Application guide
AIRCOOLAIR - ANCM/ANHM

• • • Providing indoor climate comfort

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Congratulations you have made a wise choice and we feel sure that it will meet your expectations.

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Lennox have been providing environmental solutions since 1895, our range of AIRCOOLAIR continues to meet the standards that have made LENNOX a household name. Flexible design solutions to meet YOUR needs and uncompromising attention to detail. Engineered to last, simple to maintain and Quality that comes as standard. Information on local contacts at www.lennoxeurope.com.

GENERAL DESCRIPTION

The AIRCOOLAIR air conditioning range provides Cooling only and Heat Pumps units, is of Air to Air type and designed for light to large commercial comfort applications.

The Aircoolair range consist on one part designed for Outdoor installation and one or 2 Indoor units designed for installation in a Service Room or in high false ceilings. The Indoor part supply airflow for air ducts circuits.

A large range of options and accessories are also available to fit closely with each installation needs.

CASING

Made of galvanized steel with epoxy painted finish, weather proofed with high resistant to corrosion (RAL9002).

The units are provided with metal profiles, capable of withstanding the unit and able as well of installing the unit mounted on the floor.

Both sections are thermoacoustic insulated

An insulation with aluminium protection is used for indoor units with a M1 and F1 classification, certifying that the material is auto-extinguishable and avoiding smoke formed, which may get inside the room to be conditioned.

For outdoor units, the insulation is auto-extinguishable and has a M1 classification.

COMPRESSORS

All units are provided with hermetically sealed compressors, scroll type, cooled by exhaust gas, with internal thermal insulation inside the engine, so no other additional protection is required.

The compressor is fitted on vibration mountings both inside and outside.

The compressors have a screwed connection into the pipe thus they can be more easily to assembled.

In heat pump units the compressors are provided, as standard, with a crankcase heater (optional for cooling only units), to assist evaporation of the coolant retained by the oil in the compressor so that a suitable lubrication can take place.

FANS

Indoor sections are supplied with one or two “E” or “D” centrifugal fans respectively, fans are fitted with a common axle activated through an adjustable and variable pulley belt pulley with one activating motor.

Outdoor section are supplied with one or two axial fans.(variable speed in standard)

AIR FILTER

Washable air filter; auto extinguishable material with M1 classification.

Efficiency: G2.

HEAT EXCHANGERS

Made of cupper tubes and aluminium corrugated swirl fins, the coil heat exchanger are designed and dimensioned to obtain the maximum output. Also, the dynamic defrost cycle prevent the ice forming during winter operations.

COOLING CIRCUIT

Made of welded deshumidifying copper tube with plugged valves in the discharge, suction and liquid lines on both indoor and outdoor sections.

The units are supplied with high and low pressure switches, with automatic reset.

Silencer fitted on the compressor discharge, and expansion system through a reducing valves.

The heat pump units are equipped with dehumidifying filter to avoid liquid getting on the compressor, four way valve for reversing cycle, and one way valves.

ELECTRICAL BOX

- Unit wiring in compliance with standard EN 60204-1.
- IP54 water protection.
- Circuit breaker protection for compressor and fan.
- Compressor and fan working contactors.
- Terminal block and wiring for power supply to the unit.

CONTROL

- Control and check by microprocessor.
- Reading of ambient and refrigerant temperatures.
- Alarm signaling.
- Diagnostic per circuit.
- Adjustment of temperature set points and parameters adapted for operating conditions.
- Hour counter and daily balance of operating time for each compressor by “first in/first in/first out” permutation (unit with two compressors).
- Remote alarm signal.
- Fan speed control (22E-86D models).

GENERAL DESCRIPTION

VERSIONS

AIRCOOLAIR range is available in three different versions, depending on the digital thermostat supplied with the unit: These versions are:
1- Standard version, with Climatic 40 control and digital thermostat DC40. (For all the unit models).
2- C50 version, with Climatic 50 control. (For all the unit models).
3- D2 version, with two Climatic 40 controls and two independent DC40 thermostates. (Only for models 52D2 to128D2).

1-Standard version:
Control made up with Climatic 40, in the outdoor unit and with a walled DC40 terminal-thermostat to be placed in the room to be conditioned; with ambient sensor inside the terminal for the regulation of the system.
DC 40 remote controller, with LCD display gives us information such as alarms, set point adjustment and running mode, automatic restarting, sleep mode, and scheduling.
Climatic 40 control, manages Low Noise function, intelligent defrost (heat pump units), alarm history and communications through MODBUS protocol

DC 40

Climatic 40

2- Versión C50:
Control made up with a programmable robot and with a walled terminal thermostat (DC50), to be placed in the room to be conditioned.
Control enhanced with a 16 bit processor at 14 Mhz and a 2 Megabytes flash memory. It optimises the running time of each compressor, and have an anti short-cycle program. It is able to control 34 fault signals and manage security algorithms generating various fault signals.
This innovative control, will guaranty a better temperature accuracy, while saving energy in not bringing the full capacity when not needed. Climatic 50 looks at difference between set point and room temperature needed.
It provides 4 scheduling time zones per day on 7 days.

Confort terminal DC 50

End user remote controller with LCD display and very easy to use. This graphical display gives information such as running mode of the unit, status of the fan, set point, %of fresh air, and outside temperature. On/off , scheduling, set-point override 3 hours, forced unoccupied zone, clock menu and alarm history can be managed through this terminal.

Service terminal DS 50

Remote controller with LCD display used for extra functions as anticipation, dynamic set point, different safety protections, defrost, condensing pressure control, free cooling, communications master/slave and BMS. Maintenance personnel can used it to configurate all the parameters, and to make a complete diagnosis of the unit..

Terminal DM 50

Multi-Unit remote control with LCD display to make the same functions that comfort terminal, but with an only terminal up to 12 units connected through a network.

As an option it is available a TCB printed board in order to get all inputs as voltage free contacts.
Communications: ModBUS, LONWORKS-Echelon y BACnet.

3- Versión D2.
Control made up with two Climatic 40 and two independent DC40 thermostates, that control the units multi-split.

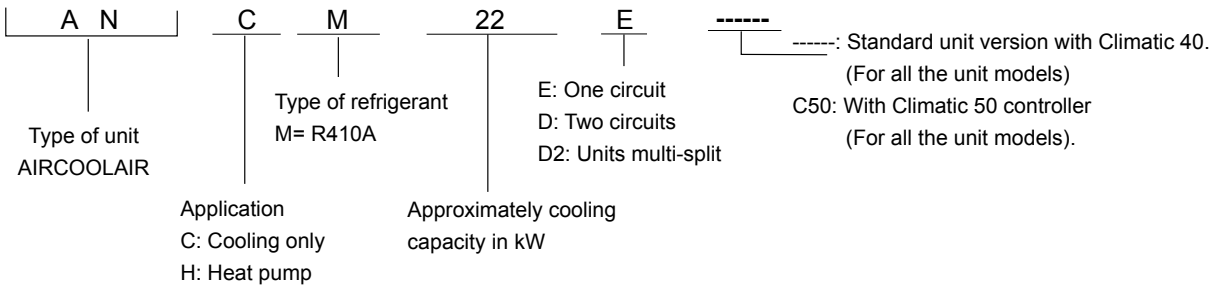
OPTIONS

OPTIONS	APPLICATION						DESCRIPTION
	VERSION			COOLING ONLY	HEAT PUMP	MODELS	
	STD	D2	C50				
AUXILIARY HEATING							
Electrial heater 7,5kW, 1 stage.	X	X	X	X	X	22E-43E/52D	Auxiliary heat for indoor unit. (*) Only for heat pump units.
Electrial heater 11kW, 1 stage.	X	X	X	X	X	22E-86D	
Electrial heater 15kW, 1 stage.	X	X	X	X	X	22E-86D	
Electrial heater 20kW, 1 stage.	X	X	X		X	68E-76E/64D-86D	
Electrial heater 30kW, 1 stage.	X		X(*)	X	X	112D-152D	
Electrial heater 40kW, 1 stage.	X		X(*)	X	X	112D-152D	
Electrial heater 20kW, 2 stages.	X	X	X	X		52D/68E-76E/64D-86D	
Electrial heater 30kW, 2 stages.	X	X	X	X		68E-76E/64D-86D	
Electrial heater 40kW, 2 stages.			X	X		112D-152D	
Electrial heater 60kW, 2 stages.			X	X		112D-152D	
Hot water coil.	X	X	X	X		22E-152D	Auxiliary heat for indoor unit.
ARCHITECTURAL INTEGRATION							
Long distance refrigerant connection.	X	X	X		X	22E-152D	It allows refrigerant connection between indoor and outdoor unit until 65m.
High pressure 125 Pa FP1.	X	X	X	X	X	112D-152D	Available static pressure for outdoor unit up to 125Pa
High pressure 250 Pa FP2.	X	X	X	X	X	112D-152D	Available static pressure for outdoor unit up to 250Pa
Square discharge plenum FP1/FP2.	X	X	X	X	X	112D-152D	Square frames for adapting the condenser air discharge to a square duct.
Inlet plenum FP1/FP2.	X	X	X	X	X	112D-152D	Accesories for adapting the condenser air intake to a duct.
Auxiliary drip tray FP1/FP2.	X	X	X		X	112D-152D	Water defrost collection.
High pressure indoor unit	X	X	X	X	X	22E-152D	Increase of air available static pressure for indoor unit.
Vertical air discharge	X	X	X	X	X	22E-152D	Vertical discharge for indoor unit.
Outdoor installation indoor unit.	X	X	X	X	X	22E-152D	To install indoor unit outside.
Indoor Air Quality							
Dirty filter indication.	X	X	X	X	X	22E-152D	Alarm with dirty filters.
High efficiency air filter G4.	X	X	X	X	X	22E-152D	Air filter high efficiency.
SECURITY							
Main switch.	X	X	X	X	X	22E-152D	Electrical box access protection.
Softstarter.	X	X	X	X	X	22E-152D	It reduces the peak compressor starting current.
Return lock three phases.	X	X	X	X	X	22E-152D	It assures that unit will not begin operation on detection of overvoltage, undervoltage, phase reversal fault or phase failure.
Smoke detector	X	X	X	X	X	22E-152D	It stops the unit in case of smoke detection.
Protection grill.	X	X	X	X	X	22E-152D	It prevents condenser coil against accidental impacts..
COMFORT PRECISION AND ENERGY EFFICIENCY							
Thermostatic free-cooling without return fan.	X	X	X	X	X	22E-152D	Power saving module: use external air when outdoor temperature is lower than set point value.
Enthalpic free-cooling without return fan.			X	X	X	22E-152D	Power saving. C50:BE 50. print board has to be selected.
Exhaust fan.(Only with free-cooling and without return fan).	X	X	X	X	X	22E-152D	To reduce overpressure in the room. C50: BE 50. print board has to be selected..
Return fan (Only with freecooling).	X	X	X	X	X	64D-152D	Increase of air available static pressure.
Low ambient kit 0ºC	X	X	X	X		22E-152D	Operation of the unit in cooling mode until 0ºC. of outdoor temperature. It is a crank case heater for the compressor.
Low ambient kit -15ºC or long distance refrigerant connection	X	X	X	X		22E-152D	Operation of the unit in cooling mode until -15ºC. of outdoor temperature. It allows refrigerant connection between indoor and outdoor unit until 65m.
Kit low noise.	X	X	X	X	X	22E-152D	Noise level reduction. It includes compressor jacket.
Duct remote sensor kit.	X	X	X	X	X	22E-152D	Remote sensor to be placed in the return air duct.
Ambient remote sensor kit.	X	X	STD	X	X	22E-152D	Remote sensor to be placed in the area to be air-conditioned.
Dynamic set point.	X	X	STD	X	X	22E-152D	Set-point adjustment according to outdoor temperature. Not available with free-cooling, outdoor sensor is included.
Hot gas by-pass	X	X	X	X		22E-152D	Control of capacity of evaporator by injecting hot gas by-pass.
Rubber anti-vibration mounts.	X	X	X	X	X	22E-152D	They avoid transmission of vibrations to the floor where the unit is installed, while unit is operating.
Spring anti-vibration mounts.	X	X	X	X	X	112D-152D	
SERVICE							
Factory pre-charged.	X	X	X	X	X	22E-152D	R-410A refrigerant charge and service valves.
Service valves.	X	X	X	X	X	22E-152D	Liquid and gas service valves in outdoor unit.
COMMUNICATION CAPABILITIES							
ModBUS.	X	X	X	X	X	22E-152D	BMS as communications protocoll.
LonWorks-Echelon.			X	X	X	22E-152D	Communications protocoll.
BACnet.			X	X	X	22E-152D	Communications protocoll.
CLIMATIC 50 ADVANCED CONTROL							
BE50 expansion PCB.			X	X	X	22E-152D	Expansion module to get additional inputs and outputs. 4 analogic inputs,4digital inputs and 4 digital outputs. It is needed with options:TCB, enthalpic free-cooling or exhaust fan.
TCB: connection for voltage free contact.			X	X	X	22E-152D	Signals for the unit available as voltage free contacts. BE50 print board is needed. Not available with enthalpic freecooling.
Air quality probe (CO2).			X	X	X	22E-152D	
Service terminal DS50.			X	X	X	22E-152D	Service display for maintenance operations.
Comfort terminal DC50			X	X	X	22E-152D	Remote controller for the unit.
Terminal DM50.			X	X	X	22E-152D	Remote controller to connect up to 12 units.
EXTENDED LIFECYCLE							
Precoated coil for outdoor unit	X	X	X	X	X	22E-152D	Protection from aggressive external environmetal conditions of outdoor coil.
Precoated coil for indoor unit.	X	X	X	X	X	22E-152D	Protection from aggressive external environmetal conditions of indoor coil.

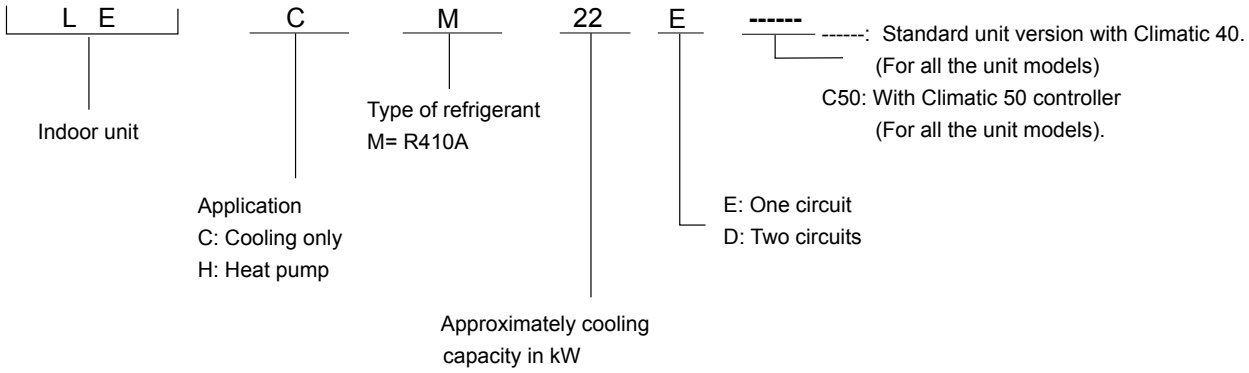
DENOMINATION

SET

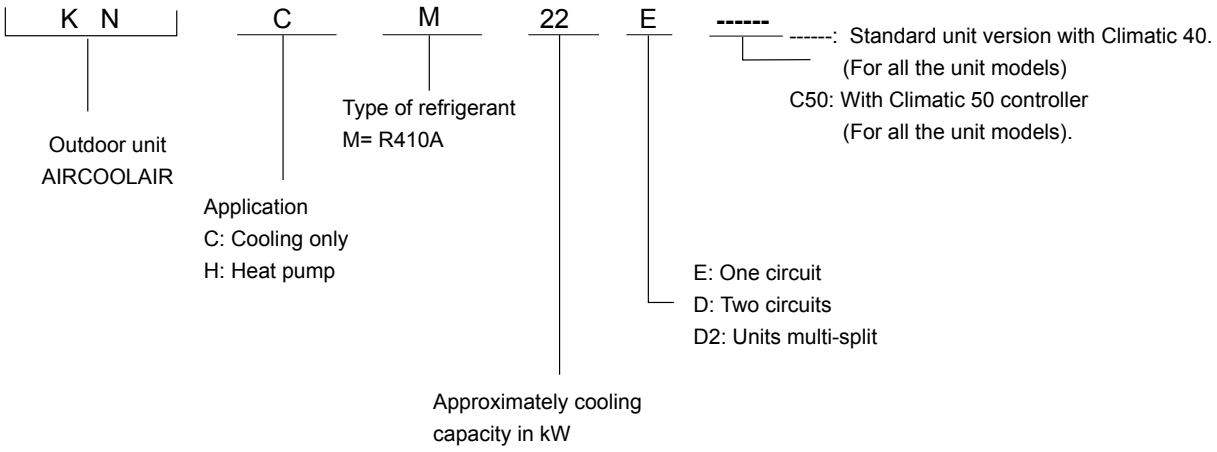
INDOOR UNIT + OUTDOOR UNIT



INDOOR UNIT



OUTDOOR UNIT



RANGE PRODUCT UNITS COOLING ONLY

SET AND SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	SUPPLY	NOMINAL CAPACITY kW	NOMINAL CONSUMPTION kW
				COOLING	COOLING
ANCM 22E	KNCM 22E	LECM 22E	3N~400V 50Hz	19.5	6.72
ANCM 26E	KNCM 26E	LECM 26E	3N~400V 50Hz	23.5	8.45
ANCM 32E	KNCM 32E	LECM 32E	3N~400V 50Hz	27.0	9.82
ANCM 38E	KNCM 38E	LECM 38E	3N~400V 50Hz	35.5	12.4
ANCM 43E	KNCM 43D	LECM 43D	3N~400V 50Hz	40.5	14.7
ANCM 52D	KNCM 52D	LECM 52D	3N~400V 50Hz	46.5	17.0
ANCM 64D	KNCM 64D	LECM 64D	3N~400V 50Hz	55.5	19.8
ANCM 76D	KNCM 76D	LECM 76D	3N~400V 50Hz	69.5	24.8
ANCM 86D	KNCM 86D	LECM 86D	3N~400V 50Hz	82.0	29.8
ANCM 112D	KNCM 112D	LECM 112D	3N~400V 50Hz	100	35.7
ANCM 128D	KNCM 128D	LECM 128D	3N~400V 50Hz	111	39.0
ANCM 152D	KNCM 152D	LECM 152D	3N~400V 50Hz	135	48.2

INDOOR UNIT
LECM (22E-32E)

OUTDOOR UNIT
KNCM 22E

INDOOR UNIT
LECM (38E-52D)

OUTDOOR UNIT
KNCM (26E-43E)

INDOOR UNIT
LECM (64D-86D)

OUTDOOR UNIT
KNCM (52D-86D)

INDOOR UNIT
LECM (112D-152D)

OUTDOOR UNIT
KNCM (112D-152D)

MULTI-SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	SUPPLY	NOMINAL CAPACITY kW	NOMINAL CONSUMPTION kW
				COOLING	COOLING
ANCM 52D2	KNCM 52D2	2xLECM 26E	3N~400V 50Hz	2x23.5	2x8.45
ANCM 64D2	KNCM 64D2	2xLECM 32E	3N~400V 50Hz	2x27.0	2x9.82
ANCM 76D2	KNCM 76D2	2xLECM 38E	3N~400V 50Hz	2x35.5	2x12.4
ANCM 86D2	KNCM 86D2	2xLECM 43E	3N~400V 50Hz	2x40.5	2x14.7
ANCM 112D2	KNCM 112D2	LECM (68E+43E)	3N~400V 50Hz	57.0+41.5	20.9+13.8
ANCM 128D2	KNCM 128D2	LECM (76E+43E)	3N~400V 50Hz	68.0+41.0	24.5+13.7

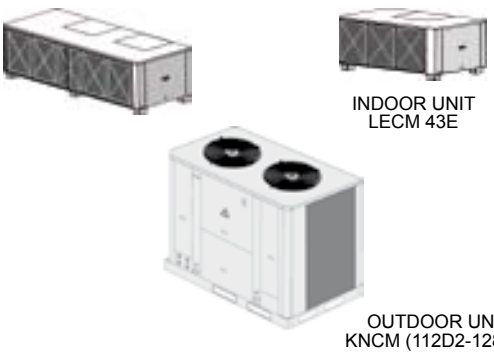
INDOOR UNIT
LECM (26E-32E)

OUTDOOR UNIT
KNCM (52D2-64D2)

INDOOR UNIT
LECM (38E-43E)

OUTDOOR UNIT
KNCM (76D2-86D2)

INDOOR UNIT
LECM (68E-76E)



INDOOR UNIT
LECM 43E

OUTDOOR UNIT
KNCM (112D2-128D2)

RANGE PRODUCT UNITS HEATING

SET AND SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	SUPPLY	NOMINAL CAPACITY kW		NOMINAL CONSUMPTION kW	
				COOLING	HEATING	COOLING	HEATING
ANHM 22E	KNHM 22E	LEHM 22E	3N~400V 50Hz	19.5	19.5	6.72	6.50
ANHM 26E	KNHM 26E	LEHM 26E	3N~400V 50Hz	23.5	25.0	8.45	8.33
ANHM 32E	KNHM 32E	LEHM 32E	3N~400V 50Hz	27.0	28.5	9.82	9.66
ANHM 38E	KNHM 38E	LEHM 38E	3N~400V 50Hz	35.5	36.0	12.4	11.9
ANHM 43E	KNHM 43E	LEHM 43E	3N~400V 50Hz	40.5	40.0	14.7	13.3
ANHM 52D	KNHM 52D	LEHM 52D	3N~400V 50Hz	46.5	49.5	17.0	17.1
ANHM 64D	KNHM 64D	LEHM 64D	3N~400V 50Hz	55.5	56.5	19.8	18.8
ANHM 76D	KNHM 76D	LEHM 76D	3N~400V 50Hz	69.5	72.5	24.8	24.2
ANHM 86D	KNHM 86D	LEHM 86D	3N~400V 50Hz	82.0	80.0	29.8	26.7
ANHM 112D	KNHM 112D	LEHM 112D	3N~400V 50Hz	100	108	35.7	34.5
ANHM 128D	KNHM 128D	LEHM 128D	3N~400V 50Hz	111	118	39	38.7
ANHM 152D	KNHM 152D	LEHM 152D	3N~400V 50Hz	135	137	48.2	48.6

INDOOR UNIT
LEHM (22E-32E)

OUTDOOR UNIT
KNHM 22E

INDOOR UNIT
LEHM (38E-52D)

OUTDOOR UNIT
KNHM (26E-43E)

INDOOR UNIT
LEHM (64D-86D)

OUTDOOR UNIT
KNHM (52D-86D)

INDOOR UNIT
LEHM (112D-152D)

OUTDOOR UNIT
KNHM (112D-152D)

MULTI-SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	SUPPLY	NOMINAL CAPACITY kW		NOMINAL CONSUMPTION kW	
				COOLING	HEATING	COOLING	HEATING
ANHM 52D2	KNHM 52D2	2xLEHM 26E	3N~400V 50Hz	2x23.5	2x25	2x8.45	2x8.33
ANHM 64D2	KNHM 64D2	2xLEHM 32E	3N~400V 50Hz	2x27.0	2x28.5	2x9.82	2x9.66
ANHM 76D2	KNHM 76D2	2xLEHM 38E	3N~400V 50Hz	2x35.5	2x36.0	2x12.4	2x11.9
ANHM 86D2	KNHM 86D2	2xLEHM 43E	3N~400V 50Hz	2x40.5	2x40.0	2x14.7	2x13.3
ANHM 112D2	KNHM 112D2	LEHM (68E+44E)	3N~400V 50Hz	57.0+41.5	61.6+46.4	20.9+13.8	20.3+14.5
ANHM 128D2	KNHM 128D2	LEHM (76E+44E)	3N~400V 50Hz	68.0+41.0	72.5+45.5	24.5+13.7	24.3+14.3

