MIPAL intense

TECNOLOGIA E CONFIANÇA

INTENSE

mini Cdr

Mini Air-Cooled Condenser

Ideal for supermarket refrigeration systems, large air conditioning, chillers and medium and large refrigeration systems.

Commercial Line

december/2020

48.600 to 90.913 Kcal/h
56.512 to 10.5712 W

INTENSE

Mini Air-Cooled Condenser

Benefits

- Standard electronic engines
- Standardized electrical assembly(NBR5410)
- Greater range of capacities
- Adaptable to all refrigerants
- 2 levels of protection against harsh enviroments
- Easy cleaning and maintenance
- Plug & Play concept: ease of installation and operation
- Longer fan motor life
- Higher thermal and energy efficiency
- Special and ultra resistant KTL painting on the feet
- Maximum efficiency throughout its lifecycle
- Electrical panel with printed circuits and easy feeding

Standard Version

- Copper tubes with 3/8"external diameter
- 10 and 12 app aluminum fins spacing
- Galvanized steel cabinet and epoxy white painting
- Lifting handles
- Electronic motor fans

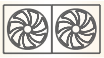
Optionals

- Copper tubes and aluminum fins (Cu/Al) for CO2
- Multiple circuits able to supply several compressors at the same time
- Anti-corrosion treatment for installations close to the seafront
- Frequency inverter to control fan rotation, reducing energy consumption and noise level even in the coldest hours of the day.

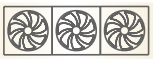
Applications

Ideal for supermarket refrigeration systems, large air conditioning, chillers and medium and large refrigeration systems.

Capacities and Features
Electronic Fans



Selection Data					Motor Fan Data					
Kcal/h	Watts	dB(a)	Model	Spacing	Ø (mm)	Flow (m³/h)	kW (220V)	A (220V)	kW (380V)	A (380V)
49.572	57.642	60	0060	10 app	500	20.200	1,90	5,54	1,90	3,20
52.122	60.607	60	0060	12 app						
54.845	63.774	60	0066	10 app	500	19.780	1,90	5,54	1,90	3,20
56.896	66.158	60	0066	12 app						
58.375	67.877	60	0075	10 app	500	19.520	1,90	5,54	1,90	3,20
60.037	69.810	60	0075	12 app						



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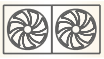
Kcal/h	Watts	dB(a)	Model	Spacing	Ø (mm)	Flow (m³/h)	kW (220V)	A (220V)	kW (380V)	A (380V)
74.664	89.919	62	0087	10 app	500	30.300	2,85	8,31	2,85	4,80
78.642	91.444	62	0087	12 app						
82.855	96.343	62	0102	10 app	500	29.820	2,85	8,31	2,85	4,80
85.955	99.948	62	0102	12 app						
88.577	102.996	62	0113	10 app	500	29.490	2,85	8,31	2,85	4,80
90.913	105.712	62	0113	12 app						

Capacities and Features
AC Fans



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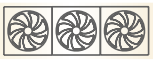
Kcal/h	Watts	dB(a)	Model	Spacing	Ø (mm)	Flow (m³/h)	kW (220V)	A (220V)	kW (380V)	A (380V)
48.600	56.512	60	0060	10 app	500	19.500	1,90	5,54	1,90	3,20
51.100	59.419	60	0060	12 app						
53.770	62.523	60	0066	10 app	500	19.080	1,90	5,54	1,90	3,20
55.780	64.860	60	0066	12 app						
57.230	66.547	60	0075	10 app	500	18.860	1,90	5,54	1,90	3,20
58.860	68.442	60	0075	12 app						



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Kcal/h	Watts	dB(a)	Model	Spacing	Ø (mm)	Flow (m³/h)	kW (220V)	A (220V)	kW (380V)	A (380V)
73.200	85.116	62	0087	10 app	500	29.250	2,85	8,31	2,85	4,80
77.100	89.651	62	0087	12 app						
81.230	94.453	62	0102	10 app	500	28.620	2,85	8,31	2,85	4,80
84.270	97.988	62	0102	12 app						
86.840	100.977	62	0113	10 app	500	28.290	2,85	8,31	2,85	4,80
89.130	103.640	62	0113	12 app						

(*) For50Hz, consult our engineering.

