

# Technical Guide

## CDU-M R04A1D

### 230V 1ph

1. Main product specifications
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3. Cooling capacities
4. Electric power input
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Dec 2021

100% CO<sub>2</sub> condensing units

# ECO-FRIENDLY REVOLUTION

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## 1. Main product specifications

		CDU-M R04A1D	
		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	51
Compressor (x1)		Inverter hermetic Scroll
Speed range	(Hz)	30 - 80
Gascooler	Type	Aluminium microchannel
Refrigerant	Type / GWP	R744 (CO2) / 1
Power supply		1ph+N / 230VAC / 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

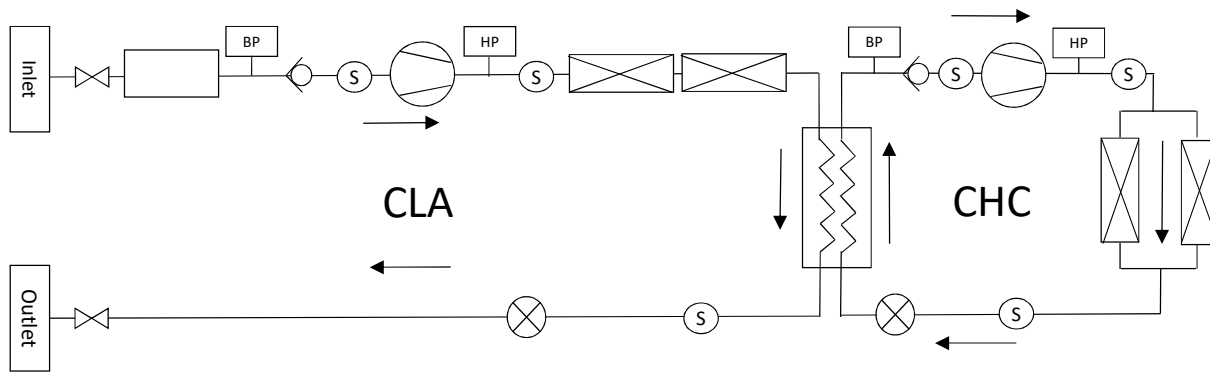
\*Piping diameter inside evaporator, connection excluded