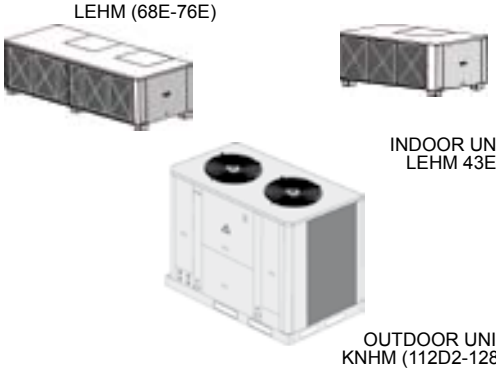
INDOOR UNIT
LEHM (26E-32E)

OUTDOOR UNIT
KNHM (52D2-64D2)

INDOOR UNIT
LEHM (38E-43E)

OUTDOOR UNIT
KNHM (76D2-86D2)

INDOOR UNIT
LEHM (68E-76E)



INDOOR UNIT
LEHM 43E

OUTDOOR UNIT
KNHM (112D2-128D2)

PHYSICAL DATA

INDOOR UNIT (22E-32E)

INDOOR UNIT (38E-43E)

OUTDOOR UNIT 22E

OUTDOOR UNIT (26E-43E)

SET			ANCM/ANHM 22E	ANCM/ANHM 26E	ANCM/ANHM 32E	ANCM/ANHM 38E	ANCM/ANHM 43E
Cooling capacity (*)	**ANCM/ANHM**	**kW**	19.5	23.5	27.0	35.5	40.5
Heating capacity (**)	**ANHM**	**kW**	19.5	25.0	28.5	36.0	40.0
OUTDOOR UNIT			**KNCM/KNHM 22E**	**KNCM/KNHM 26E**	**KNCM/KNHM 32E**	**KNCM/KNHM 38E**	**KNCM/KNHM 43E**
COMPRESSOR	Nr / Type		1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll
FAN							
Air flow		**m³/h**	6800	9750	11500	11300	11000
NET WEIGHT	**KNCM**	**Kg**	160	210	216	233	255
	KNHM	**Kg**	168	219	221	239	258
DIMENSIONS							
Height		**mm**	1375	1375	1375	1375	1375
Width		**mm**	1195	1195	1195	1195	1195
Depth		**mm**	660	980	980	980	980
REFRIGERANT CONNECTION							
Liquid			1/2”	5/8”	5/8”	5/8”	5/8”
Gas			7/8”	1 1/8”	1 1/8”	1 3/8”	1 3/8”
INDOOR UNIT			**LECM/LEHM 22E**	**LECM/LEHM 26E**	**LECM/LEHM 32E**	**LECM/LEHM 38E**	**LECM/LEHM 43E**
FAN							
Max. air flow		**m³/h**	4100	5500	6000	8050	9050
Min. air flow		**m³/h**	3150	4250	4650	6200	6950
Max. available pressure	(1)	**Pa**	162	148	153	161	231
NET WEIGHT		**Kg**	108	111	115	150	160
DIMENSIONS							
Height		**mm**	645	645	645	740	740
Width		**mm**	1195	1195	1195	1445	1445
Depth		**mm**	803	803	803	923	923
REFRIGERANT CONNECTION							
Liquid			1/2”	5/8”	5/8”	5/8”	5/8”
Gas			7/8”	1 1/8”	1 1/8”	1 3/8”	1 3/8”

(1) With admissible minimum air flow.

DB.- Dry bulb temperature.
WB.- Wet bulb temperature.

(*) Air intake temperature in the indoor exchanger: 27°C DB/19°C WB.
(*) Air intake temperature in the outdoor exchanger: 35ºC DB.
(**) Air intake temperature in the indoor exchanger: 20°C DB.
(**) Air intake temperature in the outdoor exchanger: 7°C DB / 6ºC WB.

PHYSICAL DATA

INDOOR UNIT (52D)

INDOOR UNIT (64D-86D)

INDOOR UNIT (112D-152D)

OUTDOOR UNIT (52D-86D)

OUTDOOR UNIT (112D-152D)

SET			ANCM ANHM 52D	ANCM ANHM 64D	ANCM ANHM 76D	ANCM ANHM 86D	ANCM ANHM 112D	ANCM ANHM 128D	ANCM ANHM 152D
Cooling capacity (*)	ANCM ANHM	kW	46.50	55.50	68.50	79.00	100.00	111.00	134.00
Heating capacity (**)	ANHM	kW	48.00	54.00	74.00	80.00	105.00	115.00	133.00
OUTDOOR UNIT			**KNCM KNHM 52D**	**KNCM KNHM 64D**	**KNCM KNHM 76D**	**KNCM KNHM 86D**	**KNCM KNHM 112D**	**KNCM KNHM 128D**	**KNCM KNHM 152D**
COMPRESSOR	Nr / TYPE		2 / Scroll	2 / Scroll	2 / Scroll	2 / Scroll	3 / Scroll	3 / Scroll	3 / Scroll
FAN									
Air flow		m^3/h	9750+9750	11500+11500	11300+11300	11000+11000	22700+18100	22700+18100	22700+22700
NET WEIGTH	KNCM	Kg	443	452	481	520	632	797	906
	KNHM	Kg	452	463	499	537	748	828	932
DIMENSIONS									
Height		mm	1375	1375	1375	1375	1875	1875	1875
Width		mm	1960	1960	1960	1960	2250	2250	2250
Depth		mm	1195	1195	1195	1195	1420	1420	1420
REFRIGERANT CONNECTION									
Circuit1 - Circuit2	Liquid		5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	3/4" - 5/8"	3/4" - 5/8"	3/4" - 3/4"
	Gas		1 1/8"-1 1/8"	1 1/8"-1 1/8"	1 3/8"-1 3/8"	1 3/8"-1 3/8"	1 5/8"-1 3/8"	1 5/8"-1 3/8"	1 5/8"-1 5/8"
INDOOR UNIT			**LECM LEHM 52D**	**LECM LEHM 64D**	**LECM LEHM 76D**	**LECM LEHM 86D**	**LECM LEHM 112D**	**LECM LEHM 128D**	**LECM LEHM 152D**
FAN									
Max. air flow		m^3/h	9750	12850	15090	16725	22450	24950	24750
Min. air flow		m^3/h	7950	9950	12450	14000	17350	19300	21000
Max. available pressure		Pa	216	175	197	237	187	269	276
NET WEIGTH		Kg	170	242	259	276	470	480	490
DIMENSIONS									
Height		mm	740	740	740	740	1140	1140	1140
Width		mm	1445	2250	2250	2250	2900	2900	2900
Depth		mm	923	923	923	923	1103	1103	1103
REFRIGERANT CONNECTION									
Circuit1 - Circuit2	Liquid		5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	3/4" - 5/8"	3/4" - 5/8"	3/4" - 3/4"
	Gas		1 1/8"-1 1/8"	1 1/8"-1 1/8"	1 3/8"-1 3/8"	1 3/8"-1 3/8"	1 5/8"-1 3/8"	1 5/8"-1 3/8"	1 5/8"-1 5/8"

(1) With admissible minimum air flow.

DB.- Dry bulb temperature.
WB.- Wet bulb temperature.

(*) Air intake temperature in the indoor exchanger: 27°C DB/19°C WB.
(*) Air intake temperature in the outdoor exchanger: 35ºC DB.
(**) Air intake temperature in the indoor exchanger: 20°C DB.
(**) Air intake temperature in the outdoor exchanger: 7°C DB / 6ºC WB.

PHYSICAL DATA

MULTI-SPLIT SYSTEM

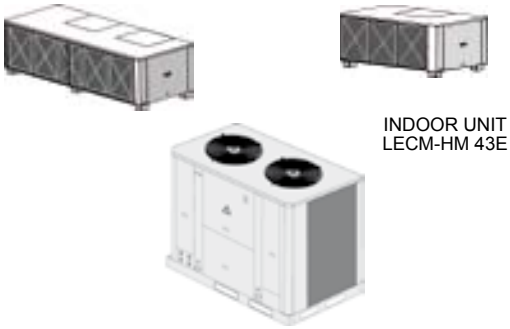
INDOOR UNIT
LECM-HM (26E-32E)

OUTDOOR UNIT
KNCM-HM (52D2-64D2)

INDOOR UNIT
LECM-HM (38E-43E)

OUTDOOR UNIT
KNCM-HM (76D2-86D2)

INDOOR UNIT
LECM-HM (68E-76E)



INDOOR UNIT
LECM-HM 43E

OUTDOOR UNIT
KNCM-HM (112D2-128D2)

SET			ANCM ANHM 52D2	ANCM ANHM 64D2	ANCM ANHM 76D2	ANCM ANHM 86D2	ANCM ANHM 112D2	ANCM ANHM 128D2
Cooling capacity (*)	ANCM ANHM	kW	46.50	55.50	68.50	79.00	100.00	111.00
Heating capacity (**)	ANHM	kW	48.00	54.00	74.00	80.00	105.00	115.00
OUTDOOR UNIT			**KNCM KNHM 52D2**	**KNCM KNHM 64D2**	**KNCM KNHM 76D2**	**KNCM KNHM 86D2**	**KNCM KNHM 112D2**	**KNCM KNHM 128D2**
COMPRESSOR	Nr / TYPE		2 / Scroll	2 / Scroll	2 / Scroll	2 / Scroll	3 / Scroll	3 / Scroll
FAN Air flow		m^3/h	9750+9750	11500+11500	11300+11300	11000+11000	22700+18100	22700+18100
NET WEIGTH	KNCM	Kg	443	452	481	520	632	797
	KNHM	Kg	452	463	499	537	748	828
DIMENSIONS								
Height		mm	1375	1375	1375	1375	1875	1875
Width		mm	1960	1960	1960	1960	2250	2250
Depth		mm	1195	1195	1195	1195	1420	1420
REFRIGERANT CONNECTION								
Circuit1 - Circuit2	Liquid		5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	3/4" - 5/8"	3/4" - 5/8"
	Gas		1 1/8"-1 1/8"	1 1/8"-1 1/8"	1 3/8"-1 3/8"	1 3/8"-1 3/8"	1 5/8"-1 3/8"	1 5/8"-1 3/8"
INDOOR UNIT			**LECM LEHM 26E+26E**	**LECM LEHM 32E+32E**	**LECM LEHM 38E+38E**	**LECM LEHM 43E+43E**	**LECM 68E+43E LEHM 68E+44E**	**LECM 76E+43E LEHM 76E+44E**
FAN								
Max. air flow		m^3/h	5500+5500	6000+6000	8050+8050	9050+9050	12850+9050	15090+9050
Min. air flow		m^3/h	4250+4250	4650+4650	6200+6200	6950+6950	9950+6950	12450+6950
Max. available pressure	(1)	Pa	148+148	153+153	161+161	231+231	175+231	197+231
NET WEIGTH		Kg	111+111	115+115	150+150	160+160	242+160	259+160
DIMENSIONS								
Height		mm	645+645	645+645	740+740	740+740	740+740	740+740
Width		mm	1195+1195	1195+1195	1445+1445	1445+1445	2250+1445	2250+1445
Depth		mm	803+803	803+803	923+923	923+923	923+923	923+923
REFRIGERANT CONNECTION								
Circuit1 / Circuit2	Liquid		5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	5/8" - 5/8"	3/4" - 5/8"	3/4" - 5/8"
	Gas		1 1/8"-1 1/8"	1 1/8"-1 1/8"	1 3/8"-1 3/8"	1 3/8"-1 3/8"	1 5/8"-1 3/8"	1 5/8"-1 3/8"

(1) With admissible minimum air flow.

DB.- Dry bulb temperature.
WB.- Wet bulb temperature.

(*) Air intake temperature in the indoor exchanger: 27°C DB/19°C WB.
(*) Air intake temperature in the outdoor exchanger: 35ºC DB.
(**) Air intake temperature in the indoor exchanger: 20°C DB.
(**) Air intake temperature in the outdoor exchanger: 7°C DB / 6ºC WB.

ELECTRICAL DATA

INDOOR UNIT 22E-32E

INDOOR UNIT (38E-43E)

OUTDOOR UNIT 22E

OUTDOOR UNIT (26E-43E)

ELECTRICAL CONSUMPTION FOR STANDARD UNITS

SET		ANCM 22E ANHM 22E	ANCM 26E ANHM 26E	ANCM 32E ANHM 32E	ANCM 38E ANHM 38E	ANCM 43E ANHM 43E
Voltage	Ph/V/Hz	3N~400V 50Hz				
Maximum absorbed power	kW	9.29	12.2	13.9	18.3	20.4
Maximum current	A	18.0	26.6	28.0	32.5	39.2
Start up current	A	88.9	99.9	106	141	177

OUTDOOR UNIT		KNCM 22E KNHM 22E	KNCM 26E KNHM 26E	KNCM 32E KNHM 32E	KNCM 38E KNHM 38E	KNCM 43E KNHM 43E
Voltage	Ph/V/Hz	3N~400V 50Hz				
	kW	8.55	10.8	12.5	16.4	17.7
Maximum current	A	16.6	24.0	25.4	29.0	34.4
Start up current	A	87.5	97.4	104	138	172

INDOOR UNIT		LECM 22E LEHM 22E	LECM 26E LEHM 26E	LECM 32E LEHM 32E	LECM 38E LEHM 38E	LECM 43E LEHM 43E
Voltage	Ph/V/Hz	3~400V 50Hz				
Maximum absorbed power	kW	0.74	1.45	1.45	1.89	2.69
Maximum current	A	1.40	2.59	2.59	3.45	4.80
Start up current	A	6.44	13.0	13.0	17.3	26.4

ADDITIONAL ELECTRICAL CONSUMPTION FOR THE OPTIONS

INDOOR UNIT

ELECTRICAL HEATER		LECM-HM 22E-26E-32E-38E-43E		
Voltage	Ph/V/50Hz	3~400V 50Hz		
Maximum absorbed power	kW	7.50	11.0	15.0
Maximum current	A	10.8	15.9	21.7

HIGH PRESSURE FAN		LECM 22E LEHM 22E	LECM 26E LEHM 26E	LECM 32E LEHM 32E	LECM 38E LEHM 38E	LECM 43E LEHM 43E
Voltage	Ph/V/Hz	3~400V 50Hz				
Maximum absorbed power	kW	0.72	0.43	0.43	0.80	0.00
Maximum current	A	1.19	0.86	0.86	1.35	0.00
Start up current	A	6.51	4.30	4.30	9.15	0.00

EXHAUST FAN		LECM 22E LEHM 22E	LECM 26E LEHM 26E	LECM 32E LEHM 32E	LECM 38E LEHM 38E	LECM 43E LEHM 43E
Voltage	Ph/V/Hz	1N~230V 50Hz				
Maximum absorbed power	kW	0.51	0.51	0.51	1.33	1.33
Maximum current	A	2.60	2.60	2.60	6.80	6.80

ELECTRICAL DATA

INDOOR UNIT
(38E-52D)

INDOOR UNIT
(64D-86D)

INDOOR UNIT
(112D-152D)

OUTDOOR UNIT
(52D-86D)

OUTDOOR UNIT
(112D-152D)

ELECTRICAL CONSUMPTION FOR STANDARD UNITS

SET		ANCM 52D ANHM 52D	ANCM 64D ANHM 64D	ANCM 76D ANHM 76D	ANCM 86D ANHM 86D	ANCM 112D ANHM 112D	ANCM 128D ANHM 128D	ANCM 152D ANHM 152D
Voltage	Ph/V/Hz	3N~400V 50Hz						
Maximum absorbed power	kW	24.3	27.7	36.4	40.5	50.7	55.0	66.3
Maximum current	A	52.8	55.6	64.5	77.4	92.6	102	121
Start up current	A	126	134	173	215	230	239	303

OUTDOOR UNIT		KNCM 52D KNHM 52D	KNCM 64D KNHM 64D	KNCM 76D KNHM 76D	KNCM 86D KNHM 86D	KNCM 112D KNHM 112D	KNCM 128D KNHM 128D	KNCM 152D KNHM 152D
Voltage	Ph/V/Hz	3N~400V 50Hz						
Maximum absorbed power	kW	21.6	25.0	32.8	35.5	45.6	48.7	59.9
Maximum current	A	48.0	50.80	58.0	68.8	84.0	90.4	110
Start up current	A	121	129	167	206	221	228	292

INDOOR UNIT		LECM 52D LEHM 52D	LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage	Ph/V/Hz	3~400V 50Hz						
Maximum absorbed power	kW	2.69	2.69	3.63	5.06	5.06	6.38	6.38
Maximum current	A	4.80	4.80	6.48	8.60	8.60	11.1	11.1
Start up current	A	26.4	26.4	35.6	60.2	60.2	81.0	81.0

ADDITIONAL ELECTRICAL CONSUMPTION FOR THE OPTIONS

OUTDOOR UNIT

OPTION FP1-FP2		KNCM 112D KNHM 112D FP1	KNCM 128D KNHM 128D FP1	KNCM 152D KNCM 152D FP1	KNCM 112D KNHM 112D FP2	KNCM 128D KNHM 128D FP2	KNCM 152D KNHM 152D FP2
Voltage	Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power	kW	2.00	2.00	1.00	6.20	6.20	5.20
Maximum current	A	3.20	3.20	1.60	9.80	9.80	8.20
Start up current	A	3.20	3.20	1.60	9.80	9.80	8.20

INDOOR UNIT

ELECTRICAL HEATER			LECM 52D				LECM 64D-76D-86D				LECM 112D-128D-152D			
COOLING ONLY	Voltage	Ph/V/Hz	3~400V 50Hz											
			1 STAGE			2 STAGES	1 STAGE		2 STAGES		1 STAGE		2 STAGES	
	Maximum absorbed power	kW	7.50	11.0	15.0	20.0	11.0	15.0	20.0	30.0	30.0	40.0	40.0	60.0
	Maximum current	A	10.8	15.9	21.7	28.9	15.9	21.7	28.9	43.3	43.3	57.7	57.7	86.6

ELECTRICAL DATA

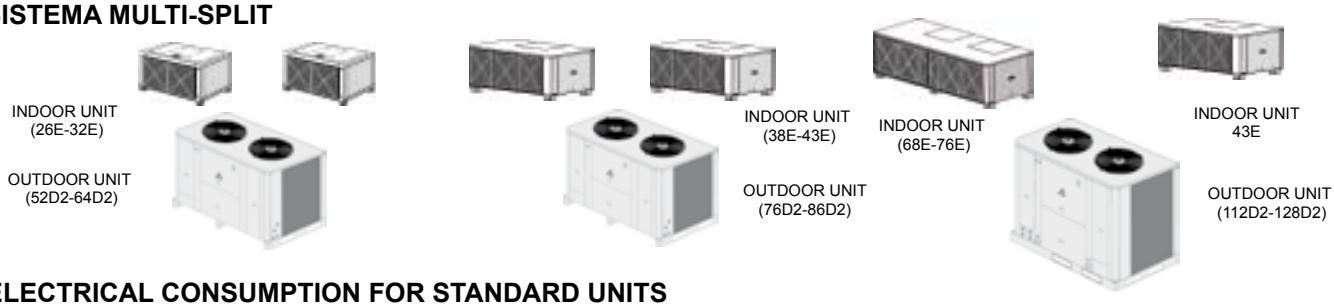
ELECTRICAL HEATER			LEHM 52D			LEHM 64D-76D-86D			LEHM 112D-128D -152D	
HEATING PUMP	Voltage	Ph/V/Hz	3~400V 50Hz							
			1 STAGE			1 STAGE			1 STAGE	
	Maximum absorbed power	kW	7.50	11.0	15.0	11.0	15.0	20.0	30.0	40.0
	Maximum current	A	10.8	15.9	21.7	15.9	21.7	28.9	43.3	57.7

HIGH PRESSURE FAN		LECM 52D LEHM 52D	LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage	Ph/V/Hz	3~400V 50Hz						
Maximum absorbed power	kW	0.94	0.94	1.43	1.32	1.32	2.41	2.41
Maximum current	A	1.68	1.68	2.12	2.50	2.50	4.20	4.20
Start up current	A	9.24	9.24	24.6	20.8	20.8	27.6	27.6

RETURN FAN		LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage	Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power	kW	2.69	3.63	3.63	5.06	6.38	6.38
Maximum current	A	4.80	6.48	6.48	8.60	11.1	11.1

EXHAUST FAN			LECM 52D LEHM 52D	LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage		Ph/V/Hz	1N~230V	3~400V 50Hz					
Maximum absorbed power		kW	1.33	2.65	2.65	2.65	5.30	5.30	5.30
Maximum current	230V/400V	A	6.80	4.50	4.50	4.50	9.00	9.00	9.00

SISTEMA MULTI-SPLIT



ELECTRICAL CONSUMPTION FOR STANDARD UNITS

SET		ANCM 52D2 ANHM 52D2	ANCM 64D2 ANHM 64D2	ANCM 76D2 ANHM 76D2	ANCM 86D2 ANHM 86D2	ANCM 112D2 ANHM 112D2	ANCM 128D2 ANHM 128D2
Voltage	Ph/V/Hz	3N~400V 50Hz					
Maximum absorbed power	kW	24.5	27.9	36.6	40.9	51.0	55.0
Maximum current	A	55.2.	56.0	64.9	78.4	93.6	102
Start up current	A	200	213	282	353	340	376

OUTDOOR UNIT		KNCM 52D2 KNHM 52D2	KNCM 64D2 KNHM 64D2	KNCM 76D2 KNHM 76D2	KNCM 86D2 KNHM 86D2	KNCM 112D2 KNHM 112D2	KNCM 128D2 KNHM 128D2
Voltage	Ph/V/Hz	3N~400V 50Hz					
Maximum absorbed power	kW	21.6	25.0	32.8	35.5	45.6	48.7
Maximum current	A	50.0	50.8	58.0	68.8	84.0	90.4
Start up current	A	195	207	275	343	330	365

INDOOR UNIT		LECM/LEHM 2x26E	LECM/LEHM 2x32E	LECM/LEHM 2x38E	LECM/LEHM 2x43E	LECM 68E+43E LEHM 68E+44E	LECM 76E+43E LEHM 76E+44E
Voltage	Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power	kW	2x1.45	2x1.45	2x1.89	2x2.69	2.69+2.69	3.63+2.69
Maximum current	A	2x2.59	2x2.59	2x3.45	2x4.80	4.80+4.80	6.48+4.80
Start up current	A	2x13.0	2x13.0	2x17.3	2x26.4	26.4+26.4	35.6+26.4

ADDITIONAL ELECTRICAL CONSUMPTION FOR THE OPTIONS

OUTDOOR UNIT

OPTION FP1-FP2		KNCM 112D2 KNHM 112D2 FP1	KNCM 128D2 KNHM 128D2 FP1	KNCM 112D2 KNHM 112D2 FP2	KNCM 128D2 KNHM 128D2 FP2
Voltage	Ph/V/Hz	3~400V 50Hz			
Maximum absorbed power	kW	2.0	2.0	6.2	6.2
Maximum current	A	3.2	3.2	9.8	9.8
Start up current	A	3.2	3.2	9.8	9.8

INDOOR UNIT

ELECTRICAL HEATER			LECM 2x(26E-32E-38E-43E)			LECM (68E+43E)-(76E+43E)						
COOLING ONLY	Voltage	Ph/V/Hz	3~400V 50Hz									
			2x(26E-32E-38E-43E) 1 STAGE			68E-76E 1 STAGE		68E-76E 2 STAGES		43E 1 STAGE		
	Maximum absorbed power	kW	2x7.50	2x11.00	2x15.00	11.00	15.00	20.00	30.00	7.50	11.00	15.00
	Start up current	A	2x10.80	2x15.90	2x21.70	15.90	21.70	28.90	43.30	10.80	15.90	21.70

