AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS REFRIGERANT R410A

SIRE CHILLERS

CSRML.V

CSRML.Block

Single circuit

Dual circuit.

Tree circuits and for circuits

- Water-cooled and remote air-cooled condenser models available
- PLC with high-resolution LCD or color touch-screen (by demand) operator interface with an extensive list of operational information including compressor run hours, all type of information's and alarms
- Brazed plate or shell and tube evaporators maximize performance and increase resistance to costly freeze-up failures
- Compressor staging for capacity control with optional hot gas bypass for even greater unloading capabilities
- Scroll compressors last longer, increase efficiency and lower operating costs
- Compressor anti-cycle and start-up timer
- Lead/lag switch to alternate primary compressor
- In-line evaporator strainers assure full evaporator performance
- Water-cooled chillers include condenser water regulating valves
- Single point connection for electric hookup at control cabinet
- Ethernet and Modbus connections
- Electronic expansion valves or thermostatic valves
- Liquid line solenoid valves to extend compressor life
- Refrigerant sight glasses
- Liquid line filter driers with removable cores
- High and low refrigerant pressure switches
- Alarm horn with silence button
- 3-phase power monitoring and safety protection
- 410a refrigerant
- Expert field start-up provided by qualified service personnel (optional)

Accessories
Electrical power supply different from standard:
three-phase, 460V three-phase. Frequency 50/60 Hz.
Low temperature operation (-20°C): electronic device for the

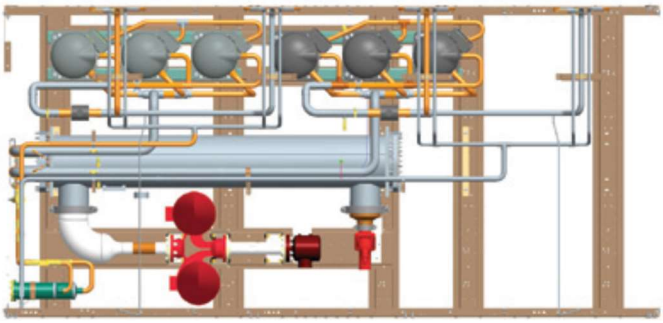
continuous modulating voltage control of the condensing pressure through the variation of the fan rotation speed.
Condensing coil protection grid: metal protection grid against accidental impacts by demand.
electronic card to be connected to microprocessor, to allow communication between the units and a Carel supervision system. It is possible to fully control the unit from remote. For connection to other supervision systems, the protocol of the controlled parameters is available on request.
fumigated sea wood case and protection bag with hygroscopic salts, suitable for long sea transports.

Phase monitor: electronic device controlling the correct sequence and/or the eventual lack of one of the 3 phases, switching off the unit if necessary.
High and low-pressure gauges for measuring circuit pressure
Buffer tank of suitable capacity complete with expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves

Hidraulic kit(optional)

Single pump group: chilled water pump group composed of single pump, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, electrical control of the pump. The pump is of 2 pole centrifugal packaged type

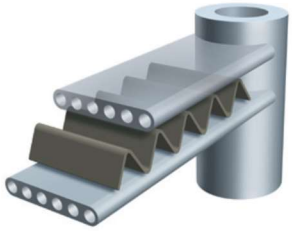
Higher available pressure pump group: chilled water higher available pressure pump group composed of single pump, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, electrical control of the pump. The pump normally is a Grunfos pump



CSRML chillers are optimized for operation with HFC-410A refrigerant, which has zero ozone-depletion potential (ODP) and no phase-out date set by Environmental Protection Agency (EPA). With its advanced design, the chiller requires 30%–50% less refrigerant compared to a conventional chiller.

Easy and economical maintenance CSRML chillers use significantly less refrigerant compared to a typical chiller. This saves time in refrigerant isolation and removal. For added convenience, isolation valves in the discharge and suction lines are standard. The microchannel coils are used by Sire by demand, and normally is used condensers with cooper aluminium fins

Microchannel batteries



cooper and aluminium fins standard

AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS REFRIGERANT R410A

The powerful Mc or Pco 5 Digital Controller provides complete chiller control and standard interface to Modbus ethernet, BACnet MS/TP interface is optional, like Ethernet connection provides easy access to set points and diagnostic display. The controller has the ability to control air-cooled condenser fan cycling, fan motor VFD's, and damper actuators for stable discharge pressure at full load, part load, and transient conditions across a wide range of ambient temperatures. Fan control and low ambient control damper

Controller for models between CSRML 6 …. 120

Controller for models between CSRML 140 …. 600

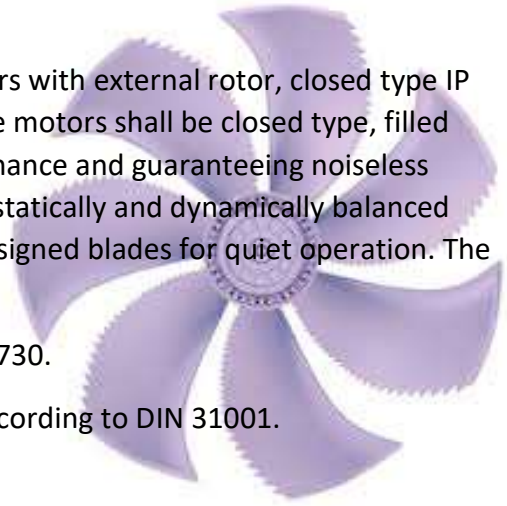
EC fans by demand optional

By opinion in Eco-design

- Electronically commutated (EC) external rotor motor with integrated EC controller
- Output range 0.10 to 6 kW
- Voltage ranges 1~200-277V 50/60Hz, 3~200-240V 50/60Hz and 3~380-480V 50/60Hz
- Integrated motor contactor, active temperature management
- Interference emissions EN 61000-6-3
- Interference immunity EN 61000-6-2
- Protection rating IP20, IP54
- Approvals: UL
- Low consume less 27% energy and Hight performance until 60HZ or more