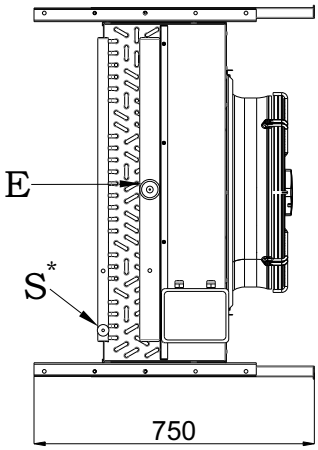
- Room temperature: + 35°
- Condensing temperature: + 45°

The data applies to the following operating conditions:

- Altitude: Sea level.
- Refrigerant: R22 (for other gases, see capacity correction table).

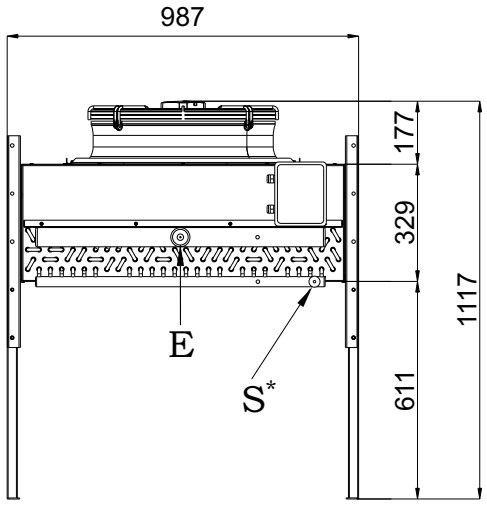
Dimensional

Horizontal Assembly

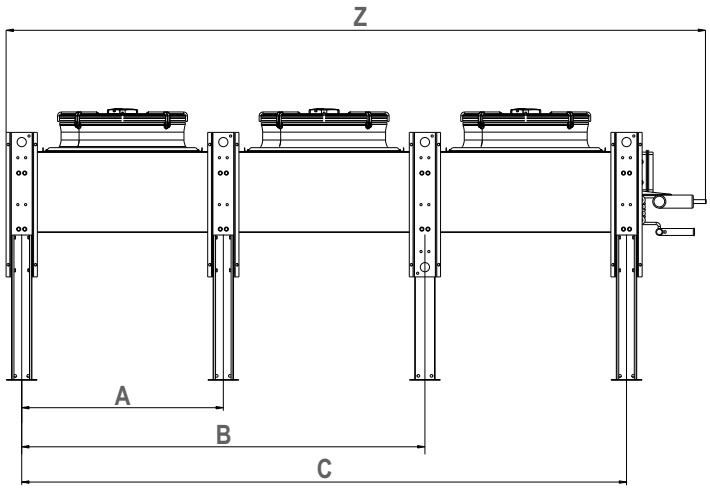


* Output side optional

Vertical Assembly



* Output side optional

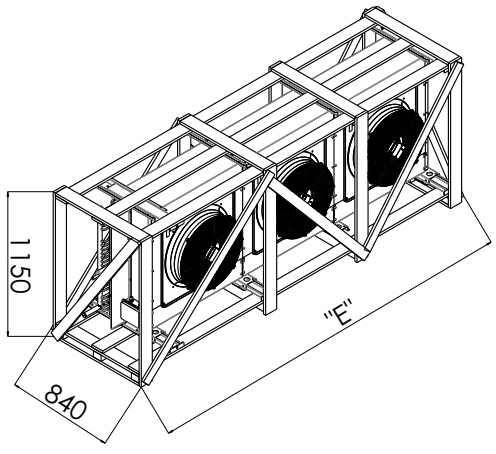


Dimensional						
	mm				Input	Output
	A	B	C	Z	Ø	Ø
2	-	1660	–	2050	1 5/8"	7/8"
3	830	1660	2490	2880	2 1/8"	1 1/8"