ELECTRICAL HEATER			LEHM 2x(26E-32E-38E-43E)			LEHM (68E+44E)-(76E+44E)					
HEATING PUMP	Voltage	Ph/V/Hz	3~400V 50Hz								
			2x(26E-32E-38E-43E) 1 STAGE			68E-76E 1 STAGE			43E 1 STAGE		
	Maximum absorbed power	kW	2x7.50	2x11.00	2x15.00	11.00	15.00	20.00	7.50	11.00	15.00
	Maximum current	A	2x10.80	2x15.90	2x21.70	15.90	21.70	28.90	10.80	15.90	21.70

HIGH PRESSURE FAN		LECM/HM 2x26E	LECM/HM 2x32E	LECM/HM 2x38E	LECM/HM 2x43E	LECM 68E+43E LEHM 68E+44E	LECM 76E+43E LEHM 76E+44E
Voltage	Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power	kW	2x0.43	2x0.43	2x0.80	0.00	0.94+0.00	1.43+0.00
Maximum current	A	2x0.86	2x0.86	2x1.35	0.00	1.68+0.00	2.12+0.00
Start up current	A	2x4.30	2x4.30	2x9.15	0.00	9.24+0.00	24.6+0.00

RETURN FAN		LECM/LEHM 1x68E	LECM/LEHM 1x76E
Voltage	Ph/V/Hz	3~400V 50Hz	
Maximum absorbed power	kW	2.69	3.63
Maximum current	A	4.80	6.48

EXHAUST FAN		LECM/HM 2x26E	LECM/HM 2x32E	LECM/HM 2x38E	LECM/HM 2x43E	LECM 68E+43E LEHM 68E+44E	LECM 76E+43E LEHM 76E+44E
Voltage	Ph/V/Hz	1N~230V 50Hz				(3~400V)+(1N~230V) 50Hz	
Maximum absorbed power	kW	2x0.51	2x0.51	2x1.33	2x1.33	2.65+1.33	2.65+1.33
Maximum current	A	2x2.60	2x2.60	2x6.80	2x6.80	4.50+6.80	4.50+6.80

FAN PERFORMANCES

STANDARD INDOOR FAN PERFORMANCES

22E

AIR FLOW	m³/h	3150	3425	3700	4100
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	806	162	156	145	●
1 TURN	771	147	136	130	112
2 VUELTAS	737	127	121	110	97
3 VUELTAS	702	112	106	95	77
4 VUELTAS	667	97	86	75	57

26E

AIR FLOW	m³/h	4250	4625	5000	5500
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	818	148	137	115	85
1 TURN	783	133	117	95	65
2 VUELTAS	747	113	92	70	40
3 VUELTAS	712	93	77	55	20
4 VUELTAS	677	73	57	30	n/a

32E

AIR FLOW	m³/h	4650	5050	5450	6000
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	818	153	134	113	80
1 TURN	783	130	113	90	52
2 TURNS	747	110	90	65	27
3 TURNS	712	90	69	45	2
4 TURNS	677	70	47	20	n/a

38E

AIR FLOW	r.p.m	6200	6650	7100	8050
PULLEY POSITION	m³/h	Available static pressure Pa.			
CLOSED PULLEY	735	161	140	122	72
1 TURN	704	136	118	97	44
2 TURNS	672	116	95	75	17
3 TURNS	640	91	71	48	n/a
4 TURNS	609	71	48	26	n/a

43E-44E

AIR FLOW	m³/h	6950	7550	8150	9050
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	829	231	210	185	138
1 TURN	794	201	180	154	103
2 TURNS	758	174	150	122	70
3 TURNS	722	147	121	90	36
4 TURNS	686	119	93	60	3

52D

AIR FLOW	m³/h	7950	8675	9400	9750
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	829	216	187	150	129
1 TURN	794	186	155	115	93
2 TURNS	758	156	122	80	56
3 TURNS	722	124	88	45	21
4 TURNS	686	223	57	10	n/a

64D-68E

AIR FLOW	m³/h	9950	10825	11700	12850
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	755	175	163	150	127
1 TURN	715	150	138	124	100
2 TURNS	675	127	114	100	74
3 TURNS	635	104	184	74	47
4 TURNS	595	82	68	50	22

76D-76E

AIR FLOW	m³/h	12450	13550	14650	15090
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	843	197	175	150	●
1 TURN	798	164	142	115	104
2 TURNS	753	134	109	80	69
3 TURNS	709	104	78	47	34
4 TURNS	664	95	47	15	0

86D

AIR FLOW	m³/h	14000	15125	16250	16725
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	941	237	214	185	●
1 TURN	891	200	172	140	127
2 TURNS	841	162	132	105	84
3 TURNS	791	287	92	58	42
4 TURNS	741	250	54	18	1

112D

AIR FLOW	m³/h	17350	18875	20400	22450
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	672	187	167	144	●
1 TURN	636	157	135	111	73
2 TURNS	601	128	106	80	40
3 TURNS	565	99	76	49	7
4 TURNS	529	72	47	19	n/a

128D

AIR FLOW	m³/h	19300	21000	22700	24950
PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	766	269	247	225	●
1 TURN	725	231	207	182	●
2 TURNS	684	193	167	142	98
3 TURNS	644	156	130	102	58
4 TURNS	603	120	94	65	17

152D

AIR FLOW	r.p.m	21000	22250	23500	24750
PULLEY POSITION	m³/h	Available static pressure Pa.			
CLOSED PULLEY	766	276	263	246	●
1 TURN	725	236	221	204	●
2 TURNS	684	196	181	162	142
3 TURNS	644	159	142	123	100
4 TURNS	603	123	104	83	60

(●) WRONG STATUS ON ACCOUNT OF MOTOR POWER LIMIT.

☐ Nominal factory setting.

NOTE: Additional pressure drop with the option high efficiency air filter-EU4 is 50Pa.

NOTE: With long distance option, it is not suitable unit working below nominal airflow.

OPTIONS

1.- INDOOR FAN PERFORMANCES WITH KIT HIGH STATIC PRESSURE (OPTIONAL TRANSMISSION)

22E

AIR FLOW	m³/h	3150	3425	[3700]	4100
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1090	322	316	310	300
1 TURN	1043	292	286	280	270
2 TURNS	996	265	258	[252]	240
3 TURNS	949	237	231	224	212
4 TURNS	902	211	204	198	185

26E

AIR FLOW	m³/h	4250	4625	[5000]	5500
	r.p.m	Available static pressure Pa.			
	1098	320	310	298	279
	1051	288	279	267	245
	1003	258	247	[235]	212
	956	230	217	203	179
	909	201	189	173	146

32E

AIR FLOW	m³/h	4650	5050	[5450]	6000
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1098	326	317	305	●
1 TURN	1051	295	284	270	248
2 TURNS	1003	263	252	[237]	212
3 TURNS	956	234	222	205	178
4 TURNS	909	205	190	173	143

38E

AIR FLOW	m³/h	6200	6650	[7100]	8050
	r.p.m	Available static pressure Pa.			
	944	327	315	301	267
	894	285	272	258	220
	844	247	232	[218]	175
	794	207	192	176	131
	744	170	155	136	87

43E-44E

AIR FLOW	m³/h	6950	7550	[8150]	9050
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	944	327	312	291	●
1 TURN	894	284	267	244	204
2 TURNS	844	243	224	[200]	154
3 TURNS	794	202	181	154	107
4 TURNS	744	163	140	111	59

52D

AIR FLOW	m³/h	7950	8675	[9400]	9750
	r.p.m	Available static pressure Pa.			
	944	320	295	264	247
	894	274	247	213	194
	844	228	200	[163]	142
	794	185	153	113	91
	744	142	262	63	41

64D-68E

AIR FLOW	m³/h	9950	10825	[11700]	12850
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1049	386	376	367	●
1 TURN	993	341	331	323	●
2 TURNS	937	298	383	[278]	262
3 TURNS	882	259	249	238	220
4 TURNS	826	221	211	197	179

76D-76E

AIR FLOW	m³/h	12450	13550	[14650]	15090
	r.p.m	Available static pressure Pa.			
	1045	354	336	318	●
	990	308	290	270	261
	934	264	245	[223]	214
	879	222	203	180	169
	823	182	160	135	123

86D

AIR FLOW	m³/h	14000	15125	[16250]	16725
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1063	346	324	301	288
1 TURN	1007	298	274	249	238
2 TURNS	951	251	227	[201]	186
3 TURNS	894	206	179	151	136
4 TURNS	838	163	134	103	88

112D

AIR FLOW	m³/h	17350	18875	[20400]	22450
	r.p.m	Available static pressure Pa.			
	854	358	343	326	●
	809	314	297	278	247
	764	269	252	[233]	202
	719	229	210	188	157
	673	189	169	146	115

128D

AIR FLOW	m³/h	19300	21000	[22700]	24950
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	852	356	337	318	283
1 TURN	806	310	290	268	231
2 TURNS	761	263	242	[220]	181
3 TURNS	716	221	200	172	133
4 TURNS	671	181	155	128	86

152D

AIR FLOW	m³/h	21000	22250	23500	[24750]
	r.p.m	Available static pressure Pa.			
	852	346	354	341	324
	806	299	305	290	272
	761	251	257	241	[223]
	716	209	212	195	176
	671	164	167	149	124

(●) WRONG STATUS ON ACCOUNT OF MOTOR POWER LIMIT.

[ ] Nominal factory setting

NOTE: Additional pressure drop with the option high efficiency air filter-EU4 is 50Pa.

NOTE: With low distance option it is not suitable unit working below nominal airflow.

OPTIONS

2.- FREE-COOLING

Return fan performances for each models are:

64D-68E

AIR FLOW	m³/h	9950	10825	11700	12850
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	755	255	257	260	260
1 TURN	715	230	232	234	233
2 TURNS	675	207	208	210	207
3 TURNS	635	184	184	184	180
4 TURNS	595	162	162	160	155

76D-76E

m³/h	12450	13550	14650	15090
r.p.m	Available static pressure Pa.			
755	260	260	258	255
715	235	233	228	225
675	208	205	198	195
635	182	176	168	165
595	157	150	140	135

86D

AIR FLOW	m³/h	14000	15125	16250	16725
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	755	260	255	250	●
1 TURN	715	230	225	215	212
2 TURNS	675	202	195	183	178
3 TURNS	635	173	165	153	145
4 TURNS	595	145	135	120	115

112D

m³/h	17350	18875	20400	22450
r.p.m	Available static pressure Pa.			
672	293	293	291	●
636	263	261	258	251
601	234	232	227	218
565	205	202	196	185
529	178	173	166	153

128D

AIR FLOW	m³/h	19300	21000	22700	24750
MOTOR PULLEY POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	766	381	380	380	373
1 TURN	725	343	340	337	330
2 TURNS	684	305	300	297	287
3 TURNS	644	268	263	257	245
4 TURNS	603	232	227	220	205

152D

m³/h	21000	22700	24750
r.p.m	Available static pressure Pa.		
766	380	380	373
725	340	337	330
684	300	297	287
644	263	257	245
603	227	220	205

(●) WRONG STATUS ON ACCOUNT OF MOTOR POWER LIMIT.

☐ Nominal factory setting.

NOTE: Additional pressure drop with the option high efficiency air filter-EU4 is 50Pa.

NOTE: With long distance option it is not suitable unit working below nominal airflow.

Air flows with exhaust fan for option "free-cooling without return fan"

22E-26E-32E

AIR FLOW	m³/h	2000	2500	2750
AVAILABLE STATIC PRESSURE	Pa.	160	105	75

38E-43E-44E-52D

m³/h	3000	3500	4000
	210	180	130

68E-76E 64D-76D-86D

AIR FLOW	m³/h	6000	7000	8000
AVAILABLE STATIC PRESSURE	Pa.	260	200	90

112D

m³/h	13200	14300	15400	16500
	230	200	150	50

128D-152D

AIR FLOW	m³/h	13200	14300	15400	16500
AVAILABLE STATIC PRESSURE	Pa.	230	200	150	50

OPTIONS

3.- OUTDOOR UNIT WITH AVAILABLE HIGH PRESSURES FAN

Air flow data with FP1 option.

MODELS				**112D-128D-152D**
Fan type				Axial-Direct coupling 900 r.p.m. (Low speed) 3~400V
Nr fans:				2
Available static pressure Pa.	50	Air flow	m^3/h	19000+19000
		Absorbed power	kW	5
	75	Air flow	m^3/h	18000+18000
		Absorbed power	kW	5.1
	100	Air flow	m^3/h	17000+17000
		Absorbed power	kW	5.2
	125	Air flow	m^3/h	15000+15000
		Absorbed power	kW	5.3

Air flow data with FP2 option.

MODELS				**112D-128D-152D**
Fan type				Axial “short case”-Direct coupling 1450 r.p.m. (High speed) 3~400V
Nr fans:				2
Available static pressure Pa.	150	Air flow	m^3/h	22000+22000
		Absorbed power	kW	9.2
	200	Air flow	m^3/h	20000+20000
		Absorbed power	kW	9.3
	250	Air flow	m^3/h	18000+18000
		Absorbed power	kW	9.4

SOUND PRESSURE / SOUND POWER LEVELS FOR INDOOR UNIT

LECM LEHM		Spectrum per octave band (dB)							SOUND POWER	SOUND PRESSURE (1)
		125	250	500	1000	2000	4000	8000	Lw dB(A)	Lp dB(A) 2m
22E	Indoor unit	76	69	68	69	67	62	54	73	51
	Indoor unit HP	84	75	72	72	71	68	60	78	56
26E	Indoor unit	81	73	73	74	72	68	61	78	55
	Indoor unit HP	85	80	75	75	75	72	65	81	58
32E	Indoor unit	82	75	74	75	73	70	63	80	55
	Indoor unit HP	85	80	76	76	76	73	66	82	57
38E	Indoor unit	78	79	76	75	74	71	65	80	55
	Indoor unit HP	83	80	78	76	76	73	68	82	57
43E-44E	Indoor unit	81	81	78	77	77	74	69	83	58
	Indoor unit HP	83	81	79	77	77	75	69	83	58
68E	Indoor unit	79	79	75	74	74	71	64	80	53
	Indoor unit+RF	83	82	79	78	77	74	68	84	57
	Indoor unit HP	88	82	81	77	77	75	70	84	57
	Indoor unit HP+RF	89	84	82	79	79	77	71	86	59
76E	Indoor unit	85	82	80	79	78	76	70	85	58
	Indoor unit+RF	87	85	83	81	81	78	73	88	61
	Indoor unit HP	89	84	85	80	80	79	73	87	60
	Indoor unit HP+RF	90	86	86	82	82	80	75	89	62
52D	Indoor unit	84	83	81	80	80	77	73	86	61
	Indoor unit HP	86	83	82	80	80	78	73	87	62
64D	Indoor unit	79	79	75	74	74	71	64	80	53
	Indoor unit+RF	83	82	79	78	77	74	68	84	57
	Indoor unit HP	88	82	81	77	77	75	70	84	57
	Indoor unit HP+RF	89	84	82	79	79	77	71	86	59
76D	Indoor unit	85	82	80	79	78	76	70	85	58
	Indoor unit+RF	87	85	83	81	81	78	73	88	61
	Indoor unit HP	89	84	85	80	80	79	73	87	60
	Indoor unit HP+RF	90	86	86	82	82	80	75	89	62
86D	Indoor unit	87	84	83	80	80	78	73	87	60
	Indoor unit+RF	87	87	85	83	83	81	76	89	62
	Indoor unit HP	88	85	85	81	81	79	74	88	61
	Indoor unit HP+RF	88	87	86	84	84	81	76	90	63
112D	Indoor unit	84	83	81	79	79	76	68	85	58
	Indoor unit+RF	87	86	84	82	82	79	71	88	61
	Indoor unit HP	89	86	83	81	80	79	72	87	60
	Indoor unit HP+RF	91	88	85	83	83	80	74	89	62
128D	Indoor unit	85	84	84	81	81	78	71	87	60
	Indoor unit+RF	89	88	87	84	84	82	75	91	64
	Indoor unit HP	87	85	84	81	81	79	72	88	61
	Indoor unit HP+RF	90	88	87	84	84	82	75	91	64
152D	Indoor unit	87	86	86	83	83	81	74	89	62
	Indoor unit+RF	90	89	89	86	86	84	77	92	65
	Indoor unit HP	89	87	86	83	83	81	75	90	63
	Indoor unit HP+RF	91	90	89	86	86	84	77	93	66

(1) Sound pressure level estimated in duct according to intake and discharge duct acoustic attenuation. It is considered a room with normal acoustic absortion and ducts lengh according with the unit size. Ducts with normal absortion isolation, installation without vibrations and suitaible air speed in the dampers.

It is an orientative values and must always consider for each installation the value of sound power level in the table to calculate the value of sound pressure level.

NOTE: **HP**:High pressure **RF**: Free-cooling with return fan.

EXHAUST FAN SOUND LEVEL

UNIT	Lw dB(A)*
LECM/HM 22E-32E	64
LECM/HM 38E-52D	66
LECM/HM 68E-86D	73
LECM/HM 112D-152D	76

*Free-field noise measurement at 1m

SOUND PRESSURE / SOUND POWER LEVELS FOR OUTDOOR UNIT

KNCM/KNHM			Spectrum per octave band (dB)							Sound power Lw dB(A)	Sound pressure at 10 m Lp dB(A)
			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
22E		(1)	68	71	71	71	69	67	59	76	48
		(2)	68	71	71	71	68	65	58	75	47
26E		(1)	74	70	72	70	73	70	62	78	50
		(2)	74	70	70	66	72	67	62	76	48
32E		(1)	80	72	74	75	76	71	65	81	53
		(2)	80	72	73	74	74	66	65	79	51
38E		(1)	80	72	74	75	75	69	62	80	52
		(2)	80	72	73	74	73	65	62	79	51
43E		(1)	80	72	74	76	76	68	63	81	53
		(2)	80	72	73	74	74	65	63	79	51
52D		(1)	77	72	75	73	76	73	65	81	53
		(2)	77	72	73	69	75	70	65	79	51
64D		(1)	83	75	77	78	79	74	68	84	56
		(2)	83	75	76	77	77	69	68	82	54
76D		(1)	83	75	77	78	78	72	65	83	55
		(2)	83	75	76	77	76	68	65	82	54
86D		(1)	83	75	77	79	79	71	66	84	56
		(2)	83	75	76	77	77	68	66	82	54
112D	Low speed	(1)	73	71	75	78	77	71	65	82	54
		(2)	73	71	72	75	71	63	65	78	50
	High speed	(1)	82	78	79	83	82	76	67	87	59
		(2)	82	78	78	82	81	74	67	86	58
128D	Low speed	(1)	73	71	75	78	78	72	66	83	55
		(2)	73	71	72	75	72	63	66	79	51
	High speed	(1)	82	78	79	83	82	76	68	87	59
		(2)	82	78	78	82	81	74	68	86	58
152D	Low speed	(1)	75	73	77	82	84	77	69	87	59
		(2)	75	73	74	77	76	66	69	81	53
	High speed	(1)	84	81	81	85	86	80	71	90	62
		(2)	84	81	80	84	84	77	71	88	60
FP1 OPTION	112D	(1)	84	81	81	84	81	74	68	87	59
		(2)	84	81	80	84	80	72	68	87	59
	128D	(1)	84	81	80	84	82	75	69	88	60
		(2)	84	81	80	84	80	72	69	87	59
	152D	(1)	84	81	81	85	85	78	71	90	62
		(2)	84	81	80	84	81	72	71	87	59
FP2 OPTION	112D	(1)	96	94	92	93	89	86	82	97	69
		(2)	96	94	92	93	89	86	82	97	69
	128D	(1)	96	94	92	93	90	86	82	97	69
		(2)	96	94	92	93	89	86	82	97	69
	152D	(1)	96	94	92	93	90	87	82	97	69
		(2)	96	94	92	93	89	86	82	97	69

(1) The above data shows noise levels **without** compressor isolation (option).
(2) The above data shows noise levels **with** compressor isolation.
For units: KNCM/KNHM 112D/D2-128D/D2-152D.
- **Low speed:** - For ambient temperatures < +35ºC and unit working on cooling mode.
  - For ambient temperatures > +7ºC and unit working on heating mode.
- **High speed:** - For ambient temperatures ≥+35ºC and unit working on cooling mode.
  - For ambient temperatures ≤ +7ºC and unit working on heating mode.

- Global sound power level measured in compliance with ISO standard 3744 and under Eurovent certification program.
- Sound pressure in dB(A) calculated at 10 m, in a free field on a reflecting surface, is given as a guide only and with a directibility of +/- 3 dBA.
- Only the sound power spectrum and the global sound power value are used in determining pressure characteristics on site.

Remark for FP1/FP2 option:
Total Lw, is global sound power level radiated for the fan motor AT FREE DISCHARGE. Sound pressure level (Lp) has to be calculated according the pressure drop introduce in the installation considering the type of the air duct, isolation class, duct length, etc ...
This value is orientative and must always consider for each installation the value of sound power level in the table to calculate the vaue of sound presure level.