By serie in normal design

Fans



They shall have 3-phase (6-pole or 8-pole) motors with external rotor, closed type IP 54 (according to DIN 40050). The bearings of the motors shall be closed type, filled with special lubricant, thus requiring no maintenance and guaranteeing noiseless performance. Fan wheels shall be of axial type, statically and dynamically balanced according to VDI 2060, with aerodynamically designed blades for quiet operation. The motor shall be protected against over current

by internal thermal contacts according to VDE 0730.

Protective steel fan guards shall be furnished according to DIN 31001.

ErP 2015 norm

AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS REFRIGERANT R410A

SIRE CHILLERS

2017

Model	kW capacity	kW capacity	Steps	Current	Power input	EER	COP	Water	Air Flow
	Cold Serie	Hot optional	N. comp	Amps	kW			Flow rate	M3/h
CSRML 6	6,34	8.43	1	10.78	2.16	2,93	3.90	1.47	4670
CSRML 10	9,96	13.25	1	12.51	3.40	2,93	3.90	2.32	5100
CSRML 15	14.40	19.15	1	14.82	4.91	2,93	3.90	3.35	7600
CSRML 20	18.87	25.10	1	15.79	6.66	2,93	3.90	4.39	11300
CSRML 30	29.50	39.24	1	20.44	10	2,93	3.90	6.86	12100
CSRML 40	38.25	49.60	1	27.80	13	2,98	3.95	8.89	12200
CSRML 50	49.26	66.00	1	33.50	18.88	2,61	3.86	11.45	12000
CSRML 62	62.77	81.50	1	37.50	21.66	2,89	3.50	14.69	18300
CSRML 80	82,68	107.30	1	47.40	27.50	3,01	3.76	19.23	35700
CSRML 100	101	130.80	1	56.20	34.70	2,91	3.90	23.50	36600
CSRML 100.2	98	132.00	2	67	42.16	2,34	3.90	24	36600
CSRML 120.2	125	163.00	2	73	47.22	2,63	3.42	29.19	53200
CSRML 140.2	144	188.80	2	85	53.56	2,72	3.53	33.82	53700
CSRML 160.2	164	214.40	2	95	59.40	2,78	3.61	38.45	54000
CSRML 200.2	184	261.60	2	112	69.40	2,91	3.68	45	75000
CSRML 200.4	202	264.00	4	134	84	2,66	3.13	47	75000
CSRML 250.4	256	326.00	4	150	95	2,87	3.42	58	78900
CSRML 300.4	298	377.60	4	169	107.72	2,97	3.53	67	108000
CSRML 370.6	351	489.00	6	169	133.16	3.06	3.42	78	144000
CSRML 400.6	406	548,30	6	229	142,4	2,86	3.33	82	144400
CSRML 450.6	458	632.00	6	296	174	2.63	3.31	91	175700
CSRML 520.6	493	643.80	6	225	178	3,08	3.61	98	177000
CSRML 600.6	563	784.80	6	298	205	3,08	3.77	118.60	182000

AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS REFRIGERANT R410A

SIRE CHILLERS

CSRML scroll W Condensers Block system

(Multiple circuits)