\*\*without pipe cover

\*\*\*Drier qualified Danfoss DMT 083S, check installation conditions

# CDU-M

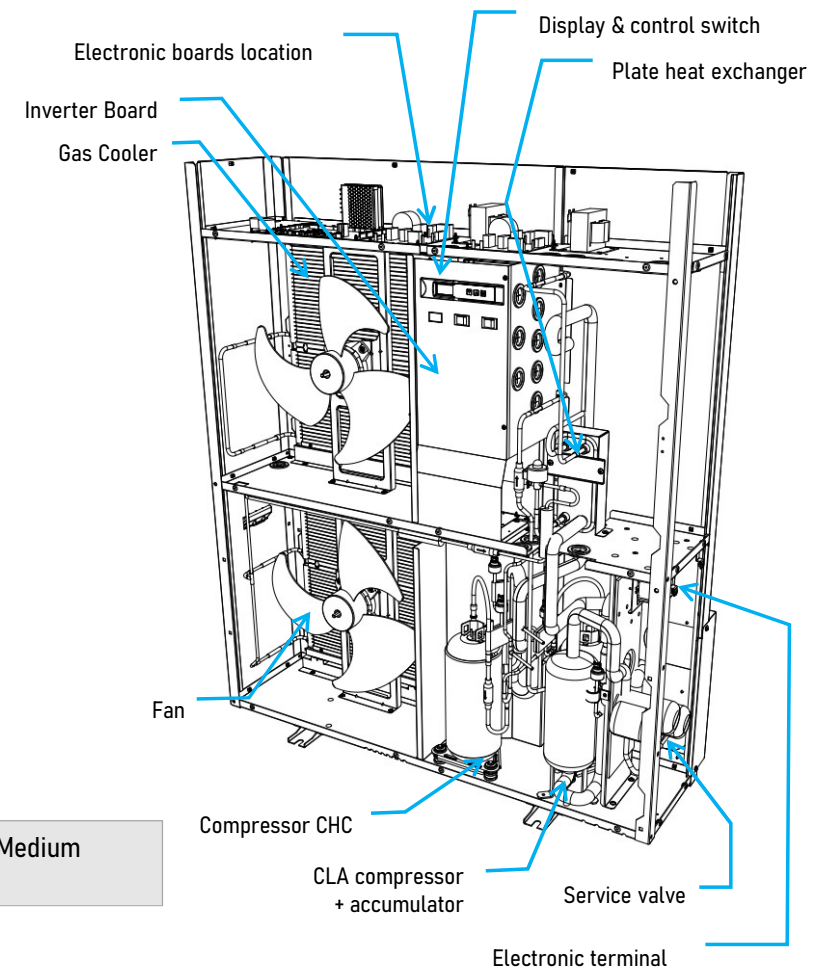
## 2. Product diagram



- 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 capacities

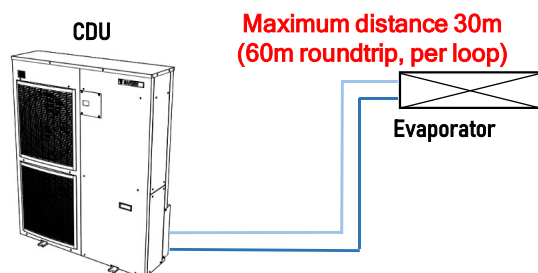
Ambient Temperature (°C)	CDU-M R04A1D Cooling capacities (kW)						
	Evaporating temperature LT (°C)			Evaporating temperature MT (°C)			
	-35	-30	-25	-10	-5	0	5
32	2,21	2,52	2,74	5,51	6,10	6,67	7,39
35	2,14	2,48	2,64	5,28	5,90	6,45	7,09
38	2,13	2,37	2,45	5,05	5,69	6,22	6,79
40	1,92	2,22	2,34	4,71	5,44	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)

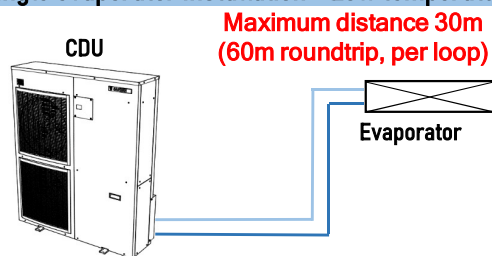
## 3.2 Cooling capacities & installation sizing

### 2. Piping length and performance loss

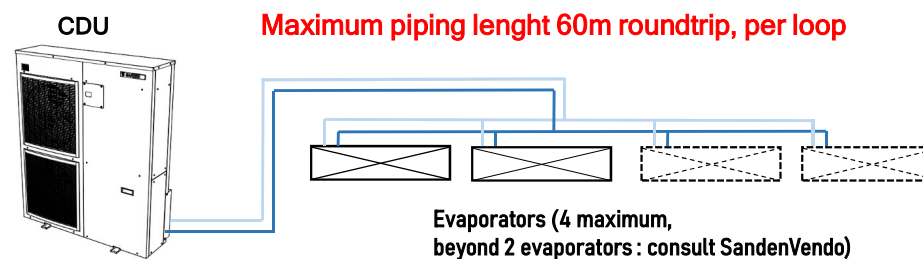
Single evaporator installation – positive temperature



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

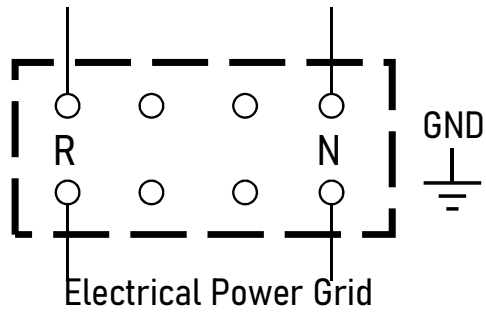
Medium Temperature: 15 liters maximum (bad oil return if > 15L)

