

Technical guide

CDU-M R04A1C

400V 3ph

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5. Service valves

April 2022

100% CO2 Condensing Units

ECO-FRIENDLY REVOLUTION

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1. Main product specifications

		CDU-M R04A1C	
		T°C evap -35°C	T°C evap -10°C
32°C ambient/ Maximum cooling capacity	(kW)	2,19	5,51
32°C amb / Max electric power input	(kW)	2,41	3,52
32°C amb / Minimum cooling capacity	(kW)	0,81	1,95
38°C amb / Maximum cooling capacity	(kW)	2,13	5,05
43°C amb / Maximum cooling capacity	(kW)	1,69	3,94
Seasonal performance SEPR		1,46	2,61
Maximum volume with associated evaporator	(L)	5	15
Maximum piping diameter with associated evaporator	(mm)	9,52 (3/8") *	9,52 (3/8") *
Maximum length to evaporator	(m)	30	30

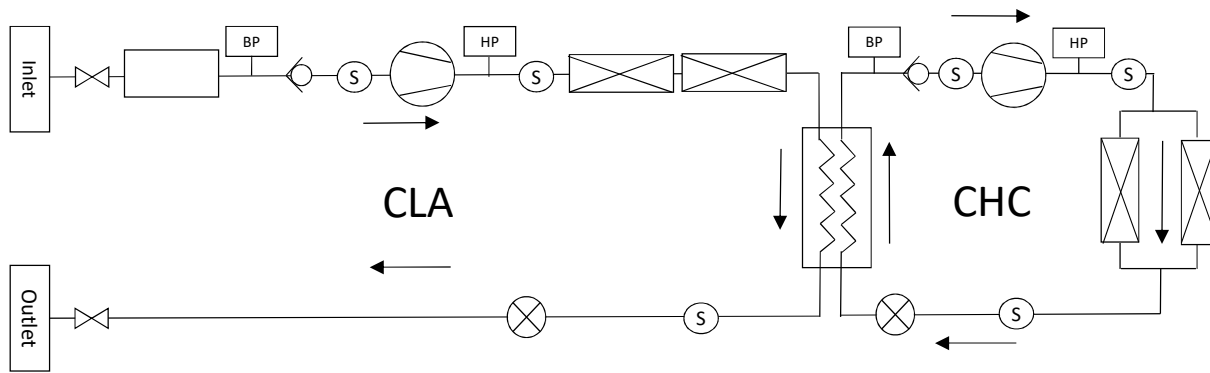
Evaporating temperature range (Min/Max)	(°C)	-35 ~ +5
Ambient temperature range (Min/Max)	(°C)	-25 ~ +43
Dimensions Height/Width/Depth	(mm)	1300 / 1105 / 285 **
Weight	(kg)	113
Noise pressure level (1)	dB(A) @1m	52
Compressor (x1)		Inverter hermetic Scroll
Speed range	(Hz)	30 - 80
Gascooler	Type	Aluminium microchannel
Refrigerant	Type / GWP	R744 (CO2) / 1
Power supply		3ph+N / 400 VAC / 50/60 Hz
Communication	Standard	Modbus
PED	Category	1
Maximum working pressure	MWP	9MPa (LP) / 14 MPa (HP)
Valves dimensions	LP / HP	3/8" (9,52mm) / 1/4" (6,35mm)
Casing color /RAL		RAL 7032
Drier		Mandatory suction line***



- (1) Conditions: ambient T°+32°C, Compressor Speed : 70Hz
 *Piping diameter inside evaporator, connection excluded
 **without pipe cover
 ***Drier qualified Danfoss DMT 083S, check installation conditions