CSRML 2 CIRCUITS V

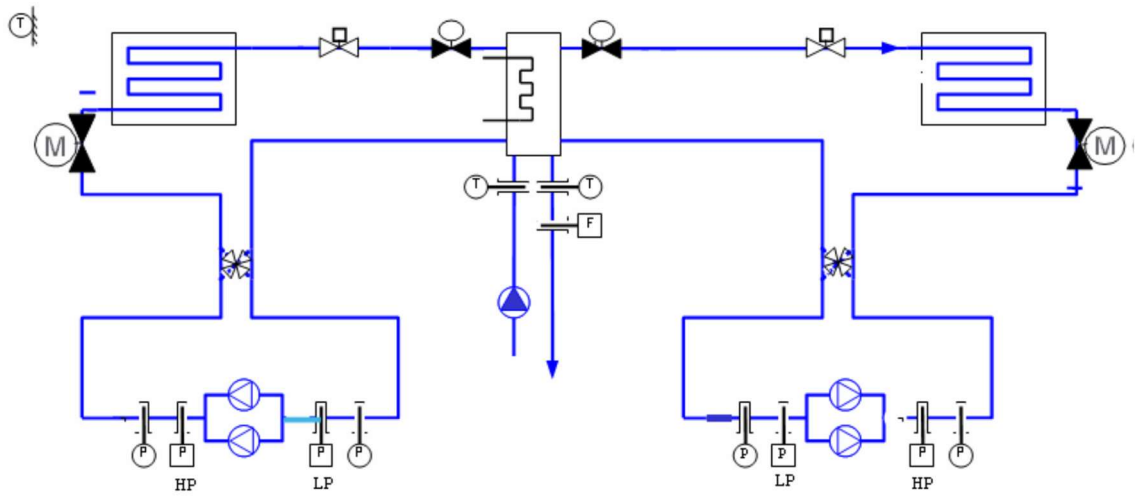
Modelo Model Modele	**Evaporador Evaporator Evaporateur**	**Peso Weight Poids**	**Ligações Connections Raccords**	**Largura Width Largeur**	**Comprimento Depth Profundeur**	**Altura Height Hauteur**
		Kg	**E/S**	**A mm**	**B mm**	**C mm**
CSRML 6	**plate**	**115**	**1”**	600	1000	
CSRML 10	**plate**	129	**1”**	800		1.300 + 120
CSRML 15	**plate**	206	**1.1/4**	950	1.900	1.300 + 120
CSRML 20	**plate**	255	**1.1/4**	950	1.900	1.300 + 120
CSRML 30	**plate**	290	**1.1/2**	950	1.900	1.300 + 120
CSRML 40	**plate**	308	**1.1/2**	950	2.100	1.300 + 120
CSRML 50	**plate**	310	**1.1/2”**	1.100	2.400	1.300 + 120
CSRML 62	**plate**	398	**2”**	1.250	2.700	1.420 + 120
CSRML 80	**plate**	412	**2”**	1.250	3.100	1.420 + 120
CSRML 100	**plate**	457	**2”**	1.250	2.600	1.800 + 120
CSRML 100.2	Shell and tube	890	**3”**	1.300	3.550	1.800 + 120
CSRML 120.2	Shell and tube	1100	**3”**	1.900	2.700	1.900 + 100
CSRML 140.2	Shell and tube	1210	**3”**	2.100	3.100	1.910 + 100
CSRML 160.2	Shell and tube	1350	**4”**	2.170	3.200	1.910 + 100
CSRML 200.2	Shell and tube	1800	**4”**	2.170	3.200	1.750 + 120
CSRML 250.4	Shell and tube	1900	**4”**	2.170	3.170	1.910 + 120
CSRML 300.4	Shell and tube	2019	**4**	2.170	3.500	1.910 + 120
CSRML 370.6	Shell and tube	3100	**4”**	2.270	4.000	1.910 + 320
CSRML 400.6	Shell and tube	3270	**4”**	2.270	5.000	1.910 + 320
CSRML 450.6	Shell and tube	3600	**5”**	2.270	5.000	1.910 + 320
CSRML 520.6	Shell and tube	3772	**6”**	2.270	6.200	1.910 + 320
CSRML 600.6	Shell and tube	4050	**6”**	2.270	7.100	1.910 + 320

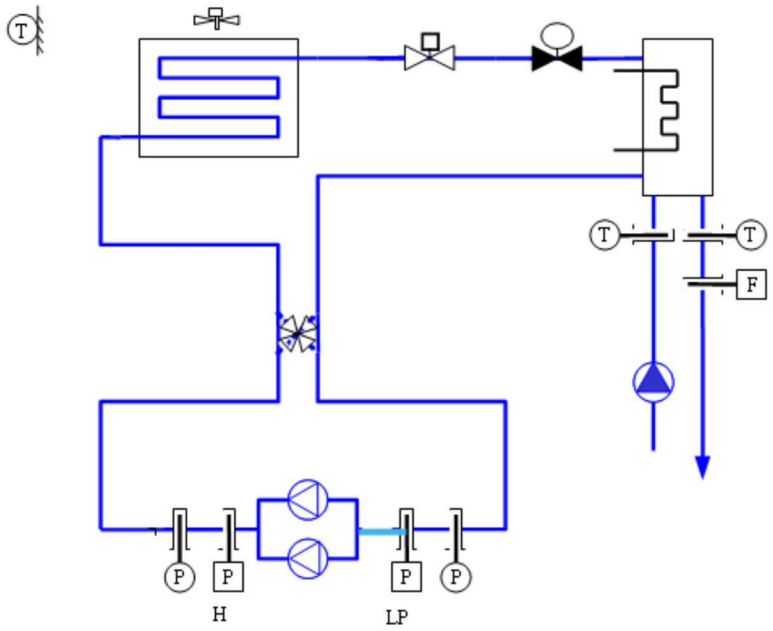
Air-Single-Circuit Air-to-Water Chiller or Chiller-HP Units I/O Configuration