COOLING CAPACITIES

Air entry Temperature indoor unit ºC		Model		Air entry temperature into the outdoor unit ºC DB													
				25			30			35			40			45		
DB	WB			Tc (kW)	Sc (kW)	Pi(c) (kW)	Tc (kW)	Sc (kW)	Pi(c) (kW)	Tc (kW)	Sc (kW)	Pi(c) (kW)	Tc (kW)	Sc (kW)	Pi(c) (kW)	Tc (kW)	Sc (kW)	Pe(c) (kW)
21	15	SPLIT	22E	18,6	13,4	5,60	18,0	13,1	6,00	17,3	12,7	6,50	16,4	12,3	7,17	15,4	11,8	8,12
			26E	22,5	16,2	7,13	21,7	15,8	7,61	20,8	15,3	8,22	19,8	14,8	9,03	18,6	14,2	10,2
			32E	26,1	18,6	8,24	25,1	18,1	8,82	23,9	17,5	9,56	22,6	16,9	10,5	21,1	16,1	12,0
			38E	34,0	24,7	10,4	32,9	24,2	11,1	31,6	23,5	12,1	30,0	22,8	13,4	28,3	21,9	15,3
			43E	38,9	27,6	12,4	37,6	27,0	13,3	36,0	26,2	14,3	34,1	25,2	15,8	31,9	24,1	17,9
			52D	44,4	31,3	14,4	42,9	30,6	15,4	41,1	29,7	16,6	39,1	28,7	18,2	36,8	27,5	20,5
			64D	53,7	38,5	16,6	51,7	37,5	17,8	49,2	36,4	19,3	46,5	35,0	21,3	43,4	33,3	24,2
			76D	66,7	47,5	21,0	64,4	46,4	22,3	61,7	45,1	24,1	58,6	43,5	26,6	55,1	41,6	30,1
			86D	79,0	56,6	25,2	76,1	55,2	26,9	72,7	53,5	29,0	68,6	51,4	32,1	64,0	48,9	36,6
			112D	96,0	69,1	29,4	92,8	67,5	31,8	89,0	65,7	34,9	84,7	63,5	39,2	79,7	60,9	45,7
			128D	106,5	73,0	33,0	102,9	71,1	35,2	98,6	68,9	37,9	93,7	66,3	41,7	88,2	63,3	47,1
			152D	129,4	90,7	41,0	125,0	88,5	43,5	119,8	85,9	46,8	113,8	82,9	51,1	107,0	79,3	57,4
		MULTI-SPLIT	52D2	22.5 + 22.5	16.2 + 16.2	7.13 + 7.13	21.7 + 21.7	15.8 + 15.8	7.61 + 7.61	20.8 + 20.8	15.3 + 15.3	8.22 + 8.22	19.8 + 19.8	14.8 + 14.8	9.03 + 9.03	18.6 + 18.6	14.2 + 14.2	10.2 + 10.2
			64D2	26.1 + 26.1	18.6 + 18.6	8.24 + 8.24	25.1 + 25.1	18.1 + 18.1	8.82 + 8.82	23.9 + 23.9	17.5 + 17.5	9.56 + 9.56	22.6 + 22.6	16.9 + 16.9	10.5 + 10.5	21.1 + 21.1	16.1 + 16.1	12 + 12
			76D2	34 + 34	24.7 + 24.7	10.4 + 10.4	32.9 + 32.9	24.2 + 24.2	11.1 + 11.1	31.6 + 31.6	23.5 + 23.5	12.1 + 12.1	30 + 30	22.8 + 22.8	13.4 + 13.4	28.3 + 28.3	21.9 + 21.9	15.3 + 15.3
			86D2	38.9 + 38.9	27.6 + 27.6	12.4 + 12.4	37.6 + 37.6	27 + 27	13.3 + 13.3	36 + 36	26.2 + 26.2	14.3 + 14.3	34.1 + 34.1	25.2 + 25.2	15.8 + 15.8	31.9 + 31.9	24.1 + 24.1	17.9 + 17.9
			112D2	55 + 39.5	38 + 27.2	17.7 + 11.9	53 + 38.3	37 + 26.5	18.9 + 12.7	50.7 + 36.8	35.9 + 25.7	20.4 + 13.7	48 + 35.1	34.5 + 24.8	22.5 + 15	45 + 33.2	32.9 + 23.8	25.5 + 16.9
			128D2	65.3 + 39	46.2 + 26.8	21.2 + 11.8	63 + 37.8	45.1 + 26.1	22.4 + 12.6	60.2 + 36.3	43.7 + 25.3	23.9 + 13.6	56.9 + 34.6	42.1 + 24.4	25.9 + 14.9	53.3 + 32.7	40.2 + 23.3	28.8 + 16.8
24	17	SPLIT	22E	19,8	14,2	5,70	19,1	13,9	6,10	18,4	13,6	6,61	17,5	13,1	7,28	16,5	12,6	8,24
			26E	23,9	17,2	7,23	23,1	16,8	7,72	22,1	16,4	8,33	21,0	15,9	9,14	19,8	15,3	10,3
			32E	27,7	19,7	8,35	26,6	19,3	8,94	25,4	18,7	9,69	24,0	18,0	10,7	22,5	17,3	12,1
			38E	36,1	26,3	10,6	34,9	25,8	11,3	33,5	25,1	12,2	31,9	24,3	13,5	30,1	23,4	15,5
			43E	41,3	29,3	12,6	39,9	28,7	13,4	38,2	27,9	14,5	36,2	26,9	16,0	34,0	25,8	18,2
			52D	47,3	33,3	14,6	45,6	32,6	15,6	43,8	31,7	16,8	41,6	30,7	18,4	39,3	29,5	20,7
			64D	57,0	41,0	16,8	54,8	40,0	18,0	52,3	38,8	19,5	49,4	37,4	21,6	46,2	35,8	24,5
			76D	70,8	50,5	21,3	68,4	49,4	22,7	65,5	48,0	24,5	62,2	46,4	26,9	58,5	44,5	30,5
			86D	83,9	60,4	25,6	80,8	58,9	27,2	77,2	57,2	29,4	73,0	55,1	32,4	68,2	52,6	37,0
			112D	101,8	73,3	29,8	98,4	71,7	32,2	94,4	69,8	35,3	89,8	67,6	39,5	84,7	65,0	45,9
			128D	113,0	78,3	33,4	109,1	76,4	35,6	104,6	74,1	38,4	99,5	71,5	42,2	93,7	68,4	47,6
			152D	137,4	96,0	41,6	132,7	93,8	44,2	127,2	91,2	47,5	120,9	88,1	51,9	113,8	84,5	58,2
		MULTI-SPLIT	52D2	23.9 + 23.9	17.2 + 17.2	7.23 + 7.23	23.1 + 23.1	16.8 + 16.8	7.72 + 7.72	22.1 + 22.1	16.4 + 16.4	8.33 + 8.33	21 + 21	15.9 + 15.9	9.14 + 9.14	19.8 + 19.8	15.3 + 15.3	10.3 + 10.3
			64D2	27.7 + 27.7	19.7 + 19.7	8.35 + 8.35	26.6 + 26.6	19.3 + 19.3	8.94 + 8.94	25.4 + 25.4	18.7 + 18.7	9.69 + 9.69	24 + 24	18 + 18	10.7 + 10.7	22.5 + 22.5	17.3 + 17.3	12.1 + 12.1
			76D2	36.1 + 36.1	26.3 + 26.3	10.6 + 10.6	34.9 + 34.9	25.8 + 25.8	11.3 + 11.3	33.5 + 33.5	25.1 + 25.1	12.2 + 12.2	31.9 + 31.9	24.3 + 24.3	13.5 + 13.5	30.1 + 30.1	23.4 + 23.4	15.5 + 15.5
			86D2	41.3 + 41.3	29.3 + 29.3	12.6 + 12.6	39.9 + 39.9	28.7 + 28.7	13.4 + 13.4	38.2 + 38.2	27.9 + 27.9	14.5 + 14.5	36.2 + 36.2	26.9 + 26.9	16 + 16	34 + 34	25.8 + 25.8	18.2 + 18.2
			112D2	58.3 + 42	40.5 + 29	18 + 12	56.2 + 40.6	39.5 + 28.4	19.2 + 12.8	53.8 + 39.1	38.3 + 27.6	20.7 + 13.8	51 + 37.3	36.9 + 26.7	22.8 + 15.1	47.8 + 35.3	35.3 + 25.6	25.9 + 17
			128D2	69.4 + 41.5	49.3 + 28.6	21.5 + 12	66.9 + 40.1	48.2 + 28	22.8 + 12.8	64 + 38.6	46.8 + 27.2	24.3 + 13.7	60.6 + 36.8	45.1 + 26.2	26.4 + 15	56.8 + 34.8	43.2 + 25.1	29.3 + 16.9
27	19	SPLIT	22E	21,0	15,0	5,80	20,3	14,7	6,21	19,5	14,4	6,72	18,6	13,9	7,41	17,5	13,4	8,38
			26E	25,4	18,2	7,34	24,5	17,8	7,83	23,5	17,4	8,45	22,4	16,9	9,28	21,1	16,3	10,4
			32E	29,3	20,8	8,47	28,3	20,4	9,06	27,0	19,8	9,82	25,6	19,2	10,8	24,0	18,4	12,3
			38E	38,2	27,8	10,7	37,0	27,2	11,5	35,5	26,6	12,4	33,8	25,8	13,7	31,9	24,9	15,6
			43E	43,8	31,0	12,8	42,3	30,3	13,6	40,5	29,5	14,7	38,4	28,6	16,2	36,1	27,4	18,4
			52D	50,2	35,1	14,8	48,5	34,4	15,8	46,5	33,5	17,0	44,3	32,5	18,7	41,8	31,3	21,0
			64D	60,4	43,3	17,1	58,1	42,3	18,3	55,5	41,2	19,8	52,5	39,8	21,9	49,2	38,1	24,8
			76D	75,1	53,3	21,6	72,5	52,2	23,0	69,5	50,8	24,8	66,1	49,2	27,3	62,2	47,3	30,9
			86D	89,1	63,9	25,9	85,8	62,5	27,6	82,0	60,8	29,8	77,6	58,7	32,9	72,6	56,2	37,4
			112D	107,8	77,2	30,2	104,2	75,6	32,6	100,0	73,8	35,7	95,2	71,6	40,0	89,9	69,0	46,3
			128D	119,8	83,1	33,9	115,7	81,2	36,1	111,0	78,9	38,9	105,6	76,3	42,7	99,6	73,2	48,2
			152D	145,8	101,0	42,2	140,8	98,8	44,9	135,0	96,2	48,2	128,4	93,1	52,7	121,0	89,5	59,1
		MULTI-SPLIT	52D2	25.4 + 25.4	18.2 + 18.2	7.34 + 7.34	24.5 + 24.5	17.8 + 17.8	7.83 + 7.83	23.5 + 23.5	17.4 + 17.4	8.45 + 8.45	22.4 + 22.4	16.9 + 16.9	9.28 + 9.28	21.1 + 21.1	16.3 + 16.3	10.4 + 10.4
			64D2	29.3 + 29.3	20.8 + 20.8	8.47 + 8.47	28.3 + 28.3	20.4 + 20.4	9.06 + 9.06	27 + 27	19.8 + 19.8	9.82 + 9.82	25.6 + 25.6	19.2 + 19.2	10.8 + 10.8	24 + 24	18.4 + 18.4	12.3 + 12.3
			76D2	38.2 + 38.2	27.8 + 27.8	10.7 + 10.7	37 + 37	27.2 + 27.2	11.5 + 11.5	35.5 + 35.5	26.6 + 26.6	12.4 + 12.4	33.8 + 33.8	25.8 + 25.8	13.7 + 13.7	31.9 + 31.9	24.9 + 24.9	15.6 + 15.6
			86D2	43.8 + 43.8	31 + 31	12.8 + 12.8	42.3 + 42.3	30.3 + 30.3	13.6 + 13.6	40.5 + 40.5	29.5 + 29.5	14.7 + 14.7	38.4 + 38.4	28.6 + 28.6	16.2 + 16.2	36.1 + 36.1	27.4 + 27.4	18.4 + 18.4
			112D2	61.8 + 44.6	42.8 + 30.8	18.2 + 12.2	59.6 + 43.1	41.8 + 30.1	19.5 + 13	57 + 41.5	40.6 + 29.3	20.9+13.8	54.1 + 39.6	39.3 + 28.4	23.2 + 15.3	50.8 + 37.6	37.6 + 27.3	26.3 + 17.2
			128D2	73.7 + 44.1	52.2 + 30.4	21.9 + 12.1	71.1 + 42.6	51 + 29.7	23.1 + 12.9	68 + 41	49.6 + 28.9	24.5+13.7	64.5 + 39.1	48 + 27.9	26.8 + 15.2	60.5 + 37.1	46.1 + 26.9	29.8 + 17
29	21	SPLIT	22E	22,3	14,8	5,91	21,5	14,5	6,32	20,7	14,2	6,85	19,7	13,8	7,54	18,6	13,3	8,52
			26E	26,9	17,9	7,46	25,9	17,6	7,96	24,9	17,2	8,59	23,7	16,7	9,43	22,4	16,1	10,6
			32E	31,1	20,5	8,59	29,9	20,1	9,19	28,6	19,6	9,95	27,1	19,0	11,0	25,5	18,2	12,4
			38E	40,5	27,4	10,9	39,1	26,9	11,6	37,6	26,3	12,6	35,8	25,6	13,9	33,9	24,7	15,8
			43E	46,4	30,5	13,0	44,8	29,9	13,8	42,9	29,1	14,9	40,7	28,2	16,5	38,3	27,2	18,7
			52D	53,2	34,6	15,0	51,4	33,9	16,0	49,3	33,1	17,3	47,0	32,1	19,0	44,4	31,0	21,3
			64D	63,9	42,6	17,3	61,5	41,7	18,5	58,8	40,6	20,1	55,7	39,3	22,2	52,2	37,8	25,1
			76D	79,4	52,5	21,9	76,7	51,4	23,3	73,6	50,2	25,2	70,0	48,7	27,7	66,0	46,9	31,3
			86D	94,2	62,9	26,3	90,7	61,5	28,0	86,7	59,9	30,2	82,2	58,0	33,3	77,0	55,6	37,9
			112D	114,0	76,1	30,7	110,1	74,6	33,1	105,7	72,9	36,2	100,8	70,8	40,5	95,2	68,4	46,8
			128D	126,9	81,9	34,4	122,6	80,1	36,6	117,6	78,0	39,5	112,0	75,5	43,3	105,8	72,6	48,7
			152D	154,4	99,6	42,8	149,1	97,4	45,5	143,1	95,0	48,9	136,2	92,1	53,5	128,5	88,7	60,0
		MULTI-SPLIT	52D2	26.9 + 26.9	17.9 + 17.9	7.46 + 7.46	25.9 + 25.9	17.6 + 17.6	7.96 + 7.96	24.9 + 24.9	17.2 + 17.2	8.59 + 8.59	23.7 + 23.7	16.7 + 16.7	9.43 + 9.43	22.4 + 22.4	16.1 + 16.1	10.6 + 10.6
			64D2	31.1 + 31.1	20.5 + 20.5	8.59 + 8.59	29.9 + 29.9	20.1 + 20.1	9.19 + 9.19	28.6 + 28.6	19.6 + 19.6	9.95 + 9.95	27.1 + 27.1	19 + 19	11 + 11	25.5 + 25.5	18.2 + 18.2	12.4 + 12.4
			76D2	40.5 + 40.5	27.4 + 27.4	10.9 + 10.9	39.1 + 39.1	26.9 + 26.9	11.6 + 11.6	37.6 + 37.6	26.3 + 26.3	12.6 + 12.6	35.8 + 35.8	25.6 + 25.6	13.9 + 13.9	33.9 + 33.9	24.7 + 24.7	15.8 + 15.8
			86D2	46.4 + 46.4	30.5 + 30.5	13 + 13	44.8 + 44.8	29.9 + 29.9	13.8 + 13.8	42.9 + 42.9	29.1 + 29.1	14.9 + 14.9	40.7 + 40.7	28.2 + 28.2	16.5 + 16.5	38.3 + 38.3	27.2 + 27.2	18.7 + 18.7
			112D2	65.3 + 47.2	42.2 + 30.3	18.5 + 12.4	63 + 45.7	41.2 + 29.7	19.7 + 13.2	60.3 + 44	40.1 + 29	21.3 + 14.2	57.2 + 42	38.8 + 28.1	23.5 + 15.5	53.8 + 39.9	37.3 + 27.1	26.6 + 17.4
			128D2	78.1 + 46.7	51.3 + 29.9	22.2 + 12.3	75.3 + 45.2	50.2 + 29.3	23.5 + 13.1	72.1 + 43.4	48.9 + 28.5	25.1 + 14.1	68.4 + 41.5	47.4 + 27.7	27.3 + 15.4	64.3 + 39.3	45.6 + 26.6	30.3 + 17.2
32	23	SPLIT	22E	23,6	15,5	6,02	22,9	15,2	6,44	22,0	14,9	6,98	21,0	14,5	7,68	19,9	14,0	8,68
			26E	28,5	18,8	7,58	27,5	18,4	8,10	26,4	18,0	8,74	25,1	17,5	9,60	23,8	17,0	10,8
			32E	32,9	21,4	8,71	31,7	21,0	9,32	30,4	20,5	10,1	28,8	20,0	11,1	27,1	19,3	12,6
			38E	42,8	28,6	11,0	41,4	28,1	11,8	39,8	27,6	12,8	38,0	26,9	14,1	36,0	26,1	16,0
			43E	49,1	31,9	13,2	47,4	31,3	14,1	45,4	30,5	15,2	43,2	29,7	16,7	40,7	28,7	18,9
			52D	56,3	36,2	15,3	54,4	35,5	16,3	52,3	34,7	17,6	49,8	33,8	19,3	47,2	32,7	21,7
			64D	67,7	44,6	17,6	65,2	43,7	18,8	62,3	42,7	20,4	59,1	41,4	22,5	55,5	40,0	25,4
			76D	84,2	54,9	22,2	81,3	53,8	23,7	78,0	52,6	25,5	74,3	51,2	28,0	70,1	49,5	31,6
			86D	99,8	65,9	26,7	96,2	64,6	28,4	92,0	63,0	30,7	87,2	61,1	33,8	81,9	58,9	38,4
			112D	120,5	79,4	31,2	116,5	78,0	33,7	111,9	76,3	36,8	106,7	74,3	41,1	101,0	72,0	47,4
			128D	134,6	85,5	35,0	130,1	83,8	37,2	124,9	81,8	40,1	119,0	79,4	43,9	112,5	76,6	49,4
			152D	163,7	103,7	43,5	158,1	101,7	46,2	151,8	99,3	49,7	144,6	96,5	54,3	136,6	93,2	60,8
		MULTI-SPLIT	52D2	28.5 + 28.5	18.8 + 18.8	7.58 + 7.58	27.5 + 27.5	18.4 + 18.4	8.1 + 8.1	26.4 + 26.4	18 + 18	8.74 + 8.74	25.1 + 25.1	17.5 + 17.5	9.6 + 9.6	23.8 + 23.8	17 + 17	10.8 + 10.8
			64D2	32.9 + 32.9	21.4 + 21.4	8.71 + 8.71	31.7 + 31.7	21 + 21	9.32 + 9.32	30.4 + 30.4	20.5 + 20.5	10.1 + 10.1	28.8 + 28.8	20 + 20	11.1 + 11.1	27.1 + 27.1	19.3 + 19.3	12.6 + 12.6
			76D2	42.8 + 42.8	28.6 + 28.6	11 + 11	41.4 + 41.4	28.1 + 28.1	11.8 + 11.8	39.8 + 39.8	27.6 + 27.6	12.8 + 12.8	38 + 38	26.9 + 26.9	14.1 + 14.1	36 + 36	26.1 + 26.1	16 + 16
			86D2	49.1 + 49.1	31.9 + 31.9	13.2 + 13.2	47.4 + 47.4	31.3 + 31.3	14.1 + 14.1	45.4 + 45.4	30.5 + 30.5	15.2 + 15.2	43.2 + 43.2	29.7 + 29.7	16.7 + 16.7	40.7 + 40.7	28.7 + 28.7	18.9 + 18.9
			112D2	69.1 + 50.1	44.1 + 31.6	18.8 + 12.6	66.7 + 48.5	43.2 + 31	20.1 + 13.4	63.8 + 46.7	42.1 + 30.3	21.7 + 14.4	60.7 + 44.7	40.9 + 29.5	23.9 + 15.7	57.2 + 42.4	39.4 + 28.5	27 + 17.6
			128D2	82.8 + 49.5	53.8 + 31.2	22.6 + 12.5	79.9 + 47.9	52.7 + 30.6	23.9 + 13.3	76.5 + 46.1	51.5 + 29.9	25.5 + 14.3	72.7 + 44.1	50 + 29.1	27.7 + 15.6	68.4 + 41.9	48.3 + 28.1	30.7 + 17.4

n/a: Not available

Tc (kW): Total cooling capacity in kW. Sc (kW): Sensible capacity in kW. Pi(c) (kW): Power input in kW.

DB: Dry bulb WB: Wet bulb.

COOLING CAPACITIES

CAPACITY PARTIALITY "STD UNITS"

ANCM / ANHM	22E	26E to 43E	52D to 86D	112D	128D	152D
Capacity steps %	0-100	0-100	0-55-100	0-35-59-100	0-38-62-100	0-30-50-100

CAPACITY PARTIALITY "MODELS D2"

ANCM / ANHM D2	52D2	64D2	76D2	86D2	112D2		128D2	
LECM /LEHM	2x26E	2x32E	2x38E	2x43E	1x68E	1x43E	1x76E	1x43E
% Total capacity - circuit 1	50	50	50	50	58	------	63	------
% Total capacity - circuit 2	50	50	50	50	------	42	------	37

CALCULATION OF COOLING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow.

MODELS	22E	26E	32E	38E	43E	52D	64D/68E	76D/76E	86D	112D	128D	152D
INDOOR AIR FLOW m^3/h	3700	5000	5450	7100	8150	9400	11700	14650	16250	20400	22700	24750

CORRECTION COEFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW:

MODELS: 22E TO 152D					
	% NOMINAL AIR FLOW				
	70%	80%	90%	100%	110%
TOTAL CAPACITY	0.94	0.96	0.98	1	1
SENSIBLE CAPACITY	0.86	0.91	0.95	1	1.02
POWER INPUT	0.98	0.99	1	1	1.04

Data based on the following nominal outdoor fan air flow:

MODELS	22E	26E	32E	38E	43E	52D	64D/68E	76D/76E	86D	112D	128D	152D
OUTDOOR AIR FLOW m^3/h	6800	9750	11500	11300	11000	9750+9750	11500+11500	11300+1300	11000+11000	22700+18100	22700+18100	22700+22700

CORRECTION FACTORS FOR CAPACITY AND EFFICIENCY DEPENDING ON LINES LENTGH

Data on the tables have been calculated for 7.5 m of refrigerant lines length between indoor and outdoor unit. To find out the performaces for units when the distance between indoor and outdoor unit is more than 7.5 m apply the following coefficients for capacity and EER.

	COOLING	
	Capacity	EER
Lines length 30 m	0.98	0.99
Lines length 65 m	0.96	0.98

CORRECTION FACTORS

To find out the performances for units installed with air ducts, apply the following coefficients for capacity and consumption, over the performance tables of stadard fan units without ducts.

		VERSION	MODELS	Available static pressure Pa	Maximum ambient temperature ºC	Correction coefficient capacity Cool	Correction coefficient consumption ((1) Only FP1/FP2)
AVAILABLE STATIC PRESSURE	50Pa	STANDARD	22E-152D	**30**	43	0.95	1.06
				50	39	0.89	1.16
	125Pa	FP1	112D/D2-152D	**50**	45	0.964	1.072
				75	42	0.935	1.094
				100	38	0.9	1.171
				125	36	0.856	1.269
	250Pa	FP2	112D/D2-152D	**150**	47	1.01	0.98
				200	44	0.97	1.037
				250	41	0.94	1.099

(1) After to apply correction coefficient consumption is needed to add the following power input to get total power consumption:

EXTRA POWER CONSUMPTION			
MODELS	112D/D2	128D/D2	152D
FP1	1.95	1.95	1
FP2	6.25	6.25	5.3

OPERATING LIMITS FOR (COOLING ONLY) UNITS

		MAXIMUM TEMPERATURE	MINIMUM TEMPERATURE
COOLING CYCLE OPERATION	INDOOR TEMPERATURE	32ºC DB / 23ºC WB	21ºC DB / 15ºC WB
	OUTDOOR TEMPERATURE	45ºC (22E-26E-32E-52D-64D) 47ºC (38E-43E-76D-86D-112D-128D-152D)	+10ºC STANDARD UNIT (*) (**)

DB.- Dry bulb temperature.
WB.- Wet bulb temperature.

(*) With option kit low temperature 0ºC.
(**) With option kit low temperature -15ºC or long distance.