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

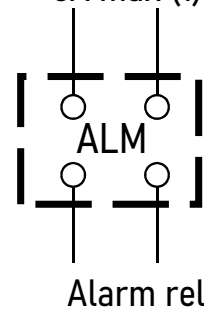
Maximum piping diameter inside evaporator 9,52mm / 3/8" (connection excluded)

## 4. Electric power input

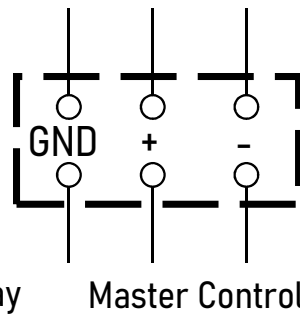
Power supply  
1ph + N / 230VAC / 50/60Hz



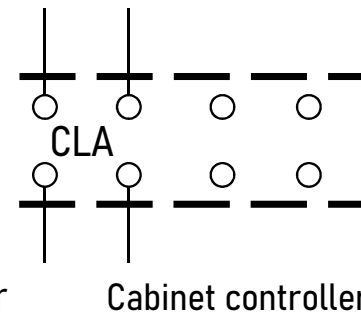
Alarm connection  
1ph + N / 230VAC /  
3A max (1)



Communication  
Modbus type (2)

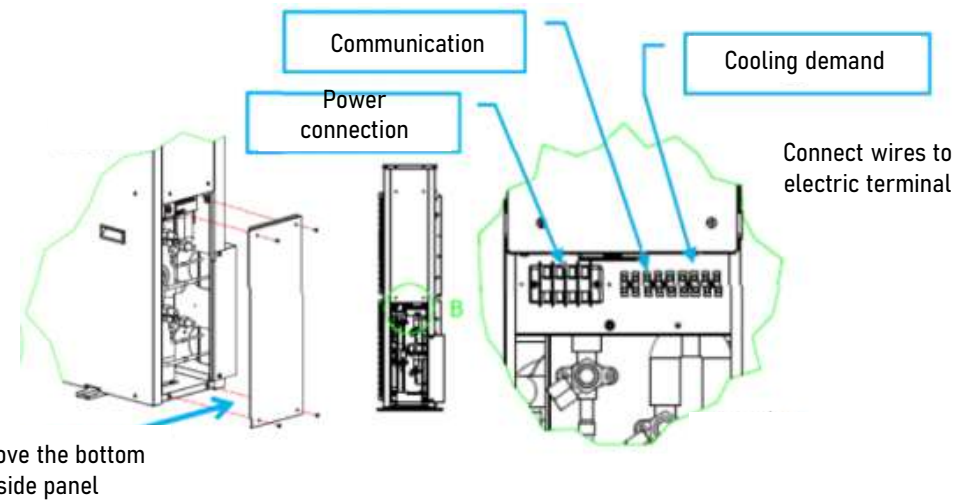


Cooling demand  
Via dry contact(3)



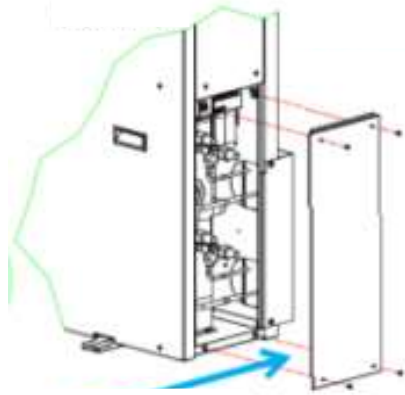
- (1) Alarm delivering 230V in case of error
- (2) Use a shielded cable to connect the modbus
- (3) Cooling demand on dry contact

Rated Power	3,8kW
Voltage	230Vac / 1 phase
Frequency	50/60Hz
Electrical consumption	3,8kW
Rated current	16,7A
Electrical power	3,8kVA
Circuit breaker	20A





**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