Machine Functional Diagram

Air-to-Water Twin-Circuit Chiller Units

Machine Functional Diagram





AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS REFRIGERANT R410A

Opinions Chillers class CSRML

Range temperatures ambient

-10ºC---------- +48.7ºC full operation

-20ºC---------- +45.3ºC full operation

Range water temperatures

-25ºC ---------- +20ºC

-10ºC ---------- +20ºC

Free Colling system

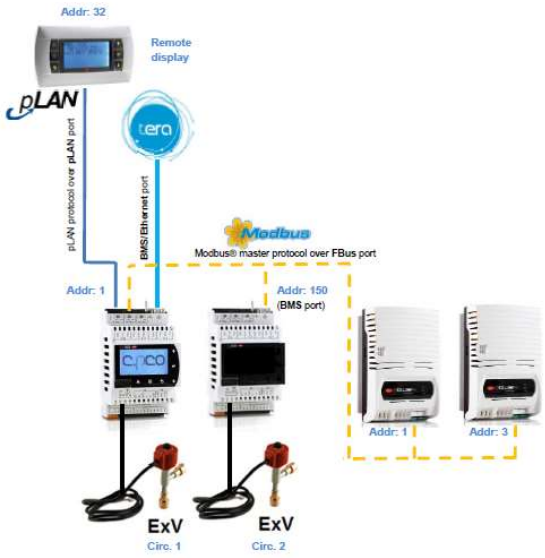
Total heat recovery

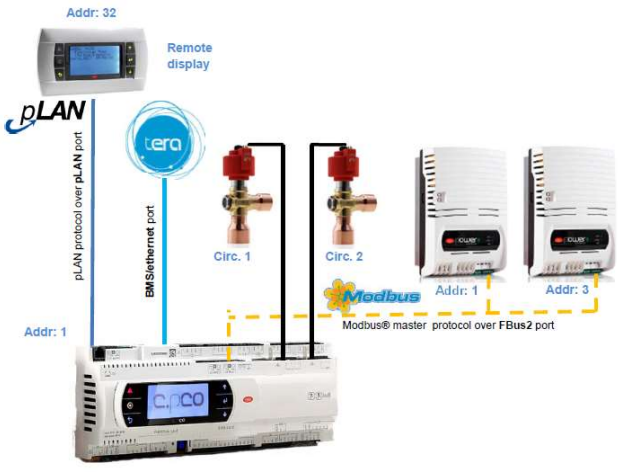
Heat pump

Low noise chiller operation

Communication systems:

Electronique expansion valves

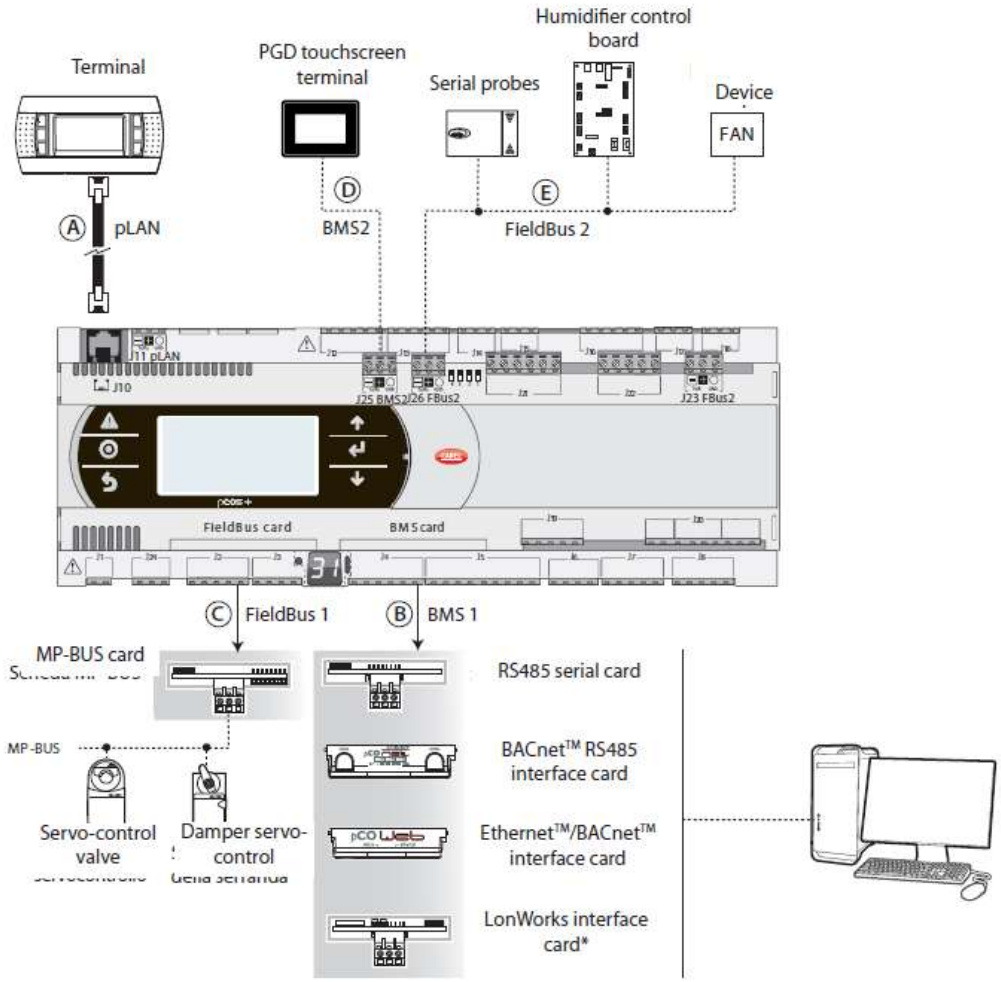




The figure below shows the functional layout of an air handling unit. Damper actuators and valve actuators are field devices that

Communication System

communicate through Fieldbus 1 (ref. C). Fieldbus 2 (ref. E) is the medium through which the serial probes communicate the values measured, and through which the humidifier control board and the fans exchange data and receive setpoints from the controller. The built-in terminal and the remote terminal, which communicate via pLAN (ref. A), are used for installing the application program and for commissioning the system. The PGD touchscreen terminal, intuitive and simple to use, can be used while the unit is normally working to set switch-on and switch-off times, to enter the main parameters, to perform other advanced functions of the application program and to view any alarms triggered. In this case the data is communicated through the BMS2 serial port (ref. D). The system can be connected to a supervision system (KonnexR, LONR, BACnet™, etc.) after installing the relative BMS1 expansion card (ref. B).