Air entry temp. indoor unit ºC		Model	Air entry temperature into the outdoor unit ºC WB													
			-11		-6		-1		4		6		8		18	
			Tc (h) (kW)	Pi (h)(kW)	Tc (h) (kW)	Pi (h) (kW)	Tc (h) (kW)	Pi (h) (kW)	Tc (h) (kW)	Pi (h) (kW)	Tc (h) (kW)	Pi (h) (kW)	Tc (h) (kW)	Pi (h) (kW)	Tc (h) (kW)	Pi (h) (kW)
15	SPLIT	22E	12,7	4,55	14,8	4,95	16,9	5,34	18,9	5,73	19,8	5,89	21,4	6,22	26,6	7,39
		26E	16,5	6,12	19,1	6,56	21,7	6,99	24,3	7,42	25,3	7,60	27,4	7,97	33,8	9,33
		32E	18,8	6,99	21,8	7,54	24,8	8,07	27,8	8,59	28,9	8,80	31,2	9,22	38,5	10,7
		38E	23,8	8,53	27,6	9,25	31,3	9,94	35,0	10,6	36,4	10,9	39,3	11,4	48,6	13,3
		43E	26,5	9,70	30,6	10,5	34,7	11,2	38,8	11,9	40,4	12,2	43,6	12,8	54,0	14,8
		52D	32,8	12,4	38,0	13,3	43,2	14,3	48,2	15,2	50,2	15,6	54,1	16,4	66,5	19,3
		64D	37,1	13,6	43,2	14,7	49,1	15,7	55,0	16,7	57,3	17,1	61,9	17,9	76,5	20,9
		76D	48,3	17,7	55,8	19,0	63,2	20,4	70,5	21,7	73,4	22,2	79,2	23,2	97,5	26,9
		86D	53,1	19,7	61,3	21,2	69,5	22,6	77,6	23,9	80,8	24,5	87,3	25,6	108,0	29,3
		112D	70,7	24,5	82,3	26,5	93,8	28,5	105,1	30,5	109,6	31,3	118,5	32,9	146,7	38,7
		128D	78,4	28,2	90,7	30,4	102,8	32,5	114,8	34,6	119,6	35,5	129,0	37,2	159,1	43,4
		152D	91,1	35,1	105,3	37,9	119,3	40,7	133,1	43,4	138,6	44,5	149,5	46,8	184,0	54,9
	MULTI-SPLIT	52D2	16.5 + 16.5	6.12 + 6.12	19.1 + 19.1	6.56 + 6.56	21.7 + 21.7	6.99 + 6.99	24.3 + 24.3	7.42 + 7.42	25.3 + 25.3	7.6 + 7.6	27.4 + 27.4	7.97 + 7.97	33.8 + 33.8	9.33 + 9.33
		64D2	18.8 + 18.8	6.99 + 6.99	21.8 + 21.8	7.54 + 7.54	24.8 + 24.8	8.07 + 8.07	27.8 + 27.8	8.59 + 8.59	28.9 + 28.9	8.8 + 8.8	31.2 + 31.2	9.22 + 9.22	38.5 + 38.5	10.7 + 10.7
		76D2	23.8 + 23.8	8.53 + 8.53	27.6 + 27.6	9.25 + 9.25	31.3 + 31.3	9.94 + 9.94	35 + 35	10.6 + 10.6	36.4 + 36.4	10.9 + 10.9	39.3 + 39.3	11.4 + 11.4	48.6 + 48.6	13.3 + 13.3
		86D2	26.5 + 26.5	9.7 + 9.7	30.6 + 30.6	10.5 + 10.5	34.7 + 34.7	11.2 + 11.2	38.8 + 38.8	11.9 + 11.9	40.4 + 40.4	12.2 + 12.2	43.6 + 43.6	12.8 + 12.8	54 + 54	14.8 + 14.8
		112D2	40.7 + 31	14.9 + 10.6	47.1 + 35.8	16.1 + 11.4	53.5 + 40.6	17.2 + 12.3	59.8 + 45.3	18.3 + 13.1	62.3 + 47.1	18.8 + 13.4	67.3 + 50.8	19.7 + 14.1	83.1 + 62.1	23 + 16.5
		128D2	48.5 + 30.5	18.3 + 10.4	55.9 + 35.2	19.5 + 11.2	63.2 + 39.9	20.6 + 12.1	70.5 + 44.5	21.7 + 12.9	73.4 + 46.2	22.1 + 13.2	79.1 + 49.8	23 + 13.8	97.4 + 60.8	26.2 + 16.1
18	SPLIT	22E	12,7	4,86	14,8	5,27	16,8	5,67	18,8	6,08	19,6	6,24	21,2	6,59	26,3	7,84
		26E	16,4	6,51	19,0	6,95	21,6	7,39	24,1	7,84	25,1	8,03	27,1	8,41	33,4	9,87
		32E	18,8	7,45	21,8	8,01	24,7	8,54	27,5	9,08	28,7	9,30	30,9	9,75	38,0	11,3
		38E	23,8	9,00	27,5	9,74	31,1	10,5	34,7	11,2	36,2	11,5	39,0	12,1	48,1	14,1
		43E	26,4	10,2	30,5	11,0	34,5	11,8	38,6	12,6	40,2	12,9	43,3	13,5	53,6	15,7
		52D	32,8	13,2	37,9	14,1	42,9	15,1	47,8	16,0	49,8	16,4	53,6	17,3	65,7	20,4
		64D	37,1	14,5	43,0	15,6	48,8	16,7	54,6	17,7	56,8	18,1	61,3	19,0	75,6	22,1
		76D	48,2	18,6	55,6	20,0	62,8	21,4	70,0	22,8	72,9	23,3	78,5	24,5	96,6	28,4
		86D	53,1	20,8	61,2	22,3	69,2	23,7	77,1	25,2	80,3	25,8	86,7	26,9	107,1	31,0
		112D	70,5	26,1	81,9	28,2	93,1	30,2	104,2	32,3	108,6	33,1	117,3	34,9	145,0	41,2
		128D	78,4	29,9	90,4	32,1	102,2	34,3	113,9	36,4	118,6	37,3	127,8	39,2	157,1	45,8
		152D	91,3	37,2	105,1	40,1	118,8	42,9	132,3	45,7	137,6	46,9	148,3	49,3	181,9	58,0
	MULTI-SPLIT	52D2	16.4 + 16.4	6.51 + 6.51	19 + 19	6.95 + 6.95	21.6 + 21.6	7.39 + 7.39	24.1 + 24.1	7.84 + 7.84	25.1 + 25.1	8.03 + 8.03	27.1 + 27.1	8.41 + 8.41	33.4 + 33.4	9.87 + 9.87
		64D2	18.8 + 18.8	7.45 + 7.45	21.8 + 21.8	8.01 + 8.01	24.7 + 24.7	8.54 + 8.54	27.5 + 27.5	9.08 + 9.08	28.7 + 28.7	9.3 + 9.3	30.9 + 30.9	9.75 + 9.75	38 + 38	11.3 + 11.3
		76D2	23.8 + 23.8	9 + 9	27.5 + 27.5	9.74 + 9.74	31.1 + 31.1	10.5 + 10.5	34.7 + 34.7	11.2 + 11.2	36.2 + 36.2	11.5 + 11.5	39 + 39	12.1 + 12.1	48.1 + 48.1	14.1 + 14.1
		86D2	26.4 + 26.4	10.2 + 10.2	30.5 + 30.5	11 + 11	34.5 + 34.5	11.8 + 11.8	38.6 + 38.6	12.6 + 12.6	40.2 + 40.2	12.9 + 12.9	43.3 + 43.3	13.5 + 13.5	53.6 + 53.6	15.7 + 15.7
		112D2	40.7 + 30.9	15.8 + 11.1	47 + 35.6	17 + 12	53.3 + 40.3	18.2 + 12.9	59.5 + 44.9	19.3 + 13.8	61.9 + 46.7	19.8 + 14.1	66.8 + 50.3	20.8 + 14.9	82.2 + 61.4	24.4 + 17.4
		128D2	48.5 + 30.4	19.3 + 10.9	55.7 + 35	20.5 + 11.8	62.9 + 39.6	21.6 + 12.7	70 + 44	22.7 + 13.5	72.8 + 45.8	23.2 + 13.9	78.4 + 49.3	24.1 + 14.6	96.4 + 60	27.6 + 17
20	SPLIT	22E	12,7	5,09	14,7	5,50	16,7	5,91	18,7	6,33	19,5	6,50	21,1	6,86	26,2	8,16
		26E	16,4	6,79	19,0	7,23	21,5	7,68	24,0	8,14	25,0	8,33	27,0	8,74	33,2	10,3
		32E	18,8	7,79	21,7	8,34	24,6	8,89	27,4	9,44	28,5	9,66	30,7	10,1	37,7	11,8
		38E	23,7	9,32	27,4	10,1	31,0	10,8	34,6	11,6	36,0	11,9	38,8	12,5	47,8	14,7
		43E	26,4	10,6	30,4	11,4	34,4	12,2	38,4	13,0	40,0	13,3	43,2	14,0	53,3	16,3
		52D	32,8	13,7	37,8	14,7	42,7	15,7	47,6	16,7	49,5	17,1	53,3	17,9	65,2	21,2
		64D	37,1	15,2	42,9	16,3	48,6	17,3	54,3	18,4	56,5	18,8	60,9	19,7	74,9	23,0
		76D	48,1	19,3	55,4	20,7	62,6	22,2	69,7	23,6	72,5	24,2	78,1	25,3	95,9	29,5
		86D	53,1	21,5	61,0	23,1	69,0	24,6	76,9	26,1	80,0	26,7	86,3	27,9	106,5	32,2
		112D	70,4	27,3	81,6	29,4	92,7	31,5	103,7	33,6	108,0	34,5	116,6	36,3	143,9	42,9
		128D	78,4	31,1	90,2	33,3	101,9	35,5	113,4	37,8	118,0	38,7	127,1	40,6	155,9	47,6
		152D	91,4	38,7	105,0	41,6	118,5	44,5	131,7	47,4	137,0	48,6	147,4	51,1	180,5	60,2
	MULTI-SPLIT	52D2	16.4 + 16.4	6.79 + 6.79	19 + 19	7.23 + 7.23	21.5 + 21.5	7.68 + 7.68	24 + 24	8.14 + 8.14	25 + 25	8.33 + 8.33	27 + 27	8.74 + 8.74	33.2 + 33.2	10.3 + 10.3
		64D2	18.8 + 18.8	7.79 + 7.79	21.7 + 21.7	8.34 + 8.34	24.6 + 24.6	8.89 + 8.89	27.4 + 27.4	9.44 + 9.44	28.5 + 28.5	9.66 + 9.66	30.7 + 30.7	10.1 + 10.1	37.7 + 37.7	11.8 + 11.8
		76D2	23.7 + 23.7	9.32 + 9.32	27.4 + 27.4	10.1 + 10.1	31 + 31	10.8 + 10.8	34.6 + 34.6	11.6 + 11.6	36 + 36	11.9 + 11.9	38.8 + 38.8	12.5 + 12.5	47.8 + 47.8	14.7 + 14.7
		86D2	26.4 + 26.4	10.6 + 10.6	30.4 + 30.4	11.4 + 11.4	34.4 + 34.4	12.2 + 12.2	38.4 + 38.4	13 + 13	40 + 40	13.3 + 13.3	43.2 + 43.2	14 + 14	53.3 + 53.3	16.3 + 16.3
		112D2	40.7 + 30.8	16.5 + 11.5	47 + 35.5	17.7 + 12.4	53.1 + 40.1	18.8 + 13.4	59.2 + 44.6	20 + 14.3	61.6 + 46.4	20.3+14.5	66.4 + 49.9	21.6 + 15.4	81.6 + 60.9	25.3 + 18.1
		128D2	48.5 + 30.3	20 + 11.3	55.6 + 34.9	21.2 + 12.2	62.7 + 39.4	22.3 + 13.1	69.7 + 43.8	23.5 + 14	72.5 + 45.5	24.3+14.3	78 + 48.9	24.9 + 15.1	95.7 + 59.5	28.6 + 17.6
23	SPLIT	22E	12,7	5,46	14,7	5,88	16,6	6,30	18,6	6,73	19,4	6,91	20,9	7,29	25,9	8,70
		26E	16,4	7,25	18,9	7,69	21,4	8,15	23,8	8,63	24,8	8,83	26,7	9,26	32,8	10,9
		32E	18,8	8,33	21,6	8,88	24,4	9,44	27,2	10,0	28,3	10,2	30,4	10,7	37,2	12,5
		38E	23,7	9,83	27,3	10,6	30,8	11,4	34,3	12,2	35,7	12,5	38,5	13,2	47,3	15,6
		43E	26,4	11,2	30,4	12,0	34,3	12,9	38,2	13,7	39,8	14,1	42,9	14,8	52,9	17,3
		52D	32,7	14,7	37,7	15,6	42,5	16,6	47,2	17,7	49,1	18,1	52,8	19,0	64,5	22,6
		64D	37,1	16,3	42,7	17,4	48,3	18,4	53,9	19,5	56,0	20,0	60,4	20,9	74,0	24,4
		76D	48,0	20,3	55,2	21,8	62,2	23,3	69,2	24,9	72,0	25,5	77,5	26,7	95,0	31,3
		86D	53,0	22,7	60,9	24,3	68,7	25,9	76,4	27,4	79,5	28,1	85,7	29,4	105,5	34,1
		112D	70,3	29,2	81,3	31,4	92,2	33,5	102,9	35,8	107,1	36,7	115,6	38,6	142,3	45,9
		128D	78,6	33,1	90,1	35,3	101,5	37,6	112,8	39,9	117,2	40,9	126,1	42,9	154,2	50,4
		152D	91,5	41,2	104,8	44,1	117,9	47,0	130,9	50,1	136,0	51,3	146,2	54,0	178,4	63,8
	MULTI-SPLIT	52D2	16.4 + 16.4	7.25 + 7.25	18.9 + 18.9	7.69 + 7.69	21.4 + 21.4	8.15 + 8.15	23.8 + 23.8	8.63 + 8.63	24.8 + 24.8	8.83 + 8.83	26.7 + 26.7	9.26 + 9.26	32.8 + 32.8	10.9 + 10.9
		64D2	18.8 + 18.8	8.33 + 8.33	21.6 + 21.6	8.88 + 8.88	24.4 + 24.4	9.44 + 9.44	27.2 + 27.2	10 + 10	28.3 + 28.3	10.2 + 10.2	30.4 + 30.4	10.7 + 10.7	37.2 + 37.2	12.5 + 12.5
		76D2	23.7 + 23.7	9.83 + 9.83	27.3 + 27.3	10.6 + 10.6	30.8 + 30.8	11.4 + 11.4	34.3 + 34.3	12.2 + 12.2	35.7 + 35.7	12.5 + 12.5	38.5 + 38.5	13.2 + 13.2	47.3 + 47.3	15.6 + 15.6
		86D2	26.4 + 26.4	11.2 + 11.2	30.4 + 30.4	12 + 12	34.3 + 34.3	12.9 + 12.9	38.2 + 38.2	13.7 + 13.7	39.8 + 39.8	14.1 + 14.1	42.9 + 42.9	14.8 + 14.8	52.9 + 52.9	17.3 + 17.3
		112D2	40.7 + 30.6	17.5 + 12.1	46.8 + 35.3	18.7 + 13.1	52.9 + 39.8	19.9 + 14.1	58.8 + 44.2	21.2 + 15	61.2 + 46	21.7 + 15.4	65.8 + 49.4	22.8 + 16.2	80.7 + 60.2	26.9 + 19.2
		128D2	48.5 + 30.2	21.2 + 11.9	55.5 + 34.7	22.3 + 12.9	62.5 + 39.1	23.5 + 13.8	69.3 + 43.4	24.7 + 14.7	72 + 45	25.2 + 15.1	77.4 + 48.4	26.3 + 15.9	94.7 + 58.7	30.2 + 18.7
25	SPLIT	22E	12,7	5,74	14,7	6,15	16,6	6,58	18,5	7,03	19,3	7,21	20,8	7,60	25,8	9,09
		26E	16,3	7,58	18,8	8,02	21,3	8,49	23,7	8,99	24,7	9,20	26,6	9,64	n/a	n/a
		32E	18,8	8,71	21,6	9,27	24,4	9,84	27,1	10,4	28,1	10,7	30,3	11,2	n/a	n/a
		38E	23,7	10,2	27,2	11,0	30,7	11,8	34,2	12,6	35,6	13,0	38,3	13,7	n/a	n/a
		43E	26,4	11,6	30,3	12,4	34,2	13,3	38,1	14,2	39,6	14,6	42,7	15,3	52,6	18,0
		52D	32,7	15,3	37,6	16,3	42,3	17,3	47,0	18,4	48,9	18,8	52,5	19,8	n/a	n/a
		64D	37,1	17,1	42,7	18,1	48,2	19,2	53,6	20,4	55,8	20,8	60,0	21,8	n/a	n/a
		76D	48,0	21,0	55,0	22,6	62,0	24,2	68,9	25,7	71,6	26,4	77,0	27,7	n/a	n/a
		86D	53,0	23,5	60,7	25,1	68,5	26,8	76,1	28,4	79,2	29,1	85,3	30,5	104,9	35,4
		112D	70,3	30,5	81,1	32,8	91,9	35,0	102,4	37,3	106,6	38,3	114,9	40,3	n/a	n/a
		128D	78,7	34,5	90,1	36,8	101,3	39,1	112,4	41,5	116,8	42,5	125,5	44,6	n/a	n/a
		152D	91,6	42,9	104,7	45,9	117,6	48,9	130,3	52,0	135,4	53,3	145,4	56,1	n/a	n/a
	MULTI-SPLIT	52D2	16.3 + 16.3	7.58 + 7.58	18.8 + 18.8	8.02 + 8.02	21.3 + 21.3	8.49 + 8.49	23.7 + 23.7	8.99 + 8.99	24.7 + 24.7	9.2 + 9.2	26.6 + 26.6	9.64 + 9.64	n/a	n/a
		64D2	18.8 + 18.8	8.71 + 8.71	21.6 + 21.6	9.27 + 9.27	24.4 + 24.4	9.84 + 9.84	27.1 + 27.1	10.4 + 10.4	28.1 + 28.1	10.7 + 10.7	30.3 + 30.3	11.2 + 11.2	n/a	n/a
		76D2	23.7 + 23.7	10.2 + 10.2	27.2 + 27.2	11 + 11	30.7 + 30.7	11.8 + 11.8	34.2 + 34.2	12.6 + 12.6	35.6 + 35.6	13 + 13	38.3 + 38.3	13.7 + 13.7	n/a	n/a
		86D2	26.4 + 26.4	11.6 + 11.6	30.3 + 30.3	12.4 + 12.4	34.2 + 34.2	13.3 + 13.3	38.1 + 38.1	14.2 + 14.2	39.6 + 39.6	14.6 + 14.6	42.7 + 42.7	15.3 + 15.3	52.6 + 52.6	18 + 18
		112D2	40.7 + 30.5	18.2 + 12.5	46.7 + 35.1	19.5 + 13.5	52.7 + 39.6	20.7 + 14.5	58.5 + 43.9	22 + 15.5	60.9 + 45.7	22.6 + 16	65.5 + 49.1	23.7 + 16.8	n/a	n/a
		128D2	48.6 + 30.1	22 + 12.4	55.5 + 34.5	23.2 + 13.3	62.3 + 38.8	24.3 + 14.3	69.1 + 43.1	25.6 + 15.2	71.7 + 44.7	26.1 + 15.6	77.1 + 48	27.2 + 16.4	n/a	n/a
27	SPLIT	22E	12,7	6,02	14,7	6,44	16,6	6,88	18,5	7,34	19,2	7,53	20,7	7,93	n/a	n/a
		26E	16,3	7,94	18,8	8,38	21,2	8,85	23,6	9,37	24,5	9,59	26,4	10,1	n/a	n/a
		32E	18,8	9,12	21,6	9,68	24,3	10,3	27,0	10,9	28,0	11,1	30,1	11,6	n/a	n/a
		38E	n/a	n/a	27,1	11,4	30,6	12,2	34,0	13,1	35,4	13,5	38,1	14,2	n/a	n/a
		43E	n/a	n/a	30,3	12,9	34,1	13,8	38,0	14,7	39,5	15,1	42,5	15,9	n/a	n/a
		52D	32,7	16,0	37,5	17,0	42,2	18,1	46,8	19,2	48,6	19,7	52,2	20,7	n/a	n/a
		64D	37,1	17,9	42,6	19,0	48,0	20,1	53,4	21,2	55,5	21,7	59,7	22,7	n/a	n/a
		76D	n/a	n/a	54,9	23,4	61,8	25,0	68,6	26,7	71,3	27,4	76,6	28,8	n/a	n/a
		86D	n/a	n/a	60,6	26,0	68,3	27,7	75,8	29,4	78,9	30,1	84,9	31,6	104,3	36,9
		112D	70,3	32,0	81,0	34,2	91,6	36,5	102,0	38,9	106,1	40,0	114,3	42,1	n/a	n/a
		128D	79,0	36,0	90,1	38,3	101,2	40,7	112,1	43,2	116,4	44,2	124,9	46,4	n/a	n/a
		152D	n/a	n/a	104,6	47,8	117,2	50,8	129,8	54,1	134,7	55,5	144,5	58,3	n/a	n/a
	MULTI-SPLIT	52D2	16.3 + 16.3	7.94 + 7.94	18.8 + 18.8	8.38 + 8.38	21.2 + 21.2	8.85 + 8.85	23.6 + 23.6	9.37 + 9.37	24.5 + 24.5	9.59 + 9.59	26.4 + 26.4	10.1 + 10.1	n/a	n/a
		64D2	18.8 + 18.8	9.12 + 9.12	21.6 + 21.6	9.68 + 9.68	24.3 + 24.3	10.3 + 10.3	27 + 27	10.9 + 10.9	28 + 28	11.1 + 11.1	30.1 + 30.1	11.6 + 11.6	n/a	n/a
		76D2	n/a	n/a	27.1 + 27.1	11.4 + 11.4	30.6 + 30.6	12.2 + 12.2	34 + 34	13.1 + 13.1	35.4 + 35.4	13.5 + 13.5	38.1 + 38.1	14.2 + 14.2	n/a	n/a
		86D2	n/a	n/a	30.3 + 30.3	12.9 + 12.9	34.1 + 34.1	13.8 + 13.8	38 + 38	14.7 + 14.7	39.5 + 39.5	15.1 + 15.1	42.5 + 42.5	15.9 + 15.9	n/a	n/a
		112D2	n/a	n/a	46.6 + 34.9	20.3 + 14	52.5 + 39.4	21.5 + 15	58.3 + 43.7	22.9 + 16.1	60.6 + 45.4	23.5 + 16.5	65.1 + 48.7	24.7 + 17.4	n/a	n/a
		128D2	n/a	n/a	55.4 + 34.4	24 + 13.8	62.2 + 38.6	25.2 + 14.8	68.8 + 42.8	26.5 + 15.8	71.5 + 44.4	27.1 + 16.2	76.7 + 47.7	28.2 + 17	n/a	n/a

n/a: Not available

Pc (h) (kW): Total heating capacity in kW. Pi (h) (kW): Power input in kW. WB: Wet bulb.

HEATING CAPACITIES

CAPACITY PARTIALITY "STD UNITS"

ANCM / ANHM	22E	26E to 43E	52D to 86D	112D	128D	152D
Capacity steps %	0-100	0-100	0-55-100	0-35-59-100	0-38-62-100	0-30-50-100

CAPACITY PARTIALITY "MODELS D2"

ANCM / ANHM D2	52D2	64D2	76D2	86D2	112D2		128D2	
LECM /LEHM	2x26E	2x32E	2x38E	2x43E	1x68E	1x43E	1x76E	1x43E
% Total capacity - circuit 1	50	50	50	50	58	------	64	------
% Total capacity - circuit 2	50	50	50	50	------	42	------	36

CALCULATION OF COOLING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow:

MODELS	22E	26E	32E	38E	43E	52D	64D/68E	76D/76E	86D	112D	128D	152D
INDOOR AIR FLOW m^3/h	3700	5000	5450	7100	8150	9400	11700	14650	16250	20400	22700	24750

CORRECTION COEFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW:

MODELS: DEL 22E AL 152D					
	% NOMINAL AIR FLOW				
	70%	80%	90%	100%	110%
TOTAL CAPACITY	0.97	0.98	0.99	1	1.01
POWER INPUT	1.03	1.02	1.01	1	0.98

Data based on the following nominal outdoor fan air flow:

MODELS	22E	26E	32E	38E	43E	52D	64D/68E	76D/76E	86D	112D	128D	152D
OUTDOOR AIR FLOW m^3/h	6800	9750	11500	11300	11000	9750+9750	11500+11500	11300+1300	11000+11000	18100+18100	22700+18100	22700+22700

CORRETION FACTORS FOR CAPACITY AND EFFICIENCY DEPENDING ON LINES LENTGH

Data on the tables have been calculated for 7.5 m of refrigerant lines length between indoor and outdoor unit. To find out the performaces for units when the distance between indoor and outdoor unit is more than 7.5 m apply the following coefficients for capacity and EER.

