

Air cooled water chiller

MRS industrial grade water chillers are available in cooling capacity range from 13 to 75 KW, with water working temperatures range from 0°C to 25°C and suitable for indoor or outdoor installation. The standard configuration is designed for an ambient temperature up to 45°C.

These units are equipped with up to four hermetic rotary Scroll compressors in one or two refrigeration circuits with ozone-friendly refrigerant R410A, axial-flow fans and microchannel full-aluminium condenser.

Characterized by very small footprints, these chillers are particularly suited for installation close to processing machines.



Versions:

- **Fan type**

- **AC:** on-off asynchronous fans
- **EC:** brushless EC variable speed fans
- **EH:** high pressure EC fans, suitable for ducting indoor installation

- **Evaporator type**

- **BP:** brazed-plate
- **S&T:** shell-and-tube

- **Water configuration type**

- **N:** no pumps and tanks
- **M:** with evaporator pump only
- **P:** with tank and process pump



Scroll

Advantages

- Reduced footprint
- FC version with integrated Free Cooler (saving more than 60% of energy)
- Microchannel condenser and free cooler with low refrigerant charge and with low air pressure drop
- Easily cleanable microchannel condenser using pressure washer

Technical features

Chiller system:

- Scroll compressor;
- 1 refrigerant circuit;
- R410A refrigerant;
- High and low pressure gauges.

High efficiency microchannel aluminium condenser

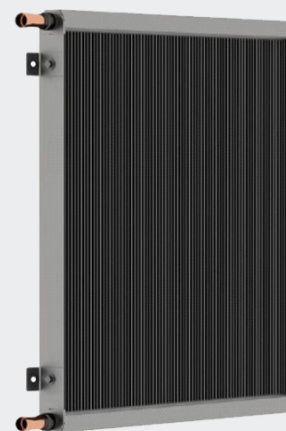
- Higher efficiency and performances
 - heat exchange from +20% to +40% compared with finned tube models;
 - reduction of air-side pressure drops;
 - lower weight and reduced dimensions;
 - thinner profile than finned tube models;
 - 60% lower weight compared to finned tube models.
- Proven reliability
 - robust design and easy to clean with pressurized water;
 - process and materials proven over time;
 - engineered with long-life aluminium alloys.
- Low cost
 - lower refrigerant charge;
 - optimized material cost.

Fan type

- **AC:** asynchronous on-off fans
 - For temperatures greater than -15 °C
- **EC:** brushless fans with variable speed
 - For ambient temperatures greater than -25 °C
- **EH:** high head EC fans
 - Suitable for ducting on indoor installations (heat recovery)
 - For ambient temperatures greater than -25 °C

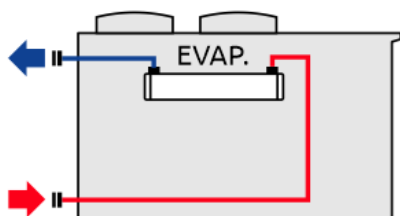
Evaporator

- **BP:** brazed plates
 - all configurations available;
 - SS316L copper brazed plates;
 - oversized exchange surface;
 - reduced dimensions and high-efficiency herringbone pattern.
- **S&T:** shell
 - available on MRS121-161-191 no-tank configuration only;
 - cleanable;
 - gas and water low approach;
 - carbon steel body and copper pipes;
 - anti-corrosion extra thick design.



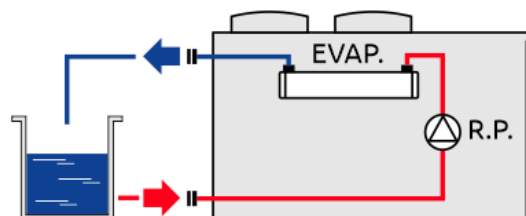
Technical features

- Self water-filling
- Chilled-water storage tank pressurized and insulated
- Galvanized steel frame and panels, painted with polyester powders
- Stainless steel pumps



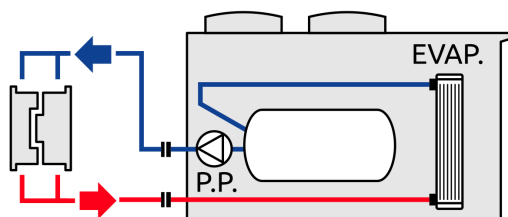
N: without pumps and tank

Process pumping stations available on request for GPP/GPV series, with and without inverters, recirculating pumping stations and its storage tanks.