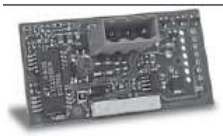


Dysplay by serie PGD 000

	Code	Description	Notes
	PGDT04000F*** (tech. leaflet code +050001475)	pGD Touch 4.3" user terminal	The pGD Touch 4.3" graphics terminal belongs to the family of touchscreen terminals, designed to simplify and make more intuitive the interfacing of users with the controllers of the pCO Sistema family. The electronic technology applied and the new 65,000-colour display allows the terminal to handle high-quality images and advanced functions, providing an excellent aesthetic performance. In addition, the touchscreen panel facilitates man-machine interaction, making it easier to navigate through the various screens.
	PGDT07000F*** (tech. leaflet code +050001490)	pGD Touch 7" user terminal	See description of pGD Touch 4.3" user terminal.
	PGDE000* (tech. leaflet code +050001450)	Graphics terminal	Allows complete graphics management through the use of icons (defined during the development of the application software) and managing international fonts in two sizes: 5x7 and 11x15 pixels. The application software resides only on the pCO controller; the terminal requires no additional software for operation. Accessories for installation: • telephone connection cable, code S90CONN00*; • TCONN6J000 shunt card (instr. sheet code +050002895).
	PGD1000I00 (tech. leaflet code +050001055)	Graphics terminal (panel installation)	This model can be installed on the panel. Its graphics properties are identical to those of the PGDE000 terminal*. Accessories for installation: • telephone connection cable, code S90CONN00*; • TCONN6J000 shunt card (instructions sheet code +050002895).

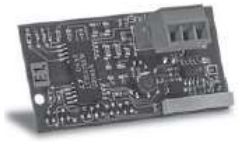
Opinions for thoses serie chillers

By serie ModBus and ethernet card

	Code	Description	Notes
	PCOS004850 (tech. leaflet code +050003237)	BMS RS485 serial card	Can be installed on all controllers of the pCO family (except pCOB); allows direct interfacing with an RS485 network, max. baud rate 19200. The card ensures the controller's optical isolation from the RS485 serial network.
	PCO1000WB0 (tech. leaflet code +050003238)	Ethernet - pCOweb interface card	Can be installed on all controllers of the pCO family (except pCOB); allows connecting the controller to a 10 Mbps Ethernet network and provides the following functions: • access to controller data (network variables and parameters) through an Internet browser (e.g. Internet Explorer™) installed on a PC and connected to the network via TCP/IP to pCOWeb; • connection to a supervisor network running the protocols indicated in the instructions sheet.
	PCO1000BA0 (tech. leaflet code +050000930)	BACnet MS/TP - pCOnet interface card	Allows connecting the controller to a BACnet MS/TP (Master/Slave Token pass) network. The RS485 connection is optically isolated from the controller.

	PCO10000F0 (tech. leaflet code +050004045)	LonWorks® interface card	Allows connecting to a LonWorks® TP/FT 10 network. The program resides in the flash memory located in the socket, and can be programmed directly via the LonWorks® network using network installation and maintenance tools such as LonMaker™. Information on how to program the card is available in the relative manual, code +030221960.
	PCOS00KXB0 (tech. leaflet code +050000770)	Konnex interface card	Allows connecting to a network set up according to the Konnex® standard. Two versions available: for BMS port and Fieldbus port.
	PCOS00HBB0 (tech. leaflet code +050000162)	CAN-bus serial card	Allows connecting to CANbus networks, specifically to e-drofan fan coil controllers, thanks to the capacities of the e-dronic system. This simplifies plant operation, optimizing comfort, enhancing synergies between controllers and reducing operating costs. Two versions available: for BMS port and for Fieldbus port.

Fieldbus port expansions cards

	Code	Description	Notes
	PCO100FD10 (tech. leaflet code +050003270)	RS485 serial card	Allows connecting to an RS485 network (through an electrically isolated interface). The controller consequently acts as a MASTER (i.e. supervisor), therefore other controllers or devices can be connected as SLAVES. Up to 64 devices can be connected.
	PCO100TLN0 (tech. leaflet Code +050003270)	tLAN and PST serial card	Allows connecting to a tLAN network through two separate connectors. The first is used to connect the controller to a tLAN network. Using this connection and a suitably configured application in TLAN MASTER mode, the controller can interact with the I/O expansion cards (tLAN version - PCOE00TLN0) or with other controllers provided with a tLAN connection, configured in tLAN SLAVE mode. Up to 5 devices can be connected. The second connector is used to connect to a PST terminal. Both connections require using a shielded cable having a maximum length of 10 m. **Attention:** Do not use both connectors at the same time
	PCO100MPB0 (tech. leaflet code +050003270)	MP-BUS card	Allows connecting to an MP-Bus network consisting of devices (sensors, actuators) set up according to the Belimo standard. Up to 8 actuators can be connected at the same time, at a maximum distance of 30 m. See the specific documentation provided by Belimo (www.belimo.ch).

AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS REFRIGERANT R410A

			Capacité kW		Connections		Water tank		
model	Water flow M3/h		hot “	cold “	inlet	Water Pump	capacity	Model du kit	Vase expansion
CSRLM 6	1,2	129	8	**6**	**1”**	**Cmv3-4**	100	KHEX100	18Litres
CSRML10	1,8	206	13	**10**	**1.1/4**	**Cmv3-4**	100	KHEX100	18Litres
CSRML15	2,4	255	17	**15**	**1.1/4**	**Cmv3-5**	100	KHEX100	18Litres
CSRML20	3,2	290	24	**20**	**1.1/2**	**Cmv3-5**	100	KHEX100	18Litres
CSRML30	5,1	308	35	**30**	**1.1/2**	**Cmv5-5**	100	KHEX100	18Litres
CSRML40	6	310	58	**38**	**1.1/2”**	**Cmv5-5**	200	KHEX200	18Litres
CSRML50	7,7	398	76	**50**	**2”**	**Cmv10-2**	200	KHEX200	18Litres
CSRML62	12,1	412	91	**62**	**2”**	**Cmv10-3**	200	KHEX200	25litres
CSRML80	15	457	127	**80**	**2”**	**Cmv15-2**	250	KHEX250	25litres
CSRML100	16,3	890	140	**100**	**3”**	**Cmv15-2**	250	KHEX250	25litres
CSRML100.2	16,3	1100	140	**100**	**3”**	**Cmv15-2**	300	KHEX300	25litres
CSRML120.2	21.7	1210	161	**120**	**3”**	**Cmv15-2**	300	KHEX300	25litres
CSRML140.2	27	1350	172	**140**	**4”**	NB32-160/163	300	KHEX300	25litres
CSRML160.4	26.4	1800	223	**160**	**4”**	NB 32-160/163	500	KHEX500	25litres
CSRML200,4	31.9	1900	253	**200**	**4”**	NB 32-160/163	500	KHEX500	25litres
CSRML250,4	42,0	2019	378	**250**	**4**	NB 32-160/177	500	KHEX500	25litres
CSRML300.6	53.4	2790	426	**300**	**4”**	NB 40-160/150	700 L	KHEX700	extern
CRSMD360.6	60.5	3100	532	**360**	**4”**	NB 50-160/167	700 L	KHEX700	
CRSML400.6	67.5	3100	559	**390**	**4”**	NB 50-160/167	1000 L	KHEX1000	
CRSML480.6	71.3	3270	654	**480**	**4”**	NB 50-160/167	1500 L	KHEX1500	
CRSML600.6	119,9	4050	762	**600**	**6”**	NB 60-160/173	2200L	KHEX2200	

Hidraulic kit

1. water tank

2. water pump

3. expansion tank

4. Manometer

5. outlet valve

6. security valve

7. air bleed valve

8. Manual air vent

9. filling / emptying

10. Unit autofill

11. Switchboard

12. anti-return valve

(Only version with 2 pumps)

13. Drain

14. Anchorage points

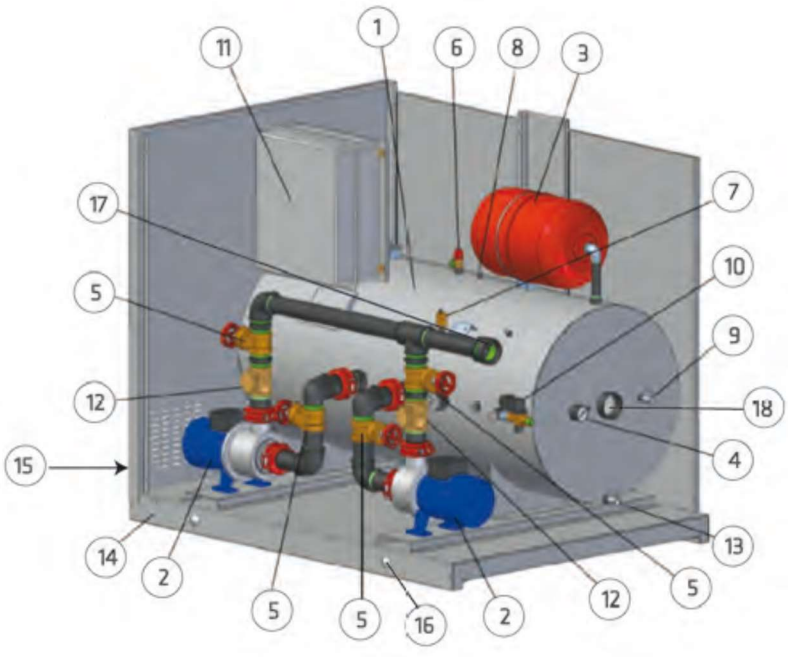
(Nº4-6 holes M12 / Ø14)