	Weight (Kg)					
	060	066	075	087	102	113
Net Weight 10app	110	120	130	162	177	191
Gross Weight 10app	139	149	159	201	216	230
Net Weight 12app	114	125	136	168	184	200
Gross Weight 12app	143	154	165	207	223	240

Connector resistant to temperature variations, vibration and shock. Spring-loaded technology reduces the time for electrical installations without the need for special tools.

Packing



	Quota L
	mm
2	2120
3	2950

Model	Description	Available options
CDRM	Remote Condenser	CDRM • Mini Air-Cooled Condenser
E	Spacing between fins	E • 10 app F • 12APP
0060	Model	0060 to 0113
TN	Circuits	Number of circuits
00	Accessories	00 • Without accessories 04 • Pressure transducer 05 • Electrical panel with control 06 • Electrical panel without control 07 • Electric box 08 • Electric box and pressure transducer 09 • Pressure transducer and electrical panel without control
A	Finishing	J • Protected steel cabinet K • Protected steel cabinet and fins N1 protection L • Protected steel cabinet and fins N2 protection S • Protected steel cabinet and fins N3 protection
EC500	Motor	Ec500 • EC 500mm Motor Fan AC50A • AC 500mm Motor Fan with 04 Poles
Q	Voltage and Frequency	H • Motor = 230V/3F/50Hz Q • Motor = 230V/3F/60Hz E • Motor = 380V/3F/50Hz V • Motor = 380V/3F/60Hz
1	Packing	1 • Crate

Capacity Correction

F1	Factor related to DT (*)										
DT	7	8	9	10	11	12	13	14	15	18	20
F1	1,42	1,25	1,11	1	0,91	0,83	0,77	0,71	0,67	0,55	0,5

F2	Coolant factor				
Refrigerant	R22	R134A	R404A	R407C	R410A
F2	1	1,01	0,983	0,98	0,95

F3	Factor related to air inlet temperature							
Input Temperature	+15	+20	+25	+30	+35	+40	+45	+50
	0,9	0,95	0,97	0,98	1	1,03	1,08	1,12

F4	Factor relative to the altitude of the installation site								
Altitude (m)	0	600	800	1000	1200	1400	1600	1800	2000
F4	1,00	1,04	1,06	1,07	1,09	1,10	1,12	1,14	1,16

Fsom	Correction of the sound level according to the distance of the condenser and the desired location										
Length (m)	1	2	3	4	5	10	15	20	40	60	80
Dba	+20	+14	+10	+8	+6	0	-4	-6	-12	-16	-20

The thermal capacities shown in the tables in this catalog correspond to standard operating conditions and are not always those available in the project.
Thus, we present a correction method for real conditions that must be applied before entering the equipment selection table.

(*) DT = difference between air inlet and condensation temperatures

FCP

Eaporation Temperature	Coeficient Fcp for hermetic or semi-hermetic compressors Condensing Temperature °C						Coeficient Fcp for open compressors Condensing Temperature °C					
°C	32	35	40	45	50	55	32	35	40	45	50	55
10	1,14	1,16	1,18	1,22	1,24	1,29	1,09	1,11	1,13	1,16	1,18	1,21
5	1,18	1,20	1,22	1,25	1,29	1,33	1,12	1,13	1,16	1,18	1,21	1,24
0	1,21	1,23	1,25	1,29	1,33	1,37	1,14	1,15	1,18	1,21	1,24	1,28
-5	1,25	1,27	1,30	1,33	1,38	1,41	1,16	1,18	1,21	1,24	1,28	1,32
-10	1,29	1,31	1,34	1,38	1,43	1,48	1,19	1,21	1,24	1,28	1,32	1,36
-15	1,33	1,35	1,39	1,43	1,48	1,55	1,23	1,25	1,28	1,32	1,36	1,40
-20	1,38	1,41	1,44	1,48	1,55	1,62	1,26	1,28	1,32	1,36	1,40	1,45
-25	1,44	1,47	1,50	1,55	1,62	1,72	1,30	1,32	1,36	1,40	1,45	1,49
-30	1,51	1,53	1,57	1,62	1,72	1,87	1,34	1,36	1,40	1,45	1,49	1,55
-35	1,58	1,60	1,66	1,75	1,87	2,07	1,37	1,40	1,45	1,49	1,55	1,62
-40	1,66	1,70	1,76	1,87	2,03	2,27	1,39	1,45	1,50	1,55	1,62	1,67