M: with evaporator's pump only

Process pumping stations available on request for GPP/GPV series, with and without inverters.

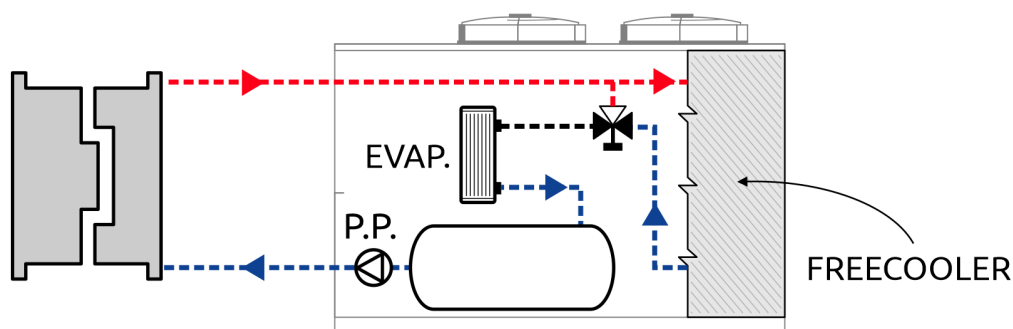


P: with tank and process pump

Built-in Freecooling option

Some versions are available with built-in freecooler system. This version, using the ambient air, allows to cool the water from the process, by shutting down, partially and/or completely, the refrigerating unit, resulting in energy savings.

MRS (FREE COOLING)



Options

- Cold Climate for no glycol systems when $T_{amb} < 0^{\circ}\text{C}$
- Electrical cabinet heater for glycol systems when $T_{amb} < -10^{\circ}\text{C}$
- Remote control with 30m of cable
- Y water filters
- Wheels
- Opened loading tank option
- Metal air filter on condenser

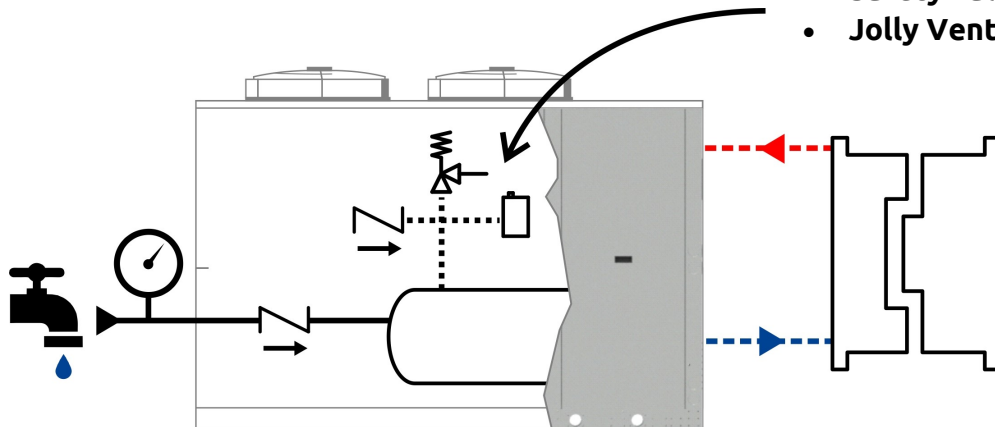
Hydraulic supply

Standard models with internal tank "P"

- Filling by water system
- The pressure of the inner tank is determined by the water supply
- External water and glycol charging kits available (please contact Frigel).

