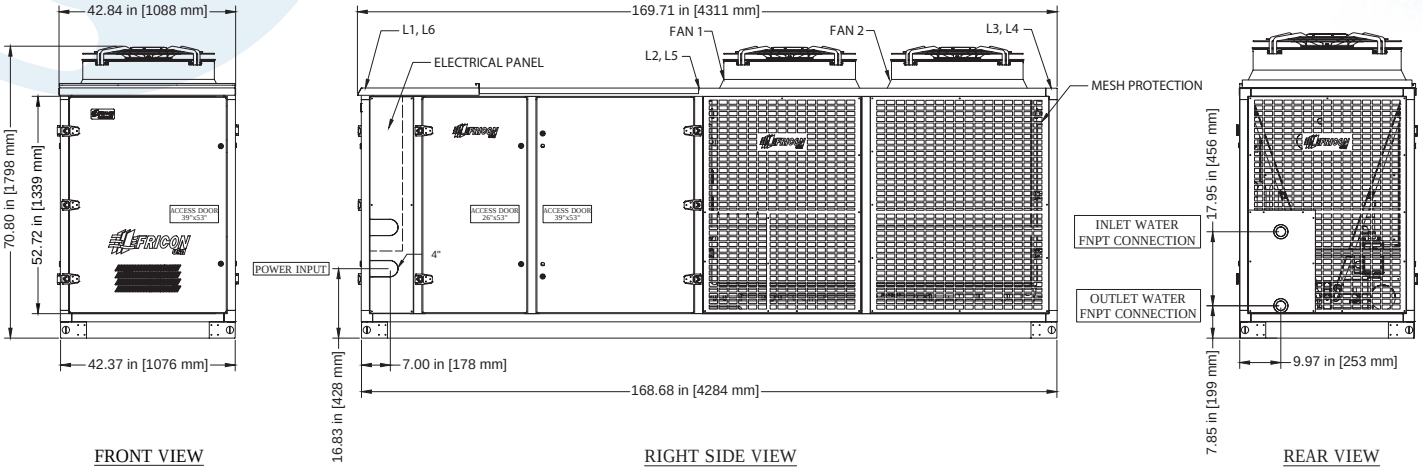


REAR VIEW

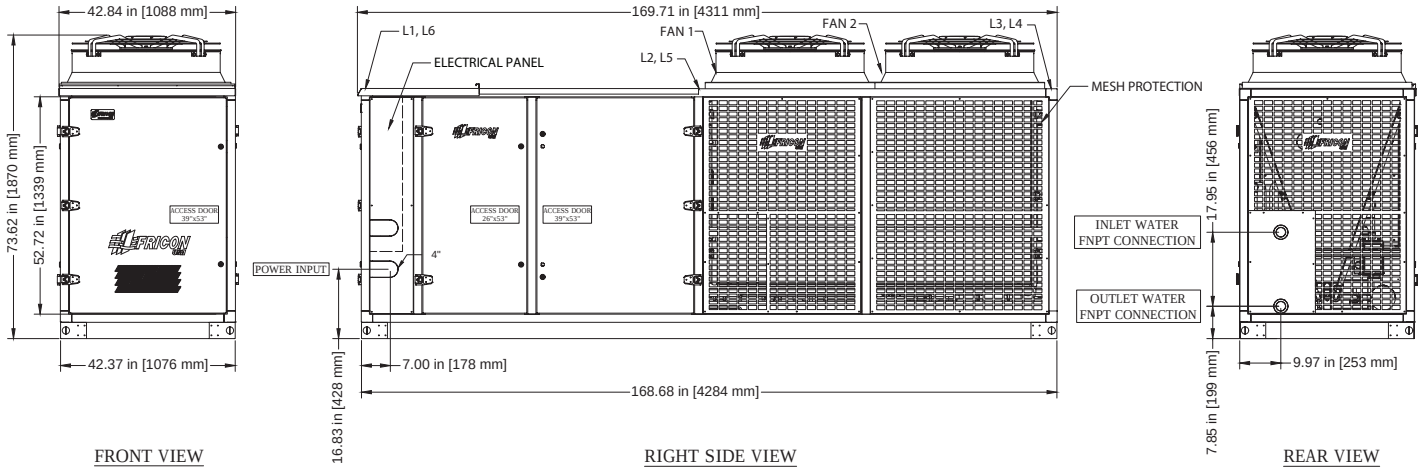
SUBJECT TO CHANGE ACCORDING TO ACCESSORIES/OPTIONS. PLEASE CONSULT THE FACTORY FOR SPECIFIC INFORMATION.