	COOLING		HEATING	
	Capacity	EER	Capacity	COP
Lines length 30 m	0.98	0.99	0.95	0.96
Lines length 65 m	0.96	0.98	0.92	0.94

CORRECTION FACTORS

To find out the performances for units installed with air ducts, apply the following coefficients for capacity and consumption, over the performance tables of stadard fan units without ducts.

		VERSION	MODELS	Available static pressure Pa	Maximum ambient temperature ºC	Correction coefficient capacity Heat	Correction coefficient consumption ((1) Only FP1/FP2)
AVAILABLE STATIC PRESSURE	50Pa	STANDARD	22E-152D	**30**	-9	0.94	1.02
				50	-8	0.89	1.03
	125Pa	FP1	112D/D2-152D	**50**	-10	1	1
				75	-8	0.94	1.02
				100	-6	0.89	1.03
				125	-5	0.87	1.04
	250Pa	FP2	112D/D2-152D	**150**	-10	1.01	0.99
				200	-10	1	1
				250	-8	0.94	1.02

(1) After to apply correction coefficient consumption is needed to add the following power input to get total power consumption:

EXTRA POWER CONSUMPTION			
MODELS	**112D**	**128D**	**152D**
FP1	1.95	1.95	1
FP2	6.25	6.25	5.3

OPERATING LIMITS FOR (Heating pump)

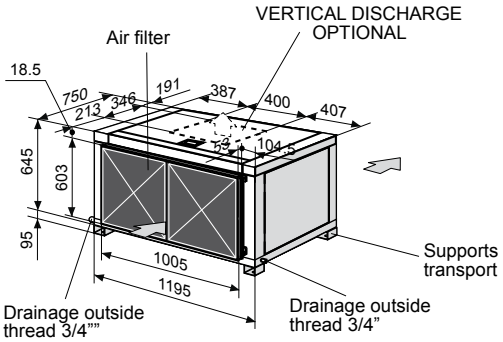
		MAXIMUM TEMPERATURE	MINIMUM TEMPERATURE
COOLING CYCLE OPERATION	INDOOR TEMPERATURE	32ºC DB / 23ºC WB	21ºC DB / 15ºC WB
	OUTDOOR TEMPERATURE	45ºC (22E-26E-32E-52D-64D) 47ºC (38E-43E-76D-86D-112D-128D-152D)	0ºC
HEATING CYCLE OPERATION	INDOOR TEMPERATURE	27ºC DB	15ºC DB
	OUTDOOR TEMPERATURE	DEPENDING ON MODELS (See tables for heating capacities)	-10ºC DB / -11ºC WB

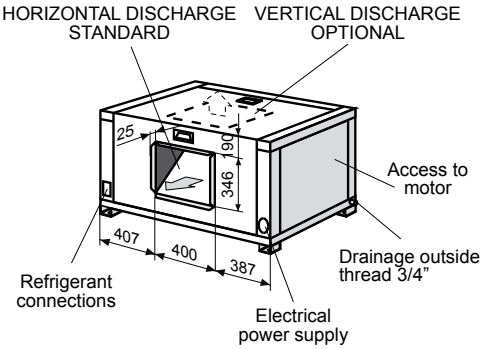
DB.- Dry bulb temperature
WB.- Wet bulb temperature

(*) With option kit low temperature 0ºC.
(**) With option kit low temperature -15ºC or long distance.

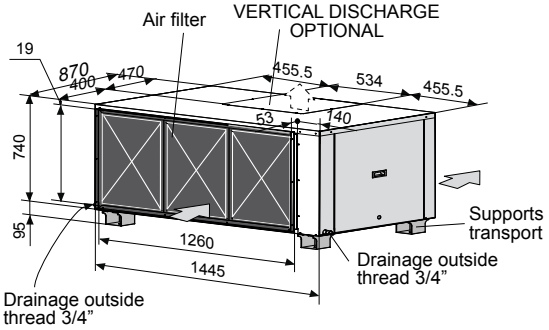
INDOOR UNITS DIMENSIONS

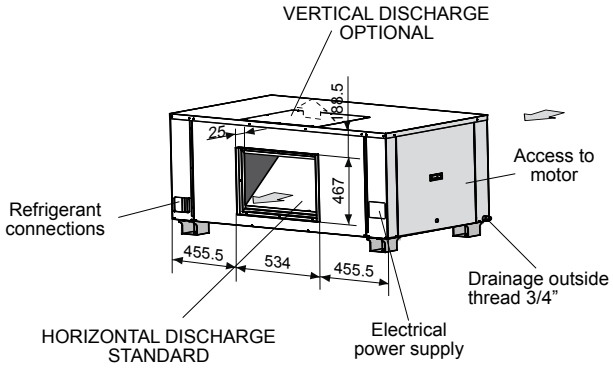
MODELS 22E - 26E - 32E



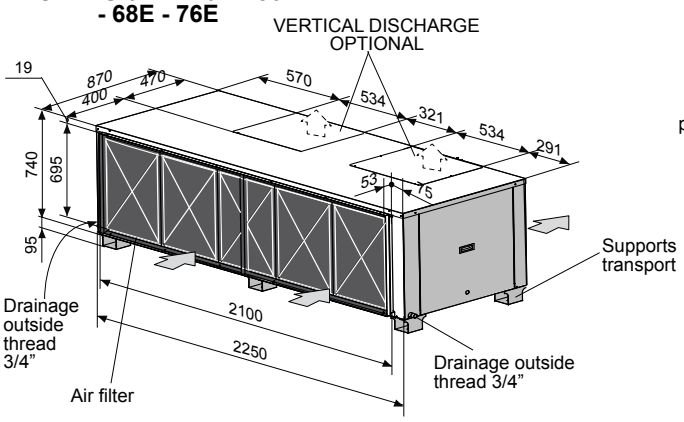


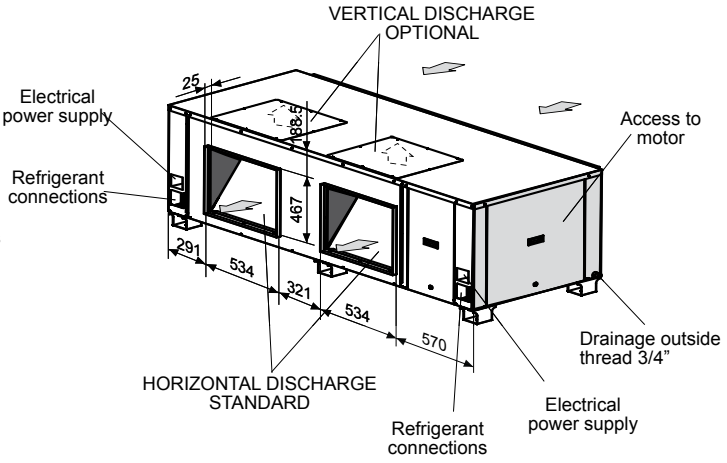
MODELS 38E - 43E - 44E - 52D



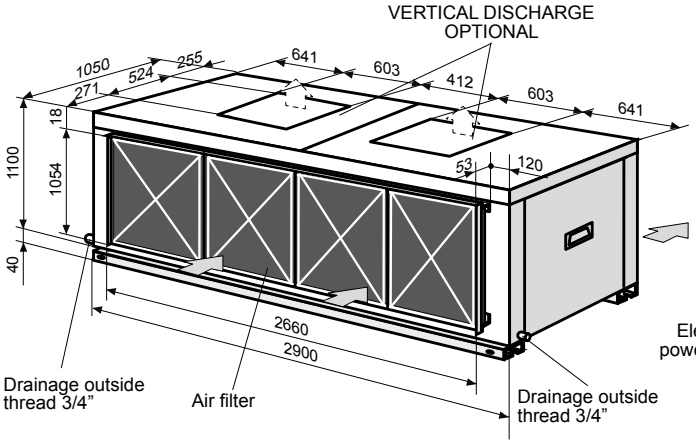


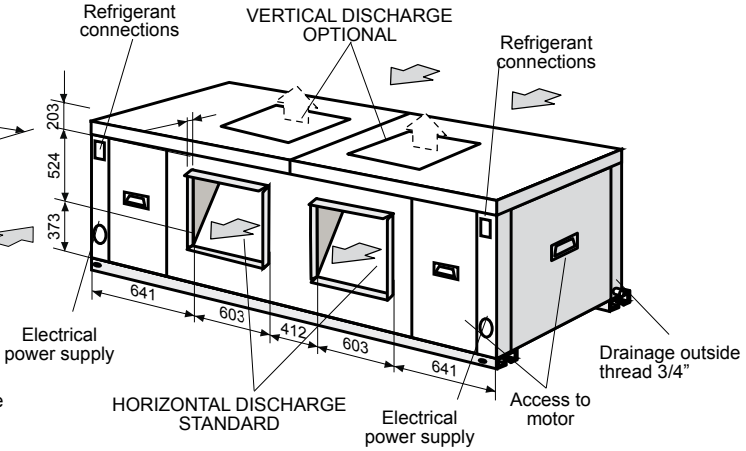
MODELS 64D - 76D - 86D
- 68E - 76E





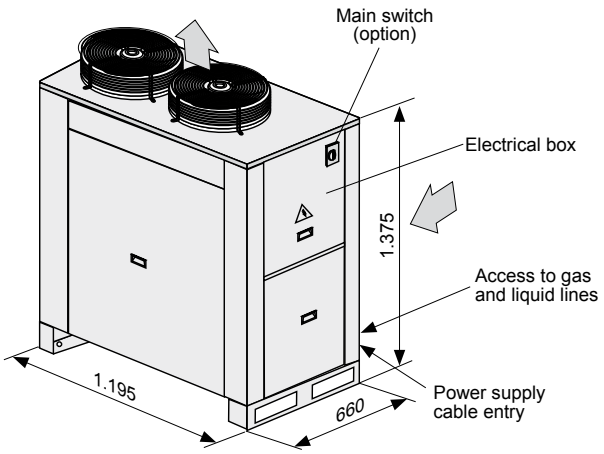
MODELS 112D-128D-152D



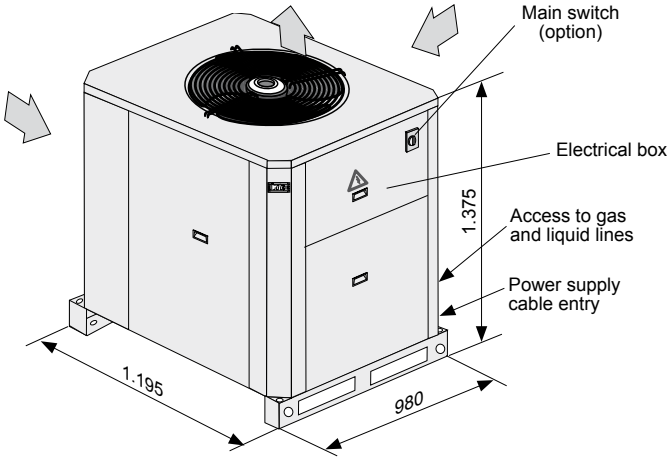


OUTDOOR DIMENSIONS

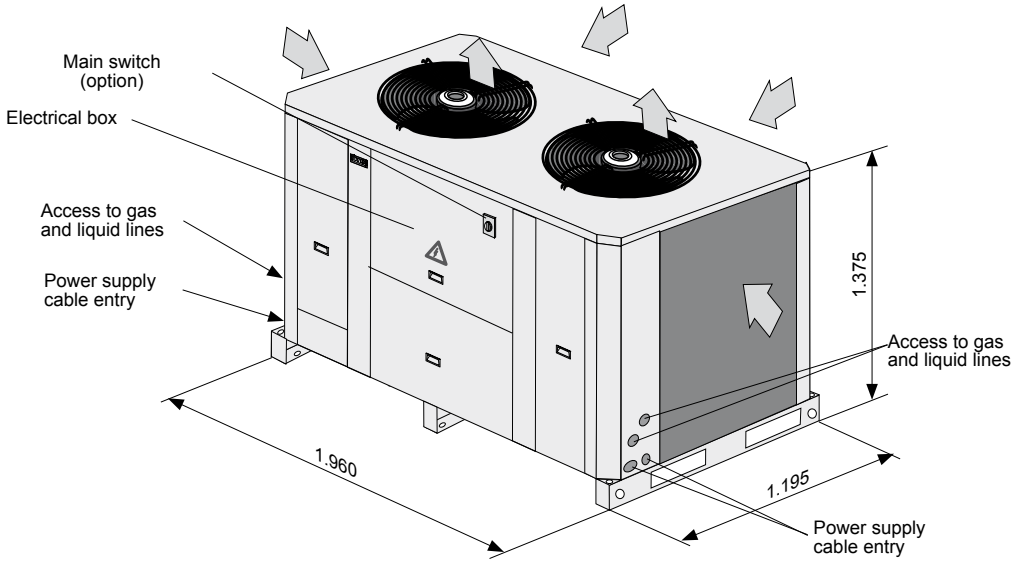
MODEL KNCM/KNHM 22E



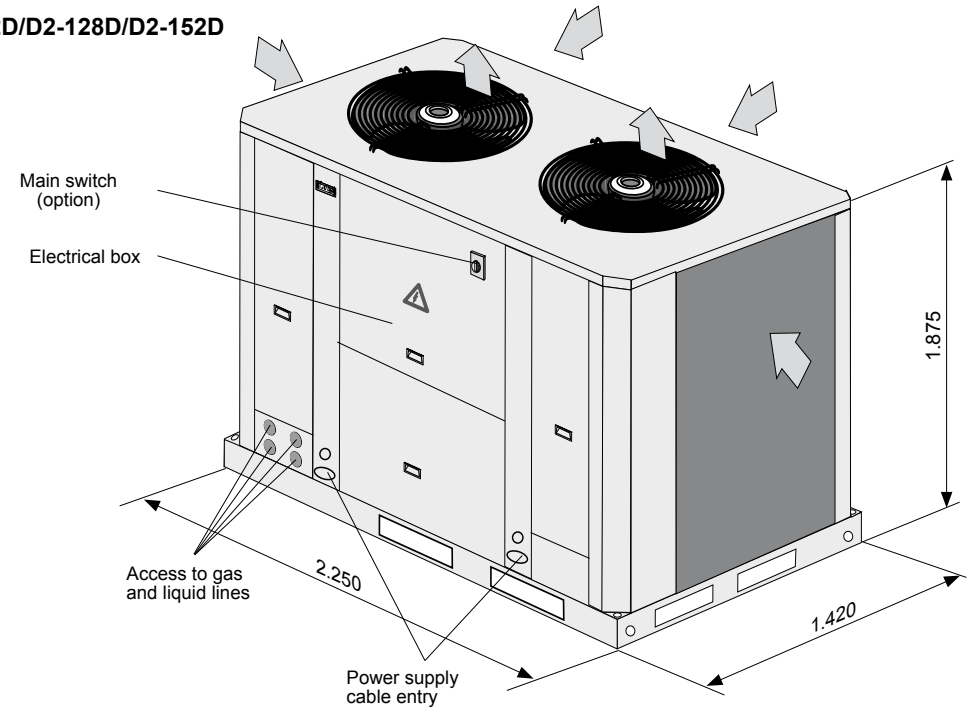
MODELS KNCM/KNHM 26E-32E-38E-43E



MODELS KNCM/KNHM 52D/D2-64D/D2-76D/D2-86D/D2

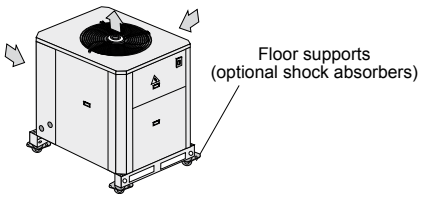


MODELS KNCM/KNHM 112D/D2-128D/D2-152D



OUTDOOR UNIT LOCATION

UNIT INSTALLED ON SHOCK ABSORBERS



- The bedplate is made up of metal channels, capable of withstanding the weight of the units.

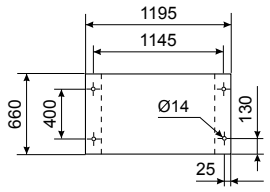
- If the unit is floor mounted, then the profiles should be isolated with shock absorbing material such as anti-vibration or pads. Keep in mind that fans rotate at approximately 850 rpm.

- The unit is able to work in normal radioelectronics conditions for commercials and residential installations. For any other conditions please consult.

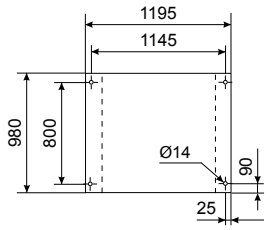
- If the outside temperature in the area where the heat pump unit is to be installed is low or the cycle functioning are too long, it may necessary to install an electrical heater, below the likely coils on the drip tray, which avoids the causing of ice in the coil during defrost cycle.

MOUNTING PLATES (OUTDOOR UNITS)

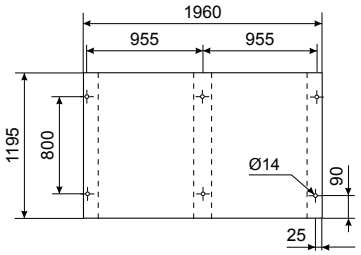
MODEL 22E



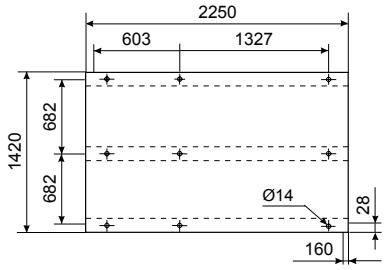
MODELS 26E-32E-38-E43E



MODELS 52D/D2-64D/D2-76D/D2-86D/D2



MODELS112D/D2-128D/D2-152D

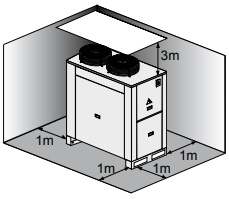


Sizes in mm.

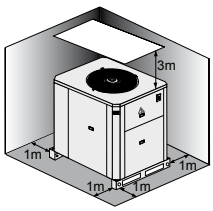
SERVICE SPACE

Space should be left free for access or servicing, to ease the installation of cables, drainage connections, electric installation and cleaning filters, as well as easy access to the unit.

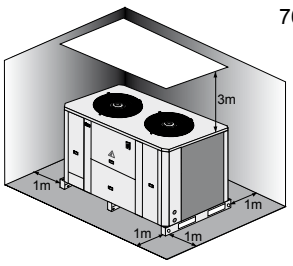
UNIDAD 22E



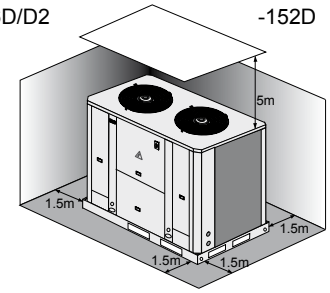
UNITS
26E-32E-38E-43E



UNITS
52D/D2-64D/D2-
76D/D2-86D/D2



UNITS
112D/D2-128D/D2
-152D

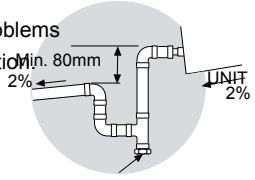


DRAINS (INDOOR UNITS)

All the indoor sections have a 3/4” steel threaded drain pipe welded to the condensation tray.

Drainage pipes will be fitted for each tray through a siphon with a height difference of 80 mm. to avoid drainage problems from the depression formed by the fans. The pipes should have an inclination of 2% to ease drainage of condensation.

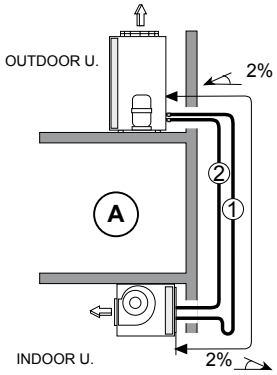
Also slightly tip the unit (2%) toward the drainage side. Check that the condensation trays are clean and free from dirt and other debris from the works and that water drains correctly.

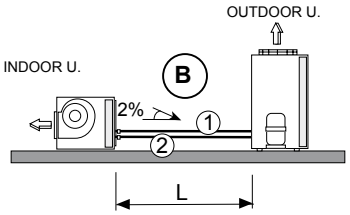


Inspection and cleaning stopper

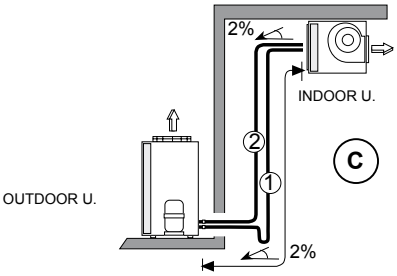
REFRIGERANT CONNECTIONS

To locate the outdoor and the indoor units, refer to the following information:





A,B,C : Unit positions
L : Total length
1 = Gas line
2 = Liquid line



POSITION A : A siphon suction must be installed on the vertical line of the gas line, and siphons must be installed every 8 meters upward. The minimum speed suction must not be below 6m/s. Maximum vertical length 16m.

POSITION B : Tip the lines toward the outdoor unit. Make special attention to line length longer than 10m, and avoid collapse on pipe lines installation.

POSITION C : Install a siphon at the base of the vertical of the gas line, no more siphons are necessary. Maximum vertical length 16m.

TABLA 1: REFRIGERANT LINES SELECTION

REFRIGERANT LINES				UNIT - MODEL											
				22E	26E	32E	38E	43E-44E	52D-D2	64D-D2	76D-D2	86D-D2	112D-D2	128D-D2	152D
Total line length. (Length refrigerant lines between indoor unit and outdoor unit.)	0 to 30 m. (Standard connection of unit)	Ø Liquid	C1	1/2”	5/8”	5/8”	5/8”	5/8”	5/8”	5/8”	5/8”	5/8”	3/4”	3/4”	3/4”
			C2	n/a	n/a	n/a	n/a	n/a	5/8”	5/8”	5/8”	5/8”	5/8”	5/8”	3/4”
		Ø Gas	C1	7/8”	1 1/8”	1 1/8”	1 3/8”	1 3/8”	1 1/8”	1 1/8”	1 3/8”	1 3/8”	1 5/8”	1 5/8”	1 5/8”
			C2	n/a	n/a	n/a	n/a	n/a	1 1/8”	1 1/8”	1 3/8”	1 3/8”	1 3/8”	1 3/8”	1 5/8”
		Max. Nr. of bends		6	12	8	18	12	12	8	18	12	12	12	12
	30 to 65 m.	Ø Liquid	C1	5/8”	5/8”	5/8”	3/4”	3/4”	5/8”	5/8”	3/4”	3/4”	7/8”	7/8”	7/8”
			C2	n/a	n/a	n/a	n/a	n/a	5/8”	5/8”	3/4”	3/4”	3/4”	3/4”	7/8”
		Ø Gas	C1	1 1/8”	1 1/8”	1 3/8”	1 3/8”	1 5/8”	1 1/8”	1 3/8”	1 3/8”	1 5/8”	1 5/8”	1 5/8”	1 5/8”
			C2	n/a	n/a	n/a	n/a	n/a	1 1/8”	1 3/8”	1 3/8”	1 5/8”	1 5/8”	1 5/8”	1 5/8”
		Max. Nr. of bends		12	18	18	18	18	18	18	18	18	12	12	12

With lines lengh between 40 amd 65m long distance option has to be selected.

NOTE: The units are supplied with welded connections. As an option, service valves are available for liquid and gas lines.