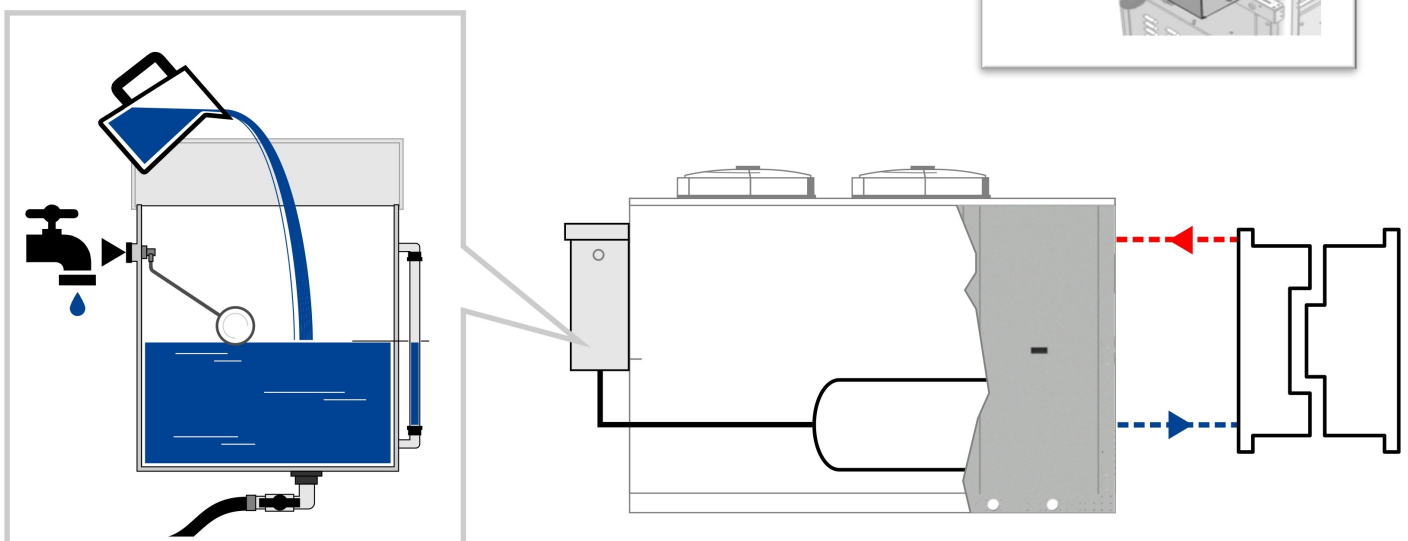
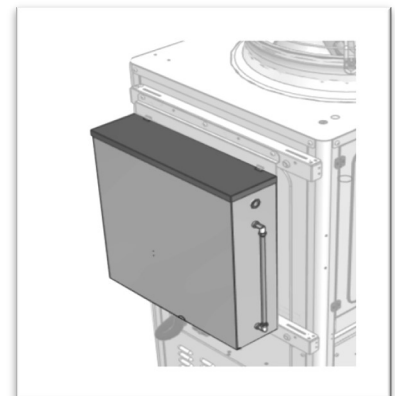
SAFETY DEVICES

- Vacuum breaker valve
- Safety valve
- Jolly Vent Valve



Models with internal tank "P" and tray for manual loading

- Consisting of a stainless steel tray with flap lid
- Allows manual loading of water, or water-glycol mixture
- Allows automatic loading with float if connected to water system
- Equipped with internal visual level indicator.



Technical data

50Hz

IndustrialChillerAir - MRS (Heavygel)