FRAME TYPE / DRAWINGS REFERENCE

C) Single or dual scroll compressor(s), 800mm EC type fans with hydronic package



D) Single or dual scroll compressor(s), 900mm EC type fans with hydronic package



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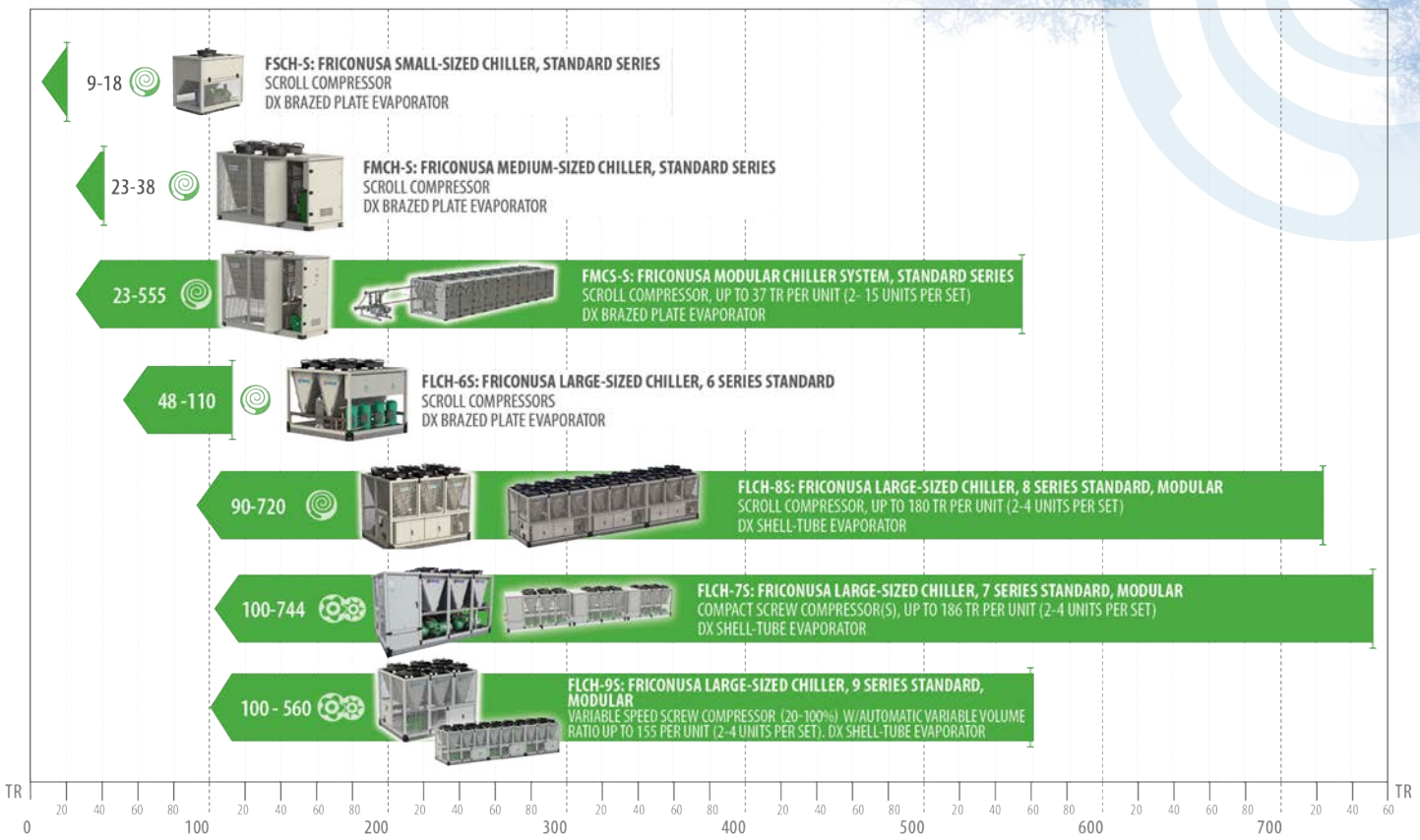
NOTES

FRICONUSA AIR COOLED CHILLERS

AIR CONDITIONING LINE



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