- THE GAS LINE ALWAYS MUST BE INSULATED.
- THE HORIZONTAL LINES MUST BE TIPPED AT LEAST 2% TOWARD THE OUTDOOR UNIT.
- THE MAXIMUM SPEED INSIDE LINES, SHOULD NOT BE MORE THAN 15 m/seg.

- 112D/D2 AND 128D/D2 UNIT MODELS USES DIFFERENT SIZES OF PIPE CONNECTIONS: BIG SIZE FOR CIRCUIT 1 AND SMALL SIZE FOR CIRCUIT 2.

REFRIGERANT CONNECTIONS

Indoor and outdoor units are factory pre-charged with Nitrogen (N2). The installer should remove this gas and charge the units with refrigerant R-410A shown on the following tables.

The unit is supplied as standard with welded connections. As an option, factory pre-charged kit is available. If so, TABLE 2 is the only to take care about (this option includes service valves).

TABLE 2: WEIGHT OF REFRIGERANT R-410A PER METER OF LINE

Liquid	Gas	gr/m
1/2”	7/8”	108
5/8”	1 1/8”	177
5/8”	1 3/8”	182
3/4”	1 3/8”	265
3/4”	1 5/8”	271
7/8”	1 5/8”	374

TABLE 3.1.: CHARGE OF REFRIGERANT

Charge of refrigerant (gr) R-410A for 0 meters of line KNCM + LECM (Cooling only)												
	22E	**26E**	**32E**	**38E**	**43E**	**52D**	**64D**	**76D**	**86D**	**112D**	**128D**	**152D**
C1	4655	5315	5700	7950	9745	6250	5775	7870	9800	12130	15585	15500
C2	------	------	------	------	------	6250	5775	7870	9800	10450	10045	15400

Charge of refrigerant (gr) R-410A for 0 meters of line KNHM + LEHM (Heat pump)												
	22E	**26E**	**32E**	**38E**	**43E**	**52D**	**64D**	**76D**	**86D**	**112D**	**128D**	**152D**
C1	4900	5900	6330	8835	10830	6940	6420	8740	10900	13480	17315	17230
C2	------	------	------	------	------	6940	6420	8740	10900	11600	11160	17100

TABLE 3.2.: CHARGE OF REFRIGERANT FOR MULTI-SPLIT SYSTEM

Charge of refrigerant (gr) R-410A for 0 meters of line KNCM + 2xLECM (Cooling only)						
	52D2	**64D2**	**76D2**	**86D2**	**112D2**	**128D2**
C1	6250	5775	7870	9800	12130	15585
C2	6250	5775	7870	9800	10450	10045

Charge of refrigerant (gr) R-410A for 0 meters of line KNHM + 2xLEHM (Heat pump)						
	52D2	**64D2**	**76D2**	**86D2**	**112D2**	**128D2**
C1	6940	6420	8740	10900	13480	17315
C2	6940	6420	8740	10900	11600	11160

C1: Circuit 1. **C2: Circuit 2.**

- 112D/D2 AND 128D/D2 UNIT MODELS USES DIFFERENT SIZES OF PIPE CONNECTIONS: BIG SIZE FOR CIRCUIT 1 AND SMALL SIZE FOR CIRCUIT 2.

CHARGE OF REFRIGERANT FOR THE SET:

EXAMPLE:

To install a KNHM 32E + LEHM 32E set, with 22m refrigerant line length between outdoor and indoor unit, then the refrigerant charge must be calculated as follow:

1ST The TABLE 1 shows, that for 22m of line length between indoor unit and outdoor unit, the sline sizes are: liquid 5/8” and gas 1 1/8”.

2nd TABLE 2 shows, for line sizes of 5/8”-1 1/8”, the charge per meter line is: 177 gr/m x 22m = 3894 gr.

3rd TABLE 3.1 shows, cahrge of refrigerant for the set with 0m of line length is: 6330 gr.

4th To determine the carge of the set:

Add charge of the refrigerant lines + charge of refrigerant indoor unit and outdoor unit.

Total charge for the set: 3894 + 6330 = 10224 gr

Note: If the outdoor unit includes factory pre-charged kit, only take care of weight of refrigerant per meter of line in TABLE 2.

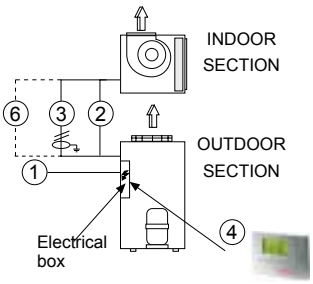
ELECTRICAL CONNECTION

- BEFORE MAKING ANY ELECTRICAL CONNECTIONS, BE SURE THAT ALL CIRCUIT BREAKERS ARE OPEN.
- IN ORDER TO CARRY OUT THE ELECTRICAL CONNECTIONS, FOLLOW THE ELECTRICAL DIAGRAM SUPPLIED WITH THE UNIT.

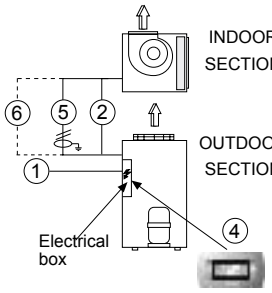
UNITS WITHOUT FREE-COOLING

① Power supply.
② Indoor motor fan electrical connection.
③ Indoor coil sensor. (STD and D2 Only).
④ Terminal connection (see electrical connection for the controller).
⑤ Discharge sensor (C50 Only).
⑥ Connection BE (option).

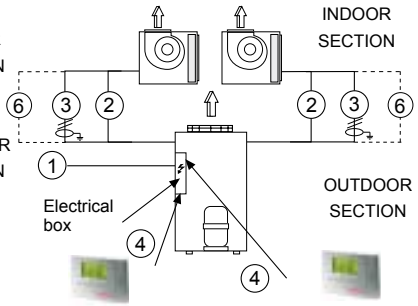
STANDARD VERSIONS



C50 VERSIONS



D2 VERSIONS



VERSIONS: STANDARD + C50							
	Supply without BE	Supply with BE	Supply FM	Indoor coil sensor	Discharge sensor C50	Supply BE (mm²)	
	1	1"	2	3	5	6 1 STAGE	6 2 STAGES
22E	5 x 4 mm²	5 x 10 mm²	4 x 1.5 mm²	2 x 1 mm² shielded	2 x 1 mm² shielded	4 x 4 + 3 x 1.5 mm²	
26E	5 x 6 mm²	5 x 16 mm²					
32E	5 x 6 mm²	5 x 16 mm²					
38E	5 x 6 mm²	5 x 16 mm²					
43E	5 x 10 mm²	5 x 16 mm²					
52D	5 x 16 mm²	3 x 25 + 2 x 16 mm²		4 x 1 mm² shielded			4 x 6 + 4 x 1.5 mm²
64D	5 x 16 mm²	3 x 35 + 2 x 16 mm²				4 x 6 + 3 x 1.5 mm²	4 x 10 + 4 x 1.5 mm²
76D	3 x 25 + 2 x 16 mm²	3 x 35 + 2 x 16 mm²					
86D	3 x 25 + 2 x 16 mm²	3 x 50 + 2 x 25 mm²					
112D	3 x 35 + 2 x 16 mm²	3 x 70 + 2 x 35 mm²	4 x 2.5 mm²			4 x 16 + 3 x 1.5 mm²	40 Kw: 2x (4 x 6) mm²+ 4 x 1.5 mm²
128D	3 x 35 + 2 x 16 mm²	3 x 70 + 2 x 35 mm²					60Kw: 2x (4 x 10) mm²+ 4 x 1.5 mm²
152D	3 x 50 + 2 x 25 mm²	3 x 70 + 2 x 35 mm²					

VERSION: D2							
	Supply without BE	Supply with BE	Supply FM	Indoor coil sensor	Discharge sensor	Supply BE (mm²)	
	1	1"	2	3	5	6 1 STAGE	6 2 STAGES
52D2	5 x 16 mm²	3 x 35 + 2 x 16 mm²	2 x (4 x 1.5) mm²	2x (2 x 1 mm² shielded)		2 x (4 x 4 + 3 x 1.5) mm²	
64D2	5 x 16 mm²	3 x 35 + 2 x 16 mm²	2 x (4 x 1.5) mm²				
76D2	3 x 25 + 2 x 16 mm²	3 x 50 + 2 x 25 mm²	2 x (4 x 1.5) mm²				
86D2	3 x 25 + 2 x 16 mm²	3 x 50 + 2 x 25 mm²	2 x (4 x 2.5) mm²				
112D2	3 x 35 + 2 x 16 mm²	3 x 70 + 2 x 35 mm²	2 x (4 x 2.5) mm²			(4 x 6 + 3 x 1.5) + (4 x 4 + 3 x 1.5) mm²	(4 x 10 + 4 x 1.5) + (4 x 4 + 4 x 1.5) mm²
128D2	3 x 35 + 2 x 16 mm²	3 x 70 + 2 x 35 mm²	2 x (4 x 2.5) mm²				

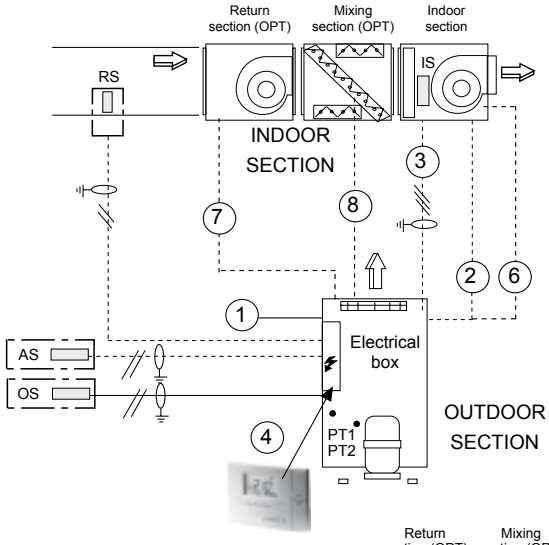
Note: For units with two circuits, indoor coil sensor IS1, must be connected with circuit C1 and indoor coil sensor IS2 with circuit C2, otherwise the protection will not work correctly.

The length of all cables for connection with indoor unit must be less than 65 m.

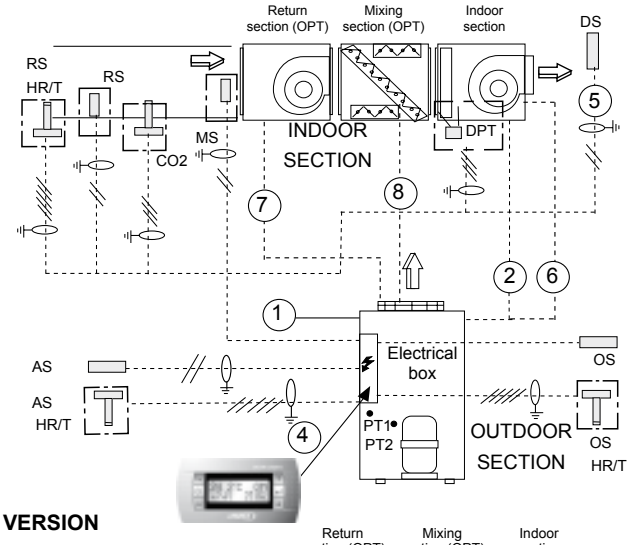
ELECTRICAL CONNECTION

UNITS WITH FREE-COOLING

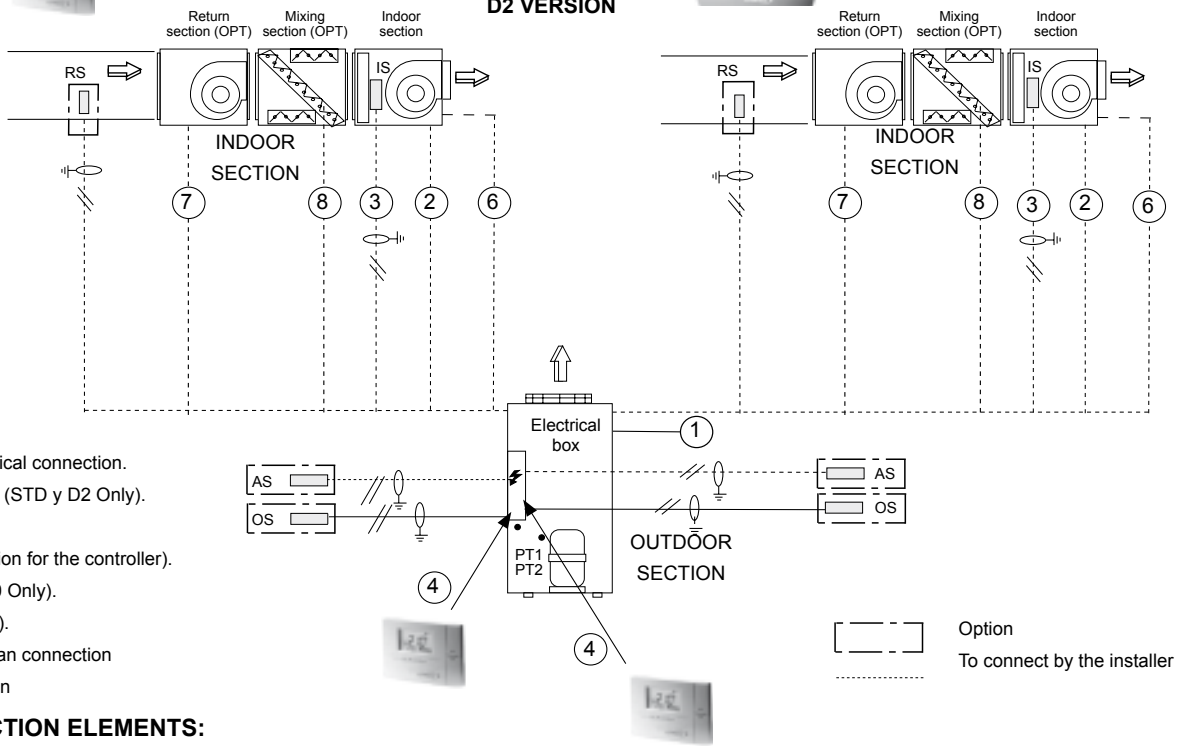
STANDARD VESION



C50 VERSION



D2 VERSION



1. Electrical supply.
2. Indoor motor fan electrical connection.
3. Liquid-gas pipe sensor (STD y D2 Only).
4. Terminal connection
   (see electrical connection for the controller).
5. Discharge sensor (C50 Only).
6. Connection BE (option).
7. Exhaust fan or return fan connection
8. Free-cooling connection

Option

To connect by the installer

CONTROL CONNECTION ELEMENTS:

COMPONENTS VERSIONS	STANDARD	C50	D2	No. OF X SECTION CABLES
DS (Discharge sensor).		STANDARD		2 x 1 mm² (shielded)
OS (Outdoor sensor).	OPTION	STANDARD	OPTION	2 x 1 mm² (shielded)
AS (Remote ambient sensor).	OPTION	STANDARD	OPTION	2 x 1 mm² (shielded)
RS (Duct sensor). Replaces AS.	OPTION	OPTION	OPTION	2 x 1 mm² (shielded)
IS (Liquid-gas pipe sensor).	STANDARD		STANDARD	2 x 1 mm² (shielded)
MS (Duct sensor for thermostatic and enthalpic free cooling).		OPTION		2 x 1 mm² (shielded)
RS HR/T (Remote duct sensor) for enthalpic free cooling.		OPTION		5 x 1 mm² (shielded)
CO_2 (CO_2 Air quality probe).		OPTION		3 x 1 mm² (shielded)
DP (Differential air pressure transducer).		OPTION		3 x 1 mm² (shielded)
OS HR/T (Outdoor sensor) for enthalpic free-cooling.		OPTION		5 x 1 mm² (shielded)
AS HR/T (Remote ambient sensor) for enthalpic free-cooling.		OPTION		5 x 1 mm² (shielded)

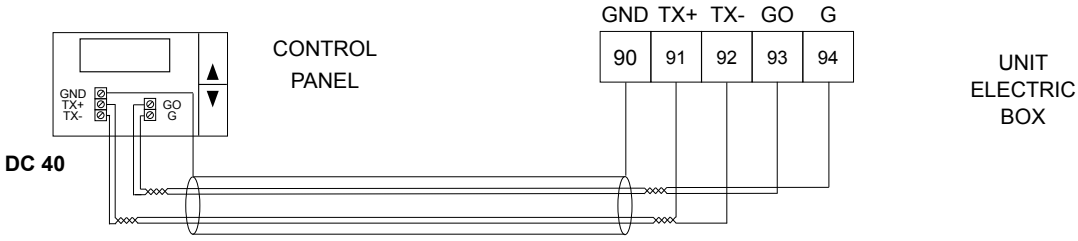
	22E	26 to 43E	52D/D2	64D/D2 a 86D/D2	112D/D2-128D/D2-152D
Ventilador de extracción	3x 1,5 mm²			4 x 1,5 mm²	
Ventilador de retorno				4 x 1,5 mm²	4 x 2,5 mm²

VERSION	
STD ó D2	**5 x 1,5 mm²**
C50	**7 x 1,5 mm²**

VOLTAGE OPERATING LIMITS: 342-462V

ELECTRICAL CONNECTION

DC 40 THERMOSTAT, ELECTRICAL CONNECTION

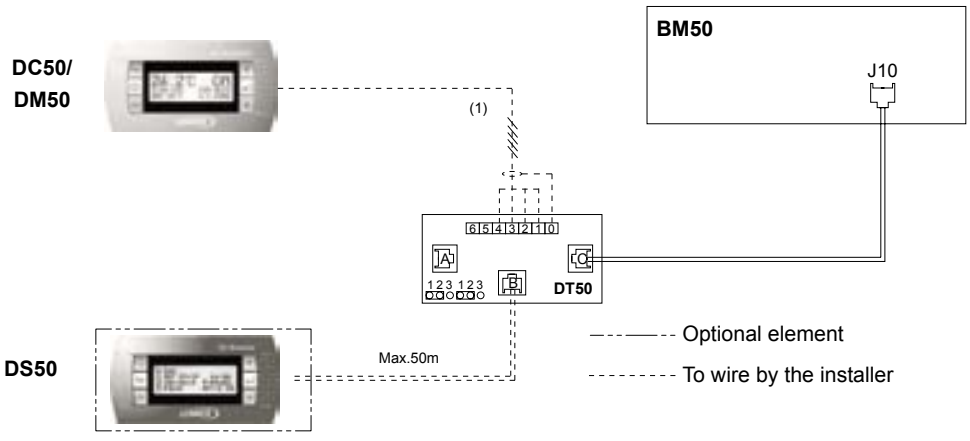


2 x Shielded twisted pairs AWG 20. 100 m maximum.
1x Shielded twisted pair AWG20 + 2 x 1,5 mm. 200m maximum.

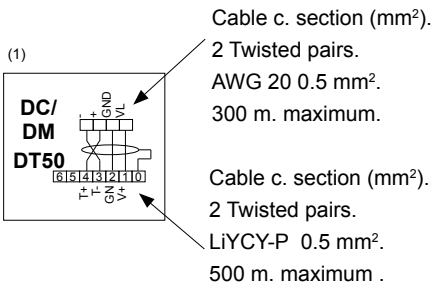
IMPORTANT
THE SHIELDED CONNECTION CABLE BETWEEN THE CONTROL PANEL AND THE UNIT MUST BE SEPARATE FROM ANY OTHER TYPE OF ELECTRICAL WIRING. CONNECT IT TO THE ELECTRIC BOX LOCATED IN THE OUTDOOR UNIT.

NOTES:
- For securing and connecting the Control Panel, consult the control Panel Manual supplied with the unit.
- Connection between DC40 and unit must be done with shielded twisted pair cables (where the screen are connected to the control and to the unit electrical box)
- The Tx+ and Tx- polarity must strictly agree with the electrical diagram supplied with the unit.

TERMINAL COMFORT AND SERVICE CONNECTION (CONTROL CLIMATIC 50)



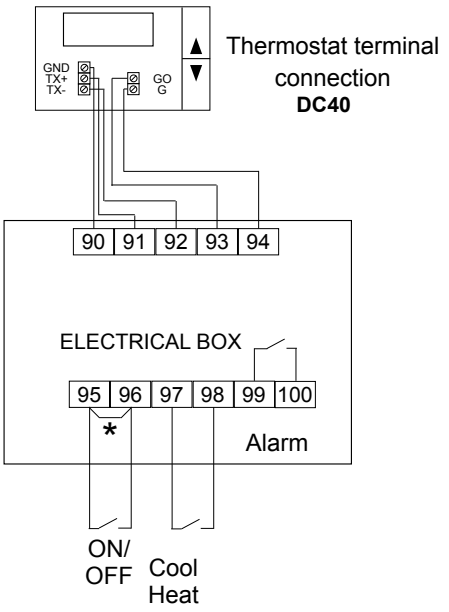
NOTE: Jumpers in the expansion module BE50 have to be connected between 1 and 2 in order to get power supply available to all connectors



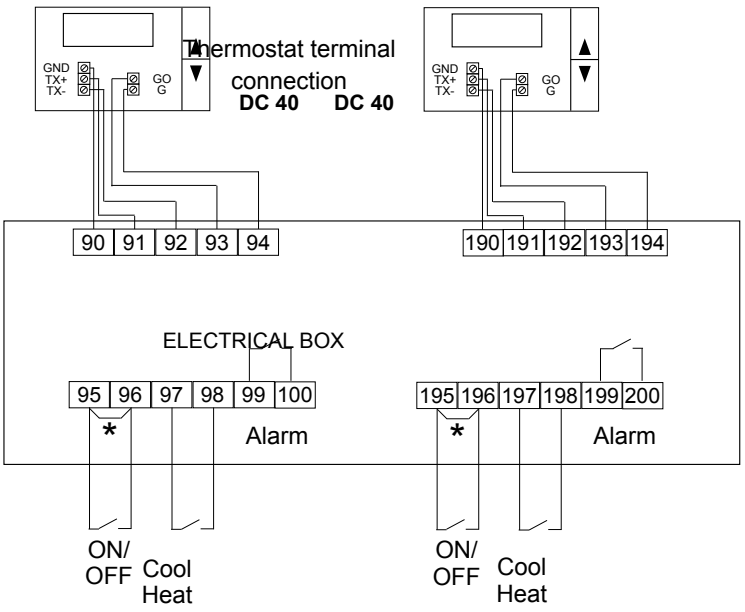
ELECTRICAL CONNECTION “REMOTE SIGNALS”

The electrical box of all the range, lets you obtain the following functions:
- Remote ON / OFF.
- One alarm signal.
- The change winter/summer remote .(Standard and D2 units).