Model			21	31	51	71	91	121	161	191	201	
Power supply voltage and frequency			400V±10%/3/50Hz									
Cooling capacity (*) (R410A)	15°C/25°C (*)	kW	13	15	22	26	31	41	52	58	72	
	10°C/35°C	kW	10	11	17	19	25	33	41	46	57	
SEPR		[Brazed plate version]	3,98	4,77	4,78	4,96	4,96	5,44	5,58	5,46	5,30	
Max set point temp.		°C	25	25	25	25	25	25	25	25	25	
Min set point temp. (no glycol)		°C	10	10	10	10	10	10	10	10	10	
Max ambient temp.		°C	45	45	45	45	50	50	50	45	45	
Compressor	Type		Scroll									
	Capacity control		ON/OFF (0-100%)									
	N°		1	1	1	1	1	1	1	1	1	
	Circuits	N°	1	1	1	1	1	1	1	1	1	
	Motor power	HP	3,0	3,5	5,4	6,0	7,5	10,0	13,0	15,0	20,0	
Air condenser	Type		Microchannel									
	Material		Aluminium									
	Nominal flow rate	m³/h	6.150	6.300	13.220	13.220	13.220	17.580	17.580	17.580	17.580	
Fans (***)	N°		1	1	2	2	2	2	2	2	2	
	AC fan (Axial) (Not ductable)	kW	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,6	
		With diffuser	No									
	EC fan (Axial) (Not ductable)	kW	1,0	1,0	1,0	1,0	1,0	1,3	1,3	1,3	1,3	
		With diffuser	No									
	EH fan (Axial high pressure head) (Ductable)	kW	0,9	0,9	0,9	0,9	0,9	1,9	1,9	1,9	1,9	
		With diffuser	Yes									
Available pres- sure head [Pa]		200	200	200	200	200	200	200	200	200		
Evaporator (****)		Type	Brazed plate					Brazed plate/Shell and tube			Brazed	
SP process pump (*****)	Type		Centrifugal									
	N°		1	1	1	1	1	1	1	1	1	
	kW		0,8	0,8	0,8	0,9	0,9	1,8	1,8	1,8	1,8	
	min	m³/h	1,2	1,2	1,2	3,0	3,0	4,8	4,8	4,8	4,8	
	max		6,6	6,6	6,6	9,6	9,6	15,0	15,0	15,0	15,0	
	max	bar	3,0	3,0	3,0	3,0	3,0	3,8	3,8	3,8	3,8	
	min		2,0	2,0	2,0	2,0	2,0	2,8	2,8	2,8	2,8	
Tank	Material		Stainless steel									Galvanized with internal Teflon coating
	Volume	L	55	55	80	80	80	130	130	130	200	
Process water connections	Type		DIN									
	In/out		1"	1"	1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ½"	
Unit Full Load Ampere (FLA)	AC fan	A	11	11	18	18	23	28	34	38	46	
	EC fan		11	12	18	19	23	30	35	40	48	
	EH fan		11	12	18	19	23	32	37	42	50	
Power supply cable		Size	3x2.5+1x2.5 mm² PVC @40°C	3x4+1x4 mm² PVC @40°C	3x6+1x6 mm² PVC @40°C	3x6+1x6 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x16+1x16 mm² PVC @40°C	3x25+1x16 mm² PVC @40°C	3x25+1x16 mm² PVC @40°C	
Hot Gas Bypass			Yes									
Sound level		dB(A) 10 m	48	48	50	50	50	50	50	51	55	
Refrigerant Charge		kg	3,7	3,8	5,5	5,7	7,2	8,7	8,8	10,3	10,3	
Net weight		kg	190	200	260	278	312	420	450	498	540	
Operating weight (**)		kg	250	260	350	368	402	565	595	643	755	
Protection level			IP44									

- (*) Nominal Cooling capacity (water temperature/ambient temperature°C) with BP evaporator
- (**) Not considering the water in pipes and in exchangers
- (***) AC fans in case of Ambient Temperature >-15°C / Use EC fans in case of Ambient Temperature >-25°C / Use EH fans in case of Ambient Temperature >-25°C
- (****) S&T available only without water tank
- (*****) If LWT> 4-5°C, the pump starts if the machine is powered and in stand by
- Available supply voltage: 400V±10%/3/50Hz; 460V±10%/3/60Hz; 380V±10%/3/60Hz;
- On request: UL electrical panel for 60Hz versions
- Capacity with process water temperature DeltaT = 5°C
- Altitude limit: 2600 m a.s.l.
- Add glycol in case of low ambient 0°C
- Add glycol in case of set point lower than +10°C
- Min set point with glycol: -5°C (requested check from Frigel)
- Pumps rated up to 35% of Glycol
- Glycol percentage: 20% glycol in weight -> from 0°C to the minimum set point temperature / 25% glycol in weight -> from -5°C to 0°C
- Not suitable for demi-water (due to ferrous components)
- Max water working pressure: 6 bar