15. Power supply

16. Lifting points

17. Takes drive

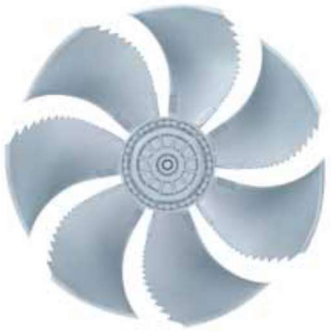
18. Takes return



FE2owlet

for three phase alternating current, 6-6 pole

FN050-SD

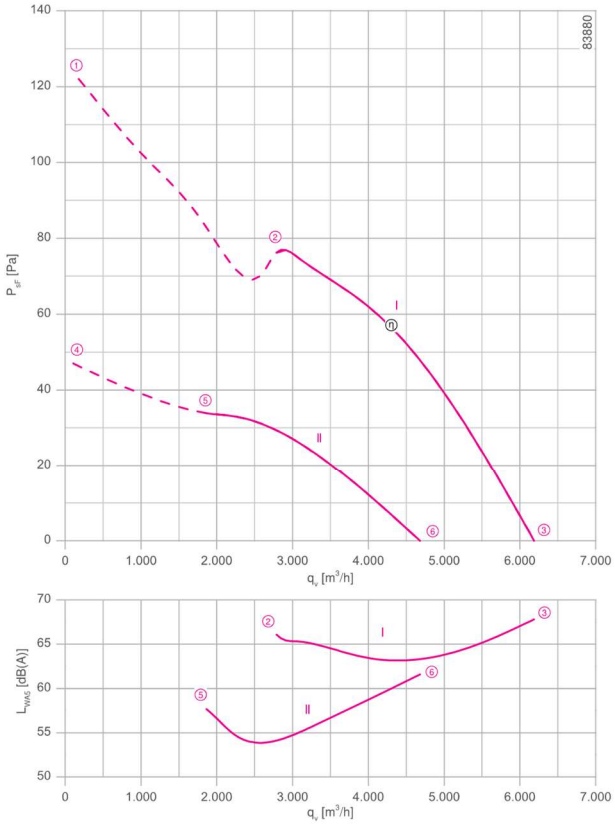


Description

Motor technology: AC
Rated voltage U_N: **3~ 400 V (Δ/Y) ±10 %***
Rated frequency f_N: **50 Hz*** (60Hz data available)
Input power P_1: **290/150 W***
Rated current I_N: **0.74/0.36 A***
Rated speed n_N: **880/ 590 min^{-1}***
Starting current I_A: 1.50 / 0.40 A
Current increase ΔI: 0 %
Thermal class: **THCL155***
Min. permitted ambient temperature $t_{R(min)}$: -40 °C
Max. permitted ambient temperature $t_{R(max)}$: 70 °C
Electrical connection: Terminal box
Number of blades: 7
Protection class: IP54
Motor protection: thermal contact
Blades: Aluminium, uncoated
Rotor: Aluminium, uncoated
Conformity: ErP 2015, CE
ErP-data
Efficiency η_{statA}: 30.1 %
Efficiency: N_{actual} = 40.2 / N_{target} = 40**
* Rated data
**ErP 2015

Connection diagram	Page 531
for airflow direction A	1360-108XB
for airflow direction V	1360-108XA
System components	Page 430

Characteristic curve

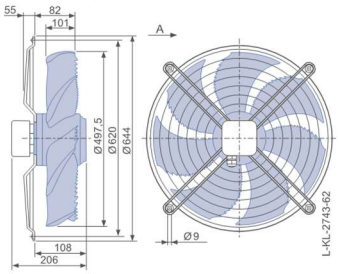


Measured in full bell mouth without guard grille in installation type A according to ISO 5801

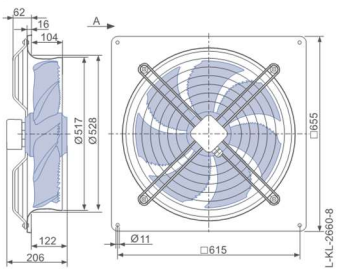
Dimensions mm

Airflow direction A

Design W - axial bolted, mounting for short bell mouth, guard grille suction side

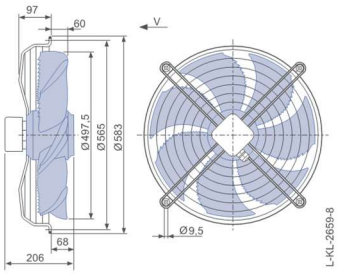


Design Q - square full bell mouth, guard grille suction side



Airflow direction V

Design K - axial bolted, mounted for short bell mouth, guard grille pressure side



SIRE chillers are developed and designed second norms and standards of quality and carefully outlined restricted.
St. chillers with high efficiency, and built with excellent materials, which guarantee to our customers get the most of the equipment outlined in factory capacity, with high **COP** (s).

Energy efficiency

Energy is often dismissed as an operational cost over which the owner has little control. That perception results in missed opportunities for energy efficiency, and lower electrical bills.

Sire chiller plant automation intelligently sequences starting of chillers to optimize the overall chiller plant energy efficiency.

Our chillers have independent circuits, with compressors working independently. Sophisticated software automatically determines the conditions to run in response to current conditions.

Unit Sizing

Our units are delivered completely assembled, with all power connections and control connections already wired, and refrigerant. They can be installed in roofs, on the ground or other place on a level base.

The equipment's can be installed indoor since it is guaranteed good ventilation.

Our chillers are subject to a high in terms of quality control, testing, and durability.

Low noise
The compressors are mounted in vibration absorbers, reducing the vibrations and noise.
Fans are statically and dynamically balanced and controlled and provide a low noise and efficient operation.

This assures a noiseless and efficient operation, as well as less maintenance due to vibrations.

Operation and easy handling
The chillers SIRE is easy to control, and are provided with protections mechanical electrical and electronic, with a microprocessor that controls and assistance throughout the service, from the start, control and alarms.

The unit are assembled with a set of safety features, and malfunctions controls, I.e. High-pressure switch, low pressure switch.

Structure

The structure is built in galvanized steel (or stainless steel, by request), with different thickness (from 1,5 mm to 3 mm) according to final location in the equipment. The machine can be dismantled in its final location, once the parts assembled are tight with screws.
Paint is with polyurethane and epoxy resin.
The equipment's are prepared to be placed without weather protection.

Compressors
Hermetic, alternatives, or screw compressors are carefully chosen by their income and durability.

They are mounted in a absorbing supports to avoid any kind of vibration. SIRE uses a low noise compressor with low vibration operation.

Condensers
More than in most chillers, these condensers ensure a high degree of transfer coefficient between the refrigerant and air.
Made of copper, with tubes mechanically expanded in aluminium, usually selected for tropical systems.

Water condensers

Extreme efficiency condensers type shell and tube at big capacities and plate for small capacities. Build in stain steel and cooper, or stainless steel and cooper or with tubes in CuNi.

Evaporator

Water to refrigerant heat exchanger Shell and tube type are used in Sire equipments. The heat exchanger got the shell in steel and the tubes are in copper, improving the efficiency of this equipment. A final cover of thermal insulation prevents condensation improves efficiency.