Selection Example

Terminology

Qcd	Heat actually rejected in the condenser (value for entry in the selection tables)
Qcp	Compressor refrigeration capacity (installation design data)
Qm	Heat produced by the compressor motor
Qbhp	Shaft power in open compressors (in HP)
Qkw	Power consumed by hermetic and semi-hermetic compressors
F1, F2, F3, F4, Fsom e FCP	Correction factors and factor for compressors
TA	Room temperature

Calculation formulas

$Q_m = P_{bhp} \times 642$ (for open compressors)

$Q_m = Q_{kw} \times 860$ (for hermetic or semi-hermetic compressors)

$Q_{cd} = (Q_{cp} + Q_m) \times F_1 \times F_2 \times F_3 \times F_4$

If the informations of motor and compressor consumption, we indicate practical factos(Fcp), that can be utilized for the effective rejected capacity in the condensator, follow the formula bellow:

$Q_{cd} = Q_{cp} \times F_{cp} \times F_1 \times F_2 \times F_3 \times F_4$

Data

Compressor Semi-hermetic	**QCP Capacity** 68000 Kcal/h
Refrigerant R 404A	**Ambient temperature of the installation site** + 30°C
TEV Evaporation -10°C	**Altitude of installation location** 800m
TCD Condensation +45°C	**Maximum permissible sound level** 55 Dba at 20m of the place