Technical data with Freecooler

50Hz

IndustrialChillerAir - MRS/FC (Heavygel)

Model			51	71	91	121	161	191	201
Power supply voltage and frequency			400V±10%/3/50Hz						
Cooling capacity (*) (R410A)	15°C/25°C (*)	kW	22	25	31	41	51	58	71
	10°C/35°C	kW	17	19	24	32	40	45	56
SEPR	[Brazed plate version]		4,78	4,96	4,96	5,44	5,58	5,46	5,3
Cooling capacity of the free-cooling (****)	kW		23	23	23	41	41	41	41
Max set point temp.		°C	25	25	25	25	25	25	25
Min set point temp. (no glycol)		°C	10	10	10	10	10	10	10
Max ambient temp.		°C	45	45	50	50	50	45	45
Compressor	Type		Scroll						
	Capacity control		ON/OFF (0-100%)						
	N°		1	1	1	1	1	1	1
	Circuits	N°	1	1	1	1	1	1	1
	Motor power	HP	5,4	6	7,5	10	13	15	20
Air condenser	Type		Microchannel						
	Material		Aluminium						
	Nominal flow rate	m³/h	11.100	11.100	11.100	15.610	15.610	15.610	15.610
Fans (***)	N°		2	2	2	2	2	2	2
	AC fan (Axial) (Not ductable)	kW	0,8	0,8	0,8	0,6	0,6	0,6	0,6
		With diffuser	No						
	EC fan (Axial) (Not ductable)	kW	1,0	1,0	1,0	1,3	1,3	1,3	1,3
		With diffuser	No						
	EH fan (Axial high pressure head) (Ductable)	kW	0,9	0,9	0,9	1,9	1,9	1,9	1,9
		With diffuser	Yes						
		Available pressure head [Pa]	200	200	200	200	200	200	200
Evaporator	Type		Brazed plate						
SP process pump (****)	Type		Centrifugal						
	N°		1	1	1	1	1	1	1
	kW		0,8	0,9	0,9	1,8	1,8	1,8	1,8
	min	m³/h	1	3	3	5	5	5	5
	max		7	10	10	15	15	15	15
	max	bar	3,0	3,0	3,0	3,8	3,8	3,8	3,8
	min		2,0	2,0	2,0	2,8	2,8	2,8	2,8
Tank	Material		Stainless steel						Galvanized steel with internal Teflon coating
	Volume	L	80	80	80	130	130	130	200
Process water connections	Type		DIN						
	In/out		1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ½"
Unit Full Load Ampere (FLA)	AC fan	A	18	18	23	28	34	38	46
	EC fan		18	19	23	30	35	40	48
	EH fan		18	19	23	32	37	42	50
Power supply cable	Size		3x6+1x6 mm² PVC	3x6+1x6 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x16+1x16 mm² PVC @40°C	3x25+1x16 mm² PVC @40°C	3x25+1x16mm² PVC @40°C
Hot Gas Bypass			Yes						
Sound level	dB(A) 10 m		50	50	50	50	50	51	55
Refrigerant Charge	kg		5,5	5,7	7,2	8,7	8,8	10,3	10,3
Net weight	kg		280	298	332	450	480	528	570
Operating weight (**)	kg		370	388	422	595	625	673	785
Protection level			IP44						