Condensers Fans
The chillers are equipped with 3 phases fans, (6 poles) normally used in exterior, close type IP54 according to DIN 40050 with due protection electric indicated. The fans do not need any maintenance or intervention. Fans enjoy a perfect system designed for a perfect aerodynamic efficiency and a low noise. Each fan is covered with steel guards for protection against contact. The fans are controlled by discharge pressure our by a speed controller, and also (in the small chillers) by the start of the compressor, depending on the type of equipment chosen. The motor is protected by internal Thermal contacts according to VDE 0730.

Protection and devices
The chillers in any of the models, have basic protections for; high pressure and low-pressure devices, oil differential pressostat, anti-ice device, phases control (in some models) delay operation relay for the start compressor, part wending start compressors, internal and external thermal protection, crankcase oil heater, and all type of liquid line protections and controls in the refrigeration circuits.

Electrical board

The electrical board is located inside of the unit and contains all the components necessary to control the unit. In this board is also located the unit protections and the electrical connections between the board and the compressors and fans. The client only has to make the main electrical connection (between electrical source and our unit), and the water connections (not included).

Microprocessor based controller

The control performs all operating, protection and alarm functions of the unit.

A large number of programmable parameters enable a precise configuration of the controller to meet the requirements of the unit.

It's used two main type of control architecture, the µC sistema architecture and the PCO architecture.

The microprocessors are made up of parametric controllers, user interfaces and both local and remote, communication interfaces. The units with PCOc architecture can be connected in pLAN, allowing communication of data and information.

Both microprocessors can have connected to external data acquisition systems and equipment's.

Main functions:

- P+I control
- stepped control in each circuit
- control and warnings on component operating hours
- preventive operation when starting with high temperatures
- self-diagnostics
- automatic change over
- proportional water/air return and outlet control with timed logic
- etc

Devices controlled:

- condensers fans
- reversing valve
- antifreeze heater
- alarm signal device
- compressors

Series chiller

A series chiller arrangement is an energy saving strategy, which is possible with our equipment's.

It is possible to operate a pair of chiller's more efficiently in a series chiller arrangement than in a parallel arrangement.

It is also possible to achieve higher entering-to-leaving chiller differentials, which may, in turn, provide the opportunity for lower chilled water design temperature, lower design flow, and resulting installation and operational cost savings.

SIRE provide to our costumer the possibility of cooperation to building all kind of chiller situation by client design and by their demand.

Water Treatment

Dirt, scale, products of corrosion and other foreign material will adversely affect heat transfer between the water and system components. Foreign matter in the chilled water system can also increase pressure drop and consequently, reduce water flow. Proper water treatment must be determined

locally, depending on the type of system and local water characteristics. Inadequate water isn't recommended for use in our equipment's. Their use will lead to a shortened life to an indeterminable degree. We encourage the employment of a reputable water treatment specialist, familiar with local water conditions, to assist in this determination and in the establishment of a proper water treatment program.

Series Chiller Arrangements

Another energy-saving strategy is to design the system around chillers arranged in series. The actual savings possible with such strategies depends on the application dynamics and should be researched by consulting your SIRE chiller. Systems Solutions Representative and applying the SIRE System analyzer program. It is possible to operate a pair, in this situation

of chillers more efficiently in a series chiller arrangement than in a parallel arrangement. It is also possible to achieve higher entering-to-leaving chiller differentials, which may, in turn, provide the opportunity for lower chilled water design temperature, lower design flow, and resulting installation and operational cost savings. The SIRE model CSRML. block allow to assemble chillers until 1.1MW capacity

compressor also has excellent capabilities for "lift," which affords an opportunity for savings on the evaporator water loop.

Water to refrigerant heat

exchanger

It shall be of high efficiency and

externally well insulated.

Brazed stainless steel plate heat

exchangers shall be used up to a total compressor absorbed power of 25 kW and shell and tube type in larger Unit

Expansion control device

It shall be a thermostatic expansion valve with external pressure equalizer. Heat pumps shall be equipped with an additional capillary tube expansion device.

Electronic expansion valves are also used.

Air to refrigerant heat exchanger (condensers)

It shall be manufactured from seamless copper tubes and aluminium fins with properly formed surface for high heat transfer efficiency. Copper tubes

shall be mechanically expanded into the aluminium fins accomplishing a good contact thus maximum heat transfer. **Adiabatic** system is also providing with more than +48C on air. The chillers with +50C they add a tropical condenseur.

The very new microchannel condenser is also providing, by demand in this model. However, we advise the use of this condenser only in clean places or far away from the sea area, with a clean ambient.

Applicative Norms

Normativas aplicadas

CE Norms

Declare under our sole responsibility that the product ranges

DTD.

to which this declaration relates is in conformity with the following

standards or other normative document(s).

EN 60529 (2000) Degrees of protection provided by enclosures (IP code)

EN 60335-2-40 (2006) Household and similar electrical appliances, Part 2-40

EN 61000-6-2 (2006) Electromagnetic compatibility (EMC), Part 6-2

EN 61000-6-3 (2007) Electromagnetic compatibility (EMC), Part 6-3

ISO 12100-2 (2004) Safety of machinery, Part 2.

EN 14511-1,2,3,4 (2008) Air conditioners, liquid chilling packages and heat pumps with

electrically driven compressors for space

Machinery 2006/42/EC

Electromagnetic compatibility 2004/108/EC

Low voltage 2006/95/EC

company under Tuv certification

TÜVRheinland

CERTIFICADO

TÜV Rheinland Ibérica Inspection, Certification & Testing, S.A.

ECODESIGN

AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS REFRIGERANT R410A