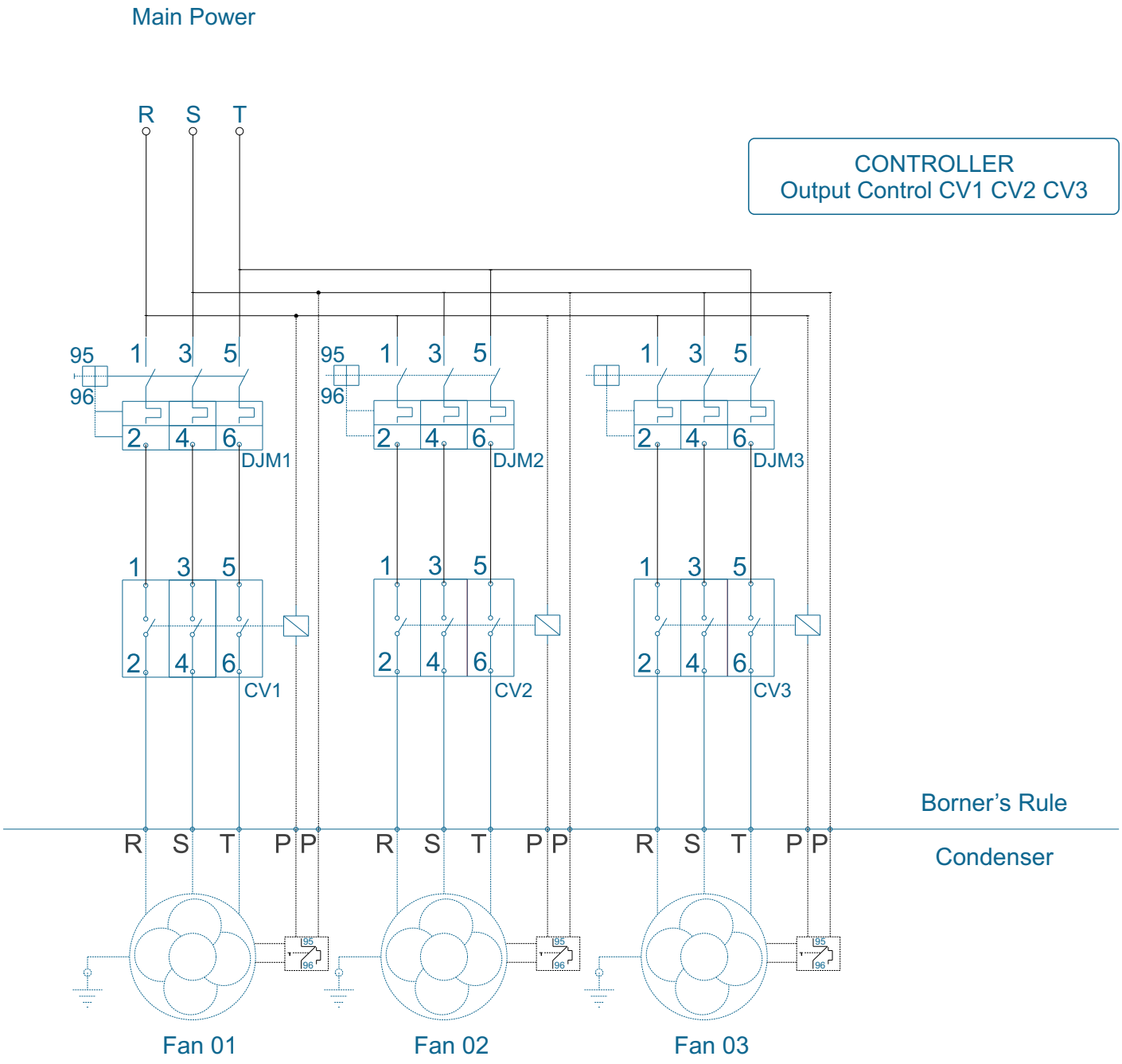
Resolution:

Qcd = Qcp x Fcp x F1 x F2 x F3 x F4
Qcp = 68000 Kcal/k
Fcp = -10°C/+45°C = 1,38 for semi-hermetic compressor
F1 = Tcd-Ta = 45-30 = 15 = 0,67
F2 = Gas R404A = 1,05
F3 = + 30°C = 0,98
F4 = Altitude = 1,06

Qcd = 68000 x 1,38 x 0,67 x 1,05 x 0,98 x 1,06 = 68577 Kcal/h - Capacity effectively rejected by the condenser in these design conditions.
Noise level = 55DBa at 20m = 55-6 = 49DBa at 10m

Defined the capacity to 68577 Kcal/h and the noise level by 49 Dba, go to the table and select the model CDR 094 with the capabilitie by 91.108 Kcal/h and 46 Dba.

220V • 380V • 440V - 50/60Hz - 3F



Subtitles:

R = Phase 1
S = Phase 2
T = Phase 3
PP = Thermal Protector
CV = Fan Contactor
DJM = Motor Circuit Breaker

Attention:

- When dimensioning installation components, refer to the catalog data table
- To change factory power, contact Mipal engineering
- The safety thermostat must be connected in series with the contactor coil and the controller heating
- Always use the ground wire
- Connect the fan thermal protector in series with the contactor coil and drive the controller

Since 1956 Mipal are writing the history of refrigeration. With a complete line of condensers, evaporators and finns for the most varied commercial and industrial applications, stands out in the market by the high quality and efficiency in our products.

That's why it's growing in large scale it's presence in other countries.

This is the result of dedication for innovation and attention to our customers. That's why the Mipal brand it's too strong, becoming a synonym of technology and reliability.

INTENSE

Mipal developed the Intense system with electronic motor fans and the concept of intense thermal exchange, improving the efficiency in finned equipments. This represents one more innovation from Mipal, aligned with world trends for maximum performance and low energy consumption.

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