- (*) Nominal Cooling capacity (water temperature/ambient temperature°C) with BP evaporator
- (**) Not considering the water in pipes and in exchangers
- (***) AC fans in case of Ambient Temperature >-15°C / Use EC fans in case of Ambient Temperature >-25°C / Use EH fans in case of Ambient Temperature >-25°C
- (****) The data refers to a temperature difference between the water output to the Free Cooler and the ambient temperature at +10°C
- (*****) If LWT> 4-5°C, the pump starts if the machine is powered and in stand by
- Available supply voltage: 400V±10%/3/50Hz; 460V±10%/3/60Hz; 380V±10%/3/60Hz;
- On request: UL electrical panel for 60Hz versions
- Capacity with process water temperature DeltaT = 5°C
- Altitude limit: 2600 m a.s.l.
- Add glycol in case of low ambient 0°C
- Add glycol in case of set point lower than +10°C
- Min set point with glycol: -5°C (requested check from Frigel)
- Pumps rated up to 35% of Glycol
- Glycol percentage: 20% glycol in weight -> from 0°C to the minimum set point temperature / 25% glycol in weight -> from -5°C to 0°C
- Not suitable for demi-water (due to ferrous components)
- Max water working pressure: 6 bar

Technical data

60Hz

IndustrialChillerAir - MRS (Heavygel)

Model			31	51	71	91	121	161	191	201	
Power supply voltage and frequency			460V±10%/3/60Hz								
Cooling capacity (*) (R410A)	15°C/25°C (*)	kW	17	24	27	29	39	49	61	68	
	10°C/35°C	kW	13	18	21	22	31	39	48	54	
SEPR	[Brazed plate version]		4,19	4,74	4,70	4,97	5,40	5,32	5,19	5,03	
Max set point temp.		°C	25	25	25	25	25	25	25	25	
Min set point temp. (no glycol)		°C	10	10	10	10	10	10	10	10	
Max ambient temp.		°C	45	45	45	50	50	50	45	45	
Compressor	Type		Scroll								
	Capacity control		ON/OFF (0-100%)								
	N°		1	1	1	1	1	1	1	1	
	Circuits	N°	1	1	1	1	1	1	1	1	
	Motor power	HP	3,0	4,6	5,4	6,0	7,5	10,0	13,0	15,0	
Air condenser	Type		Microchannel								
	Material		Aluminium								
	Nominal flow rate	m³/h	7.170	15.380	15.380	15.380	21.300	21.300	21.300	21.300	
Fans (***)	N°		1	2	2	2	2	2	2	2	
	AC fan (Axial) (Not ductable)	kW	1,2	1,2	1,2	1,2	1,0	1,0	1,0	1,0	
		With diffuser	No								
	EC fan (Axial) (Not ductable)	kW	1,0	1,0	1,0	1,0	1,3	1,3	1,3	1,3	
		With diffuser	No								
	EH fan (Axial high pressure head) (Ductable)	kW	0,9	0,9	0,9	0,9	1,9	1,9	1,9	1,9	
		With diffuser	Yes								
	Available pres- sure head [Pa]	200	200	200	200	200	200	200	200		
Evaporator (****)	Type		Brazed plate				Brazed plate/Shell and tube			Brazed plate	
SP process pump (*****)	Type		Centrifugal								
	N°		1	1	1	1	1	1	1	1	
	kW		0,8	0,8	1,1	1,1	2,2	2,2	2,2	2,2	
	min	m³/h	1	1	3	3	5	5	5	5	
	max		5	5	10	10	15	15	15	15	
	max	bar	3,1	3,1	3,0	3,0	3,6	3,6	3,6	3,6	
min	2,6		2,6	2,4	2,4	2,8	2,8	2,8	2,8		
Tank	Material		Stainless steel								Galvanized with internal Teflon coa- ting
	Volume	L	55	80	80	80	130	130	130	200	
Process water connections	Type		DIN								
Unit Full Load Ampere (FLA)	In/out		1"	1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ½"	
	AC fan	A	17	17	19	19	26	30	36	40	
	EC fan	A	12	16	19	19	26	31	36	40	
	EH fan	A	12	16	18	18	28	33	38	42	
Power supply cable	Size		3x2.5+1x2.5 mm² PVC @40°C	3x4+1x4 mm² PVC @40°C	3x6+1x6 mm² PVC @40°C	3x6+1x6 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x16+1x16 mm² PVC @40°C	3x25+1x16m m² PVC @40° C	
Hot Gas Bypass			Yes								
Sound level	dB(A) 10 m		48	50	50	50	51	52	52	58	
Refrigerant Charge	kg		3,8	5,3	5,5	5,7	7,2	8,7	8,8	9,0	
Net weight	kg		200	260	278	312	420	450	498	540	
Operating weight (**)	kg		260	350	368	402	565	595	643	755	
Protection level			IP44								