CDU-M

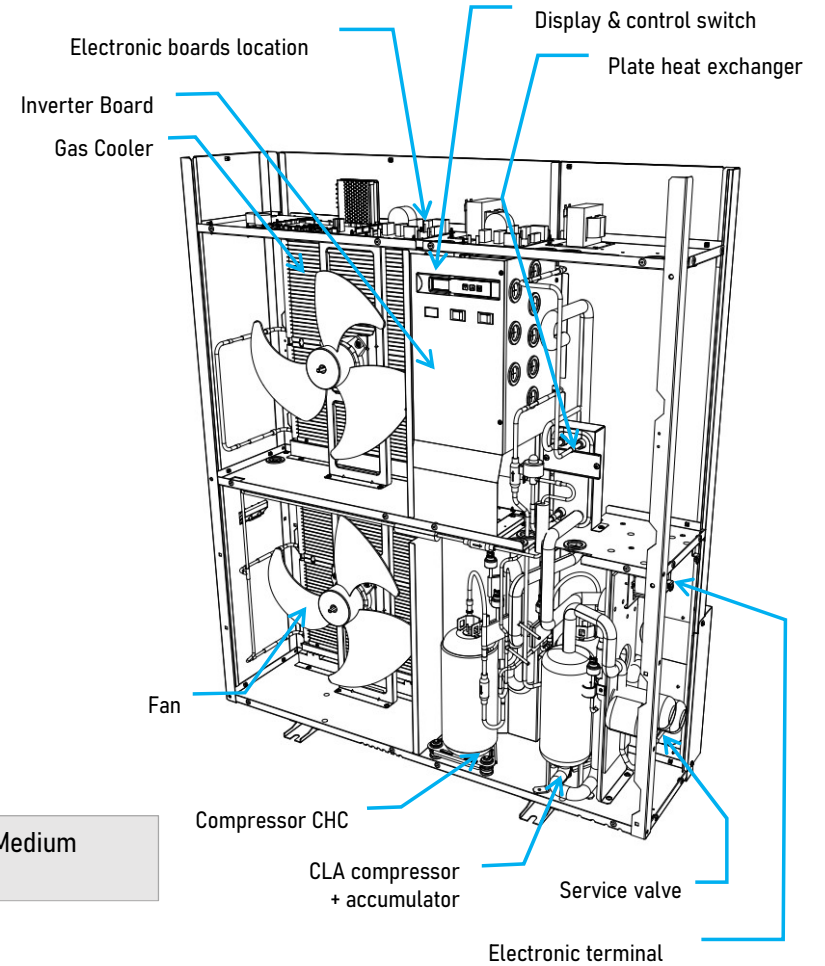
2. Product diagram



- Service valve
- Strainer
- Check valve
- Electronic Expansion Valve
- Compressor (Scroll type)
- Accumulator
- Air Gascooler (micro channel type)
- Plate Heat Exchanger



- CDU-M can operate Low temperature (LT) or Medium Temperature (MT) application.



3.1 Cooling capacities & installation sizing

1. Cooling capacity

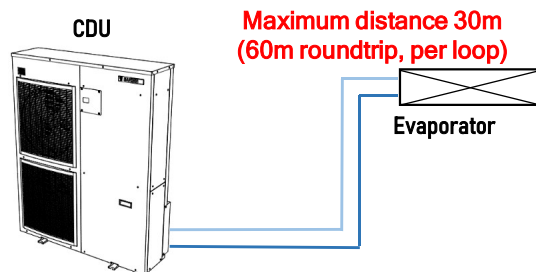
Ambient Temperature (°C)	CDU-M R04A1C Cooling capacity (kW)						
	Evaporating temperature LT (°C)			Evaporating temperature MT (°C)			
	-35	-30	-25	-10	-5	0	5
32	2,19	2,52	2,74	5,51	6,10	6,67	7,39
35	2,14	2,48	2,64	5,28	5,90	6,45	7,09
38	2,13	2,37	2,45	5,05	5,69	6,22	6,79
40	1,92	2,22	2,34	4,71	5,44	5,87	6,25

- The cooling capacity is linked to the evaporating temperature of the group of the condensing unit and the reference outside temperature of the project
- Notes: The cooling balance of refrigerated showcase is to correlate with the temperature around the furniture (the insulation of the building, or the air conditioning of the sales area can have an impact). In addition, remember to take into account in this balance that the production of cold is generated by an external unit (greater cooling demand compared to centralized cold production)
- SandenVendo GmbH is not responsible for defining the installation's cooling requirement (cooling balance)
- We recommend to keep 10% margin between the cooling capacity and cooling needs required for the installation
- Consider performance loss depending on the distance between the evaporator and the condensing unit (see next page)

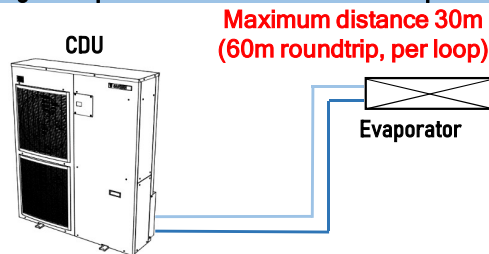
3.2 Cooling capacities & installation sizing

2. Piping length and performance loss

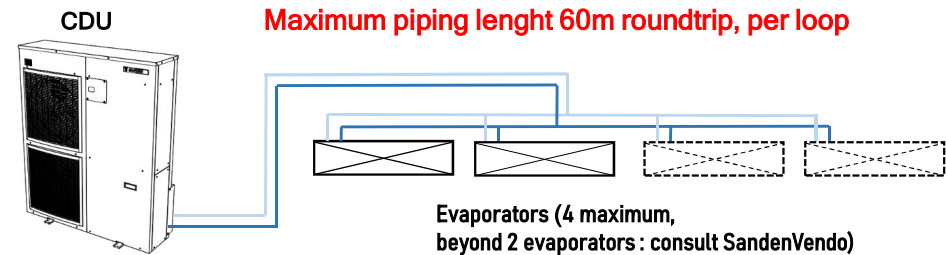
Single evaporator installation – positive temperature



Single evaporator installation - Low temperature



Multi evaporators installation – Positive Temperature



Installation beyond these distances will result with poor performances and poor return of oil to the compressor

In addition, piping length has an impact on the cooling capacity. Opposite, the coefficients to be considered for a reduction in cooling capacity depending on the distance from the evaporator.