- (*) Nominal Cooling capacity (water temperature/ambient temperature °C) with BP evaporator
- (**) Not considering the water in pipes and in exchangers
- (***) AC fans in case of Ambient Temperature > -15°C / Use EC fans in case of Ambient Temperature > -25°C / Use EH fans in case of Ambient Temperature > -25°C
- (****) S&T available only without water tank
- (*****) If LWT > 4-5°C, the pump starts if the machine is powered and in stand by
- Available supply voltage: 400V±10%/3/50Hz; 460V±10%/3/60Hz; 380V±10%/3/60Hz;
- On request: UL electrical panel for 60Hz versions
- Capacity with process water temperature DeltaT = 5°C
- Altitude limit: 2600 m a.s.l.
- Add glycol in case of low ambient 0°C
- Add glycol in case of set point lower than +10°C
- Min set point with glycol: -5°C (requested check from Frigel)
- Pumps rated up to 35% of Glycol
- Glycol percentage: 20% glycol in weight -> from 0°C to the minimum set point temperature / 25% glycol in weight -> from -5°C to 0°C
- Not suitable for demi-water (due to ferrous components)
- Max water working pressure: 6 bar

Technical data with Freecooler
60Hz
IndustrialChillerAir - MRS/FC (Heavygel)

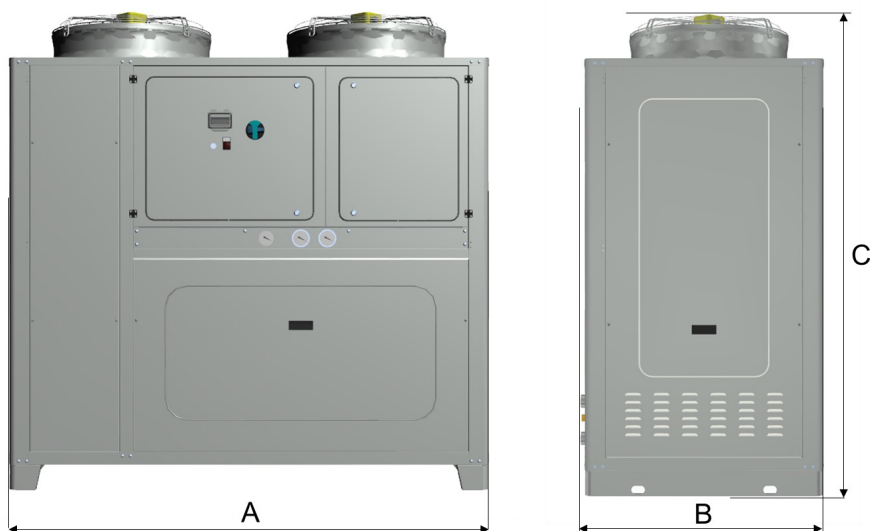
Model			51	71	91	121	161	191	201
Power supply voltage and frequency			460V±10%/3/60Hz						
Cooling capacity (*) (R410A)	15°C/25°C (*)	kW	24	27	29	38	49	61	68
	10°C/35°C	kW	18	21	22	30	39	48	54
SEPR	[Brazed plate version]		4,74	4,7	4,97	5,4	5,32	5,19	5,03
Cooling capacity of the free-cooling (****)	kW		23	23	23	41	41	41	41
Max set point temp.		°C	25	25	25	25	25	25	25
Min set point temp. (no glycol)		°C	10	10	10	10	10	10	10
Max ambient temp.		°C	45	45	50	50	50	45	45
Compressor	Type		Scroll						
	Capacity control		ON/OFF (0-100%)						
	N°		1	1	1	1	1	1	1
	Circuits	N°	1	1	1	1	1	1	1
	Motor power	HP	4,6	5,4	6	7,5	10	13	15
Air condenser	Type		Microchannel						
	Material		Aluminium						
	Nominal flow rate	m³/h	12.770	12.770	12.770	18.760	18.760	18.760	18.760
Fans (***)	N°		2	2	2	2	2	2	2
	AC fan (Axial) (Not ductable)	kW	1,2	1,2	1,2	1,0	1,0	1,0	1,0
		With diffuser	No						
	EC fan (Axial) (Not ductable)	kW	1,0	1,0	1,0	1,3	1,3	1,3	1,3
		With diffuser	No						
	EH fan (Axial high pressure head) (Ductable)	kW	0,9	0,9	0,9	1,9	1,9	1,9	1,9
With diffuser		Yes							
	Available pres- sure head [Pa]	200	200	200	200	200	200	200	
Evaporator	Type		Brazed plate						
SP process pump (*****)	Type		Centrifugal						
	N°		1	1	1	1	1	1	1
	kW		1	1	1	2	2	2	2
	min	m³/h	1	3	3	5	5	5	5
	max		5	10	10	15	15	15	15
	max	bar	3,1	3,0	3,0	3,6	3,6	3,6	3,6
min	2,6		2,4	2,4	2,8	2,8	2,8	2,8	
Tank	Material		Stainless steel						Galvanized with internal Teflon coa- ting
	Volume	L	80	80	80	130	130	130	200
Process water connections	Type		DIN						
	In/out		1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ½"
Unit Full Load Ampere (FLA)	AC fan	A	17	19	19	26	30	36	40
	EC fan	A	16	19	19	26	31	36	40
	EH fan	A	16	18	18	28	33	38	42
Power supply cable	Size		3x4+1x4 mm² PVC @40°C	3x6+1x6 mm² PVC @40°C	3x6+1x6 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x10+1x10 mm² PVC @40°C	3x16+1x16 mm² PVC @40°C	3x25+1x16mm² PVC @40°C
Hot Gas Bypass			Yes						
Sound level	dB(A) 10 m		50	50	50	51	52	52	58
Refrigerant Charge	kg		5,3	5,5	5,7	7,2	8,7	8,8	9,0
Net weight	kg		280	298	332	450	480	528	570
Operating weight (**)	kg		370	388	422	595	625	673	785
Protection level			IP44						

- (*) Nominal Cooling capacity (water temperature/ambient temperature°C) with BP evaporator
- (**) Not considering the water in pipes and in exchangers
- (***) AC fans in case of Ambient Temperature >-15°C / Use EC fans in case of Ambient Temperature >-25°C / Use EH fans in case of Ambient Temperature >-25°C
- (****) The data refers to a temperature difference between the water output to the Free Cooler and the ambient temperature at +10°C
- (*****) If LWT > 4-5°C, the pump starts if the machine is powered and in stand by
- Available supply voltage: 400V±10%/3/50Hz; 460V±10%/3/60Hz; 380V±10%/3/60Hz;
- On request: UL electrical panel for 60Hz versions
- Capacity with process water temperature DeltaT = 5°C
- Altitude limit: 2600 m a.s.l.
- Add glycol in case of low ambient 0°C
- Add glycol in case of set point lower than +10°C
- Min set point with glycol: -5°C (requested check from Frigel)
- Pumps rated up to 35% of Glycol
- Glycol percentage: 20% glycol in weight -> from 0°C to the minimum set point temperature / 25% glycol in weight -> from -5°C to 0°C
- Not suitable for demi-water (due to ferrous components)
- Max water working pressure: 6 bar

Dimensional technical data

IndustrialChillerAir - MRS (Heavygel)

Model		21	31	51	71	91	121	161	191	201
A	mm	820	820	1.360	1.360	1.360	1.810	1.810	1.810	1.810
B	mm	688	688	690	690	690	890	890	890	890
C	mm	1.631	1.631	1.827	1.827	1.827	1.865	1.865	1.865	1.865



Order Code