Length to the evaporator (m)	10	20	30
MT (positive @Te -5°C)	1,40%	2,80%	4,10%
LT (negative @Te -30°C)	2,80%	5,50%	8,10%

3. Evaporator volume

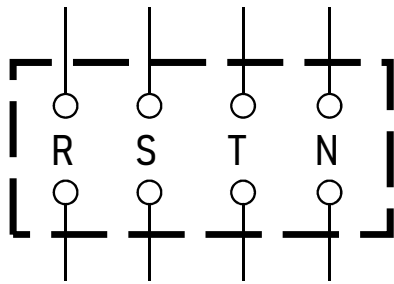
Medium Temperature: 15 liters maximum (bad oil return if > 15L)

Low temperature: 5 liters maximum (bad oil return if > 5L)

Maximum piping diameter inside evaporator 9,52mm / 3/8" (connection excluded)

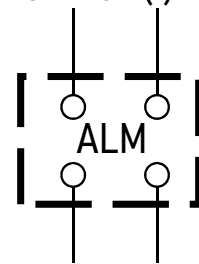
4. Electric power input

Power supply
3ph + N / 400VAC / 50/60Hz



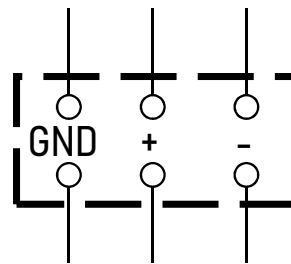
Electrical Power Grid

Alarm connection
1ph + N / 230VAC /
3A max (1)



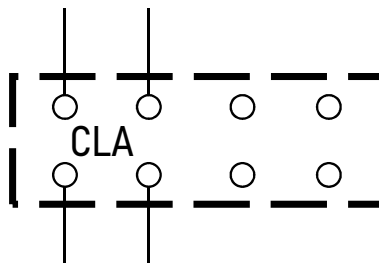
Alarm relay

Communication
Modbus type (2)



Master Controller

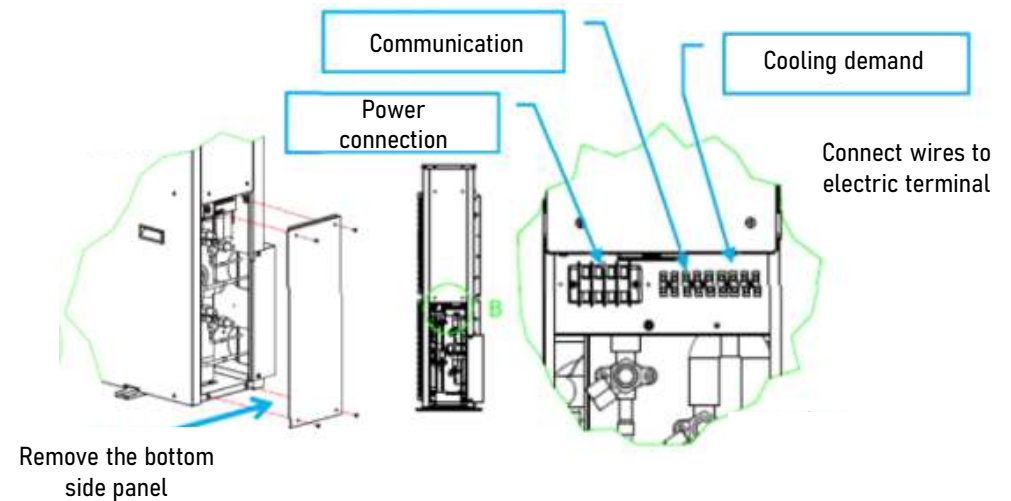
Cooling demand
Via dry contact(3)



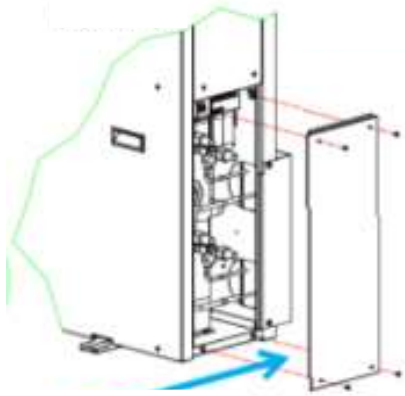
Cabinet controller

- (1) Alarm delivering 230V in case of error
- (2) Use a shielded cable to connect the modbus
- (3) Cooling demand on dry contact

Rated Power	3,8kW
Voltage	400Vac / 3 phases
Frequency	50/60Hz
Electrical consumption	3,8kW
Rated current	6,0A
Electrical power	4,2kVA
Circuit breaker	10A



5. Service valves



Remove lower right side panel



Reducer 416122 provided (x2)
Inlet G 3/8" femelle
Outlet 1/4" SAE

Terminal blocks

Service valve Suction Loop A

Service valve Supply Loop A