STANDARD VERSION

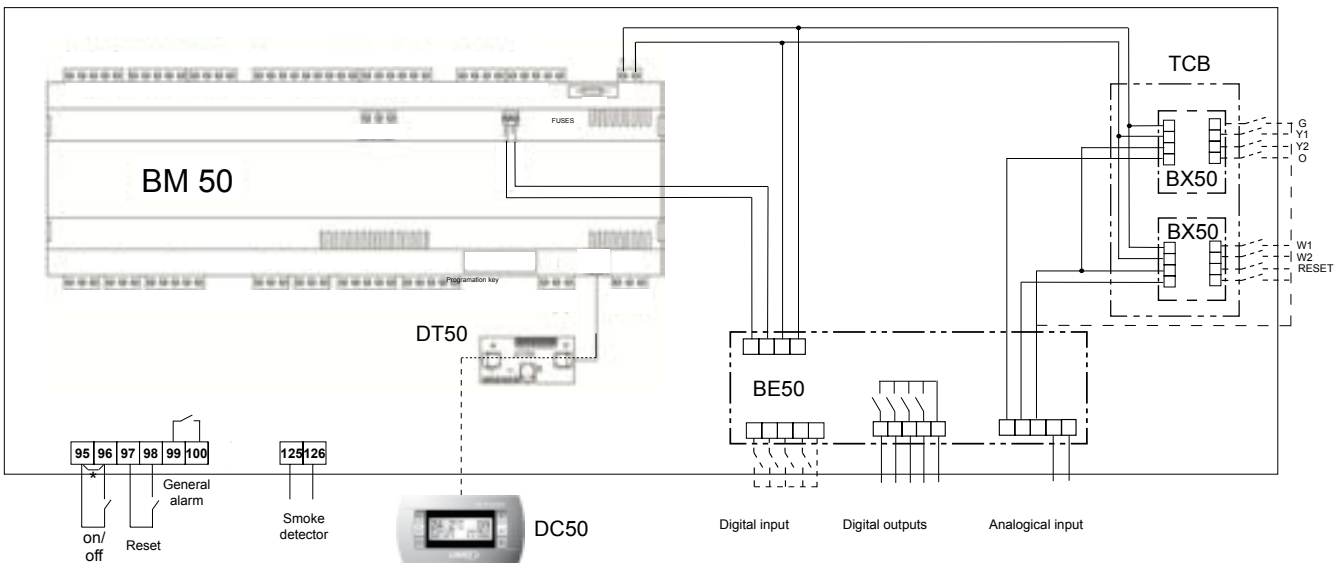


D2 VERSION



* Remove link for remote ON/OFF operation.

VERSIÓN C50



* Remove link for remote ON/OFF operation.

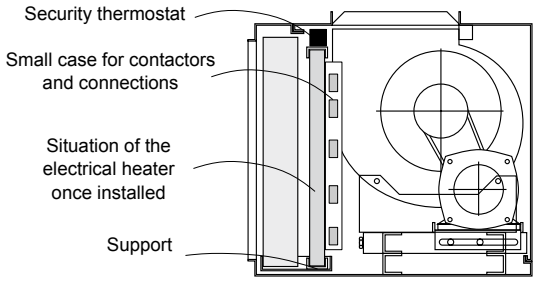
OPTIONS

1.- AUXILIARY HEATING

ELECTRICAL HEATER

Made of aligned shielded elements, supplied mounted on the unit as drawing shows.
All the range has three security elements: 2 security thermostats, one automatic, other manual reset, and an air flow security pressure switch, which makes the electrical heater stop when air flow is not enough.
The electrical heater must be supplied from the unit's electrical box.
An small case on the electrical heater protects contactors and electrical connections.

Expansion PCB (Only D2 version) has to be selected with electrical heater for LECM/LEHM 68E-76E units and without free-cooling.

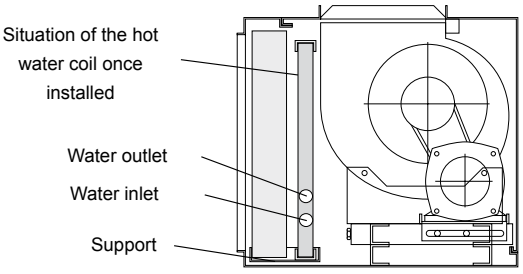


MODELS LECM/LEHM (INDOOR UNIT)	22E-26E-32E-38E-43E	52D	64D-76D 86D	112D-128D 152D
WEIGTH kg (*)	10	20	64D y 76D=20; 86D=30	45

(*) Add to the unit´s weigth.

HOT WATER COIL

The hot water coil consists of a refrigerating coil made of copper tubing, with aluminum swirl fins with inlet and outlet water connections.
it is supplied mounted inside the unit as picture shows.



MODELS LECM/LEHM INDOOR UNIT (CAPACITY W)	DIFFERENCE IN TEMPERATURES BETWEEN HOT WATER INTAKE AND THE AIR WHICH ENTERS THE COIL 50ºC	60ºC	70ºC	WATER FLOW L/H	WATER COIL PRESSURE DROP kPa	AIR PRESSURE DROP Pa Nominal air flow	Minimum air flow	Nr ROWS	WEIGHT Kg	WATER OUTLET DIAMETER Inches
22E	24	29	34	2100	36	17	13	2	10	3/4”
26E	29	35	41	2500	54	27	21	2	10	3/4”
32E	30	37	43	2600	57	31	24	2	10	3/4”
38E	42	51	60	3700	40	25	20	2	12	1”
43E	46	56	65	4000	47	31	24	2	16	1”
52D	50	60	71	4400	56	39	30	2	20	1”
64D/68E	69	83	98	6000	30	24	18	2	20	1 1/4”
76D/76E	79	96	112	6900	39	34	26	2	24	1 1/4”
86D	86	104	122	7500	46	43	32	2	30	1 1/4”
112D	129	156	183	11300	42	24	19	2	40	1 1/2”
128D	138	167	195	12100	52	30	22	2	40	1 1/2”
152D	146	175	206	12700	58	33	25	2	40	1 1/2”

PROTECTION AGAINST FREEZING:
• Use glycol water. GLYCOL IS THE ONLY EFFECTIVE PROTECTION AGAINST FREEZING.
This kit includes a security thermostat with a probe located inside the hot water coil. When the temperature is below 4ºC, the unit will stop in order to protect hot water coil and to prevent unit working with very low evaporating temperatures.
Five wires between indoor and outdoor unit have to be added with this option.
Hot water coil includes regulation valve:

- ON/OFF for standard and D2 version.
- Proportional (0-10V), for C50 version.

You must ensure that the manual or automatic air vents have been installed on all high points in the system. In order to drain the system check that all the drain cocks have been installed on all low points of the system.

A HEATING COIL FROZEN DUE TO LOW AMBIENT CONDITIONS IS NOT COVERED BY THE WARRANTY.

2.- ARCHITECTURAL INTEGRATION

KIT LONG DISTANCE REFRIGERANT CONNECTION (HEAT PUMP UNITS) (For cooling only units see 5 section).

It allows refrigerant connection between indoor and outdoor unit until 65m.

This option includes a solenoid valve in the liquid line and suction receiver which size is bigger than standard one to prevent liquid return in the compressor. Heat pump units. includes cranck case heater as standard.

KIT HIGH PRESSURE 125Pa FP1 (Only available for outdoor units 112D/D2-128D/D2-152D)

Units with high pressure fans.

Available static pressure up to 125 Pa.

MODELS KNCM/HM	112D/D2	128D/D2	152D
WEIGHTS Kg (*)	40	40	40

(*) Add to the unit´s weight.

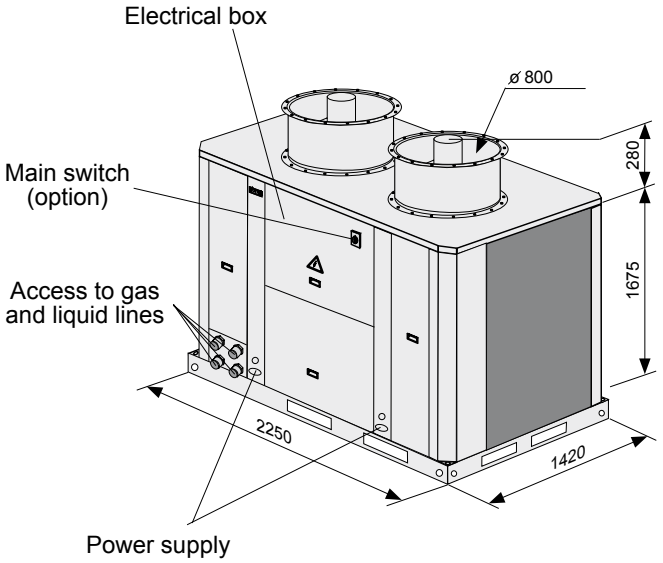
KIT HIGH PRESSURE 250Pa FP2 (Only available for outdoor units 112D/D2-128D/D2-152D)

Units with high pressure fans.

Available static pressure up to 250 Pa.

MODELS KNCM/HM	112D/D2	128D/D2	152D
WEIGHTS Kg (*)	40	40	40

(*) Add to the unit´s weight.



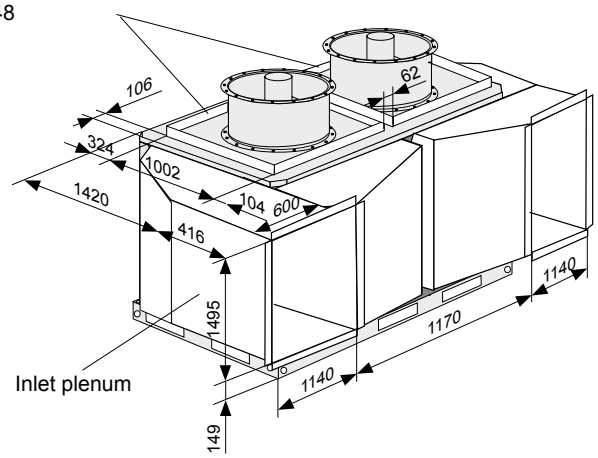
INLET PLENUM (FP1 and FP2 unit versions only)

It is an accesory for adapting the condenser air intake to accept a duct.

SQUARE DISCHARGE DUCT (FP1 and FP2 unit versions only)

It is formed by 1 or 2 square frames, for adapting discharge air from the outdoor unit to a square duct.

Square discharge duct 848x848



AUXILIARY DRIP TRAY (Only available for heat pump units with FP1/FP2 option)

Heat pump outdoor units during defrost cycle produce a lot of quantity of water. You can use an auxiliary drip tray under the unit in order to get all the defrost water and take it where you decided.

KIT MORE STATIC PRESSURE OF AIR DISCHARGE (indoor unit)

It is an specific fan to obtain more available static pressure up to 400 Pa for indoor unit. See air flow data section for optional fan performances.

MODELS LECM/LEHM (INDOOR UNIT)	22E	26E	32E	38E	43E	52D	68E-64D	76E-76D	86D	112D	128D	152D
WEIGTH kg (*)	6.50	3.00	3.00	5.00	0	3.00	3.00	3.00	13.00	13.00	8.00	8.00

(*) Add to the standard unit´s weigths.

VERTICAL DISCHARGE FOR INDOOR UNIT

Accessories to make indoor air discharge become vertical.

OUTDOOR INSTALLATION INDOOR UNIT

Accessories to install indoor unit outside.

3.- INDOOR AIR QUALITY.

DIRTY FILTER INDICATION

To be installed on the indoor unit.
Based on an air flow security pressure switch, which detects the available static pressure through the air filter.
In case the filters are dirty, the detector is activated showing an alarm, only if the fan is ON.
For standard and D2 version it is only a dirty filter indication signal and for C50 version an almarm in the display which indicates dirty filters, unit without filters or belts damaged.

HIGH EFFICIENCY AIR FILTER G4

This kit includes an high efficiency air filter G4.

4.- SAFETY

MAIN SWITCH

The main switch is located on the access panel to the electrical box of the outdoor unit.
The main switch is equipped with a clutch gadget, which allows opening the panel of the electrical box, when it is on OFF position.
Verify that the main switch is large enough to handle the current for the unit if electric heaters are installed.

PHASE SEQUENCER

The phase sequencer is located in the electrical box in the outdoor section, thus assuring that the unit will not begin operation while the phase connection of the compressor is not correct. Should this occur, then just switch two phase connections.
It assures tha unit will not begin operation on detection of overvoltage, undervoltage, phase reversal fault or phase failure.

SOFT STARTER -COMPRESSOR STARTING CURRENT CONSTRAINED, (outdoor unit)

It is an electronic element, which reduces the peak compressor starting current up to 40% (see pages of electrical data without soft starter).

MODELS (OUTDOOR UNIT)	WEIGTH (*)
22E-26E-32E-38E-43E	3
52D/D2-64D/D2-76D/D2-86D/ D2-112D/D2	6
128D/D2-152D/D2	9

(*) Add to the unit´s weight

SMOKE DETECTOR

Located in the indoor unit, after the filter. Fotoelectric head of the smoke detector can detect any type of smoke. In this case it would initiate shutdown sequence the unit, fully close the return air damper and open the fresh air damper up to 100% and send an alarm signal to the unit.

CONDENSER COIL GUARD (outdoor unit).

The condenser coil progection grill prevents light damage to the coil when shipping and when installed. It can´t protect against very heavy impacts.

5.- COMFORT PRECISION AND ENERGY EFFICIENCY

LOW AMBIENT KIT 0º (COOLING UNITS ONLY, STANDARD FOR HEAT PUMP)

It is a crank case heater for the compressor which allows operation cooling operation until 0ºC of outdoor temperature.
The purpose of the crank case heater is while the compressor is stopped, so that it can be properly lubricated when starts again.

LOW AMBIENT KIT -15ºC OR LONG DISTANCE CONNECTION (COOLING ONLY UNITS)

With this option the unit will be able to operate in cooling mode with outdoor temperatures until -15ºC and also with this option refrigerant lines distance between indoor and outdoor unit can be up to 65m.
This option includes a solenoid valve in the liquid line and suction receiver which size is bigger than standard one to prevent liquid return in the compressor, cranck case heater to keep the oil in the compressor at the optimal temperature and proportional condensing pressure control to regulate condensing temperature though speed fan regulation.

KIT LOW NOISE.

Each compressor is fitted with a compressor acoustic jacket this provides attenuation of the compressor noise that radiates from the unit.

OPTIONS

REMOTE AMBIENT SENSOR AND REMOTE DUCT SENSOR

Standard or D2 version, are available as option. These sensors may be used in conjunction with remote controller or allowing the controller to be mounted in a room away from the conditioned space.

C50 version: Ambient sensor is included as standard and only remote duct sensor is available as option.

- REMOTE DUCT SENSOR: The sensor will be located in the return-air duct, detecting the air temperature of the air being air-conditioned.
- REMOTE AMBIENT SENSOR: The sensor will be placed in the area to be air-conditioned. Of series in the standard version.

DYNAMIC SET POINT.

It changes cooling and heating set point according ambient temperature (an extra sensor must be installed).

C50 Version: standard (See User Manual for the control)

Standard version:

1.-It includes outdoor sensor and adjustment of parameters.

2.-Not necessary with free-cooling option because outdoor sensor is included. In case you select free-cooling and desire dynamic set point, adjust the parameters. (See User Manual for the control)

HOT GAS BY-PASS VALVE (COOLING ONLY UNITS

Hot gas by-pass valve is an option that serves as extra stage of capacy control of the evaporator, with evaporating temperatures below +2ºC, by injecting hot gas from high pressure side to the low pressure side, after the expansion valve.

It can reduce the capacity of the unit until 80%.

HGBP valve has to be adjusted in the installation to regulate unit capacity, taking into account evaporating temperature in the compressor can not be below -2ºC to prevent ice formming in the indoor coil.

The protection of indoor coil sensor is disabled by HGBP valve action.

RUBBER ANTI-VIBRATION MOUNTS (outdoor unit)

To install under the unit to avoid transmission of vibrations to the floor where unit is installed, while unit is operating.

They are designed for low sensibility zones to vibration

SPRING ANTI-VIBRATION MOUNTS (Only 112-152D units) (outdoor unit)

To install under the unit to avoid transmission of vibrations to the floor where unit is installed, while unit is operating.

They are designed for medium and high sensibility zones to vibration.

FREE COOLING

1.- DEFINITION
FREE-COOLING is a saving system in the Cooling cycle, this makes the unit take air from the outside to take advantage of its energy, this system acting as a first cold stage.
Free-cooling allows as well fres air managment.

2.- TYPES OF FREE COOLING
According to outside air parameters which have to be measured, the types are:
- Thermostatic free cooling:
Measures and compares the outside air temperature with the temperature of the room that has to be conditioned.
- Enthalpic free cooling:
Measures and compares the outside air enthalpy with the return air enthalpy from the room that has to be conditioned.
The enthalpy measures temperature and humidity of air.
With C50 units version and enthalpic free cooling as option, BE50 expansion module is needed too.

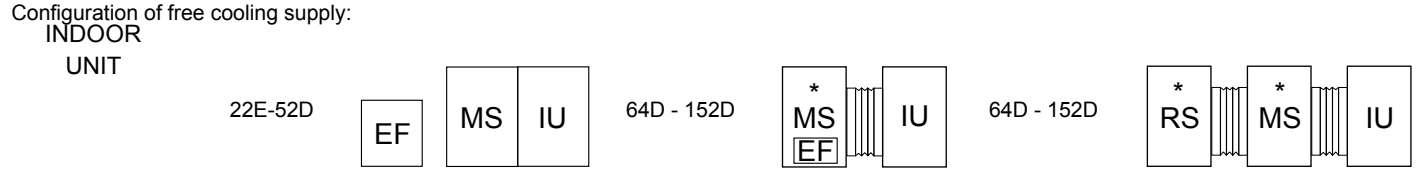
3.- COMPONENTS OF FREE COOLING
The main components are:
-Accessories: Their function is to detect the outside and indoor air conditions through the probes, deciding when free cooling should operate.
-The servomotor and system transmission: They manage the opening and closing of dampers proportionally.
- Adjustable dampers.
-Mixing section: Where fresh and return air are mixed.
Also a return fan is available, which applies an additional static pressure on the suction and return air duct. (models 64D to 152D).

For more details about components and drawings see pages 38 to 45.

4.- OPERATION
The control compares the values of temperature/enthalpy between outside air and room air through the probes, if it is a negative difference and the security elements allow (discharge temperature probes) then the control acts over the servomotor, which produces the opening of the outside damper and close the return one, entering cool outside air to the room.
The damper regulation is proportional.
If indoor air demand is not great, could be enough only the free cooling to condition the room, if the air demand is greater it is possible need the free cooling working and the unit working on different cooling mode stages.

5.- SUPPLY AND INSTALLATION
The free cooling option can be delivered as a packaged system or as a split system.
Mixing section will be delivered with the unit for models 22E to 52D and as split system for the rest of the models.
Return fan section will be delivered with the unit.

Configuration of free cooling supply:



EF: Exhaust fan.
MS: Mixing section.
RS: Return fan section.

IU: Indoor unit.
Flexible duct to install by the customer.

* Mixing and return fan section can be near or not.

6.- EXHAUST FAN
Elimination of the air overpressure in the room

LECM/HM (INDOOR.)	22E	26E	32E	38E	43E	52D	52D2	64D	64D2	76D	76D2	86D	86D2	112D	112D2	128D	128D2	152D
WEIGTHTS Kg (*)	25	25	25	28	28	28	25+25	37	25+25	37	28+28	37	28+28	65	37+28	65	37+28	65

(*) Add to the unit´s weight + freecooling, without return fan.

With C50 units version and exhaust fan as option, BE50 expansion module is needed too.

7.-RETURN FAN (Only for indoor units 64D to 152D).
If an extra static pressure is required on the return airduct, the fee-cooling should add a return fan section which includes a discharge damper.
The operation dampers, free-cooling and return fan is: as much as the air intake damper opens, that much the by-pass damper closes and the dischage air damper opens, for the air return section.
This means that at the same time reach a free cooled of the room, the discharge of return air and the air on the room gets removable.

FREE COOLING

9.- SELECTION OF THE UNIT AND FREE COOLING SYSTEM

There are different types of free cooling system, different possibilities of dampers installations, and it could be supplied mounted or loose.
In order to provide the customer the needed one, fill in the following table and send it to the order department:

INSTALLER COMPANY NAME: _____ Contact person name: _____
Tf.: _____ Fax _____ e-mail _____

ATTENTION TO: Lennox Refac S.A. _____ Contact person name: _____
Tf.: _____ Fax _____ e-mail _____
Order number : _____

A.- Select the unit needed: split or multi-split: Split ☐ Multi-split ☐

B.- Select if you need exhaust fan with the free cooling. (It is not possible exhaust fan with return fan.

With exhaust fan ☐ Without exhaust fan ☐

C.- Select if you need return fan with the free cooling. (It is not possible return fan with exhaust fan. (Only for units 64D to 152D and 68E-76E).

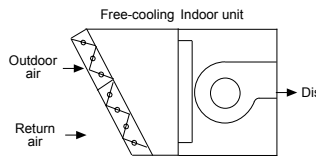
With return fan ☐ Without return fan ☐

D.- Select the dampers configuration for the free cooling, as following. (In order to be adapted to the ducts of the installation).

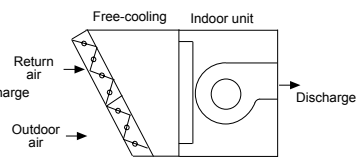
INDOOR UNITS 22E-26E-32E-38E-43E-44E-52D

D.1.- Free cooling dampers position WITHOUT exhaust fan.
The drawings are lateral view of the indoor unit and free cooling.

POSITION 1

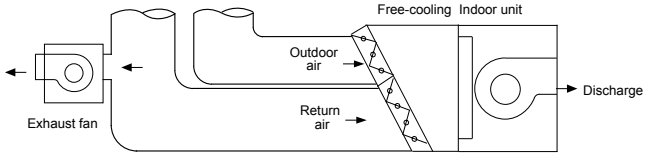


POSITION 2

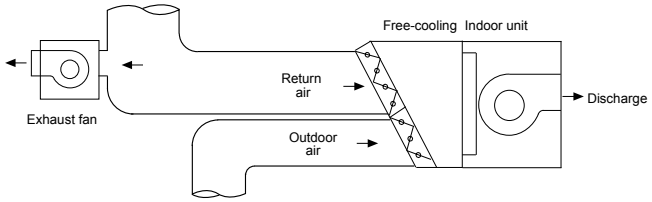


D.2.- Free cooling dampers position WITH exhaust fan:
The drawings are lateral view of the indoor unit and free cooling.

POSITION 1



POSITION 2

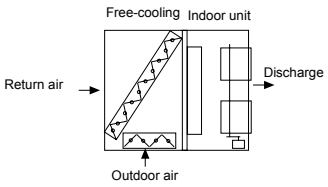


NOTE: Drawings only show dampers and fans situation, but they are not according to the delivery of the different sections (unit, mixing and return fan).

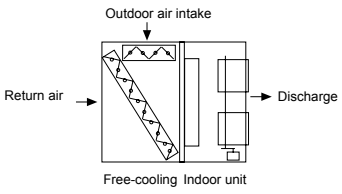
INDOOR UNITS 68E-76E-64D-76D-86D-112D-128D-152D

D.1.- Free cooling dampers position WITHOUT return fan:
The drawings are an upper view of the indoor unit and free cooling.

POSITION 1

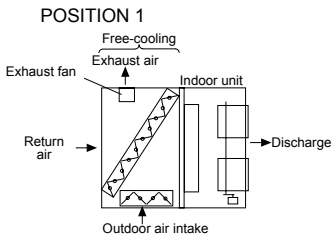


POSITION 2

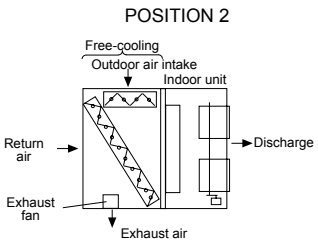


D.2- Free cooling dampers position WITHOUT return fan and with exhaust fan optional:
The drawings are an upper view of the indoor unit and free cooling.

POSITION 1

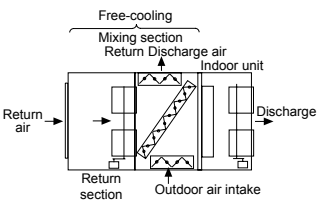


POSITION 2

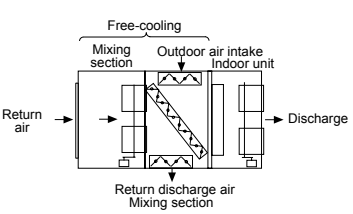


D.3 .- Free cooling dampers position WITH return fan:
The drawings are an upper view of the indoor unit and free cooling.

POSITION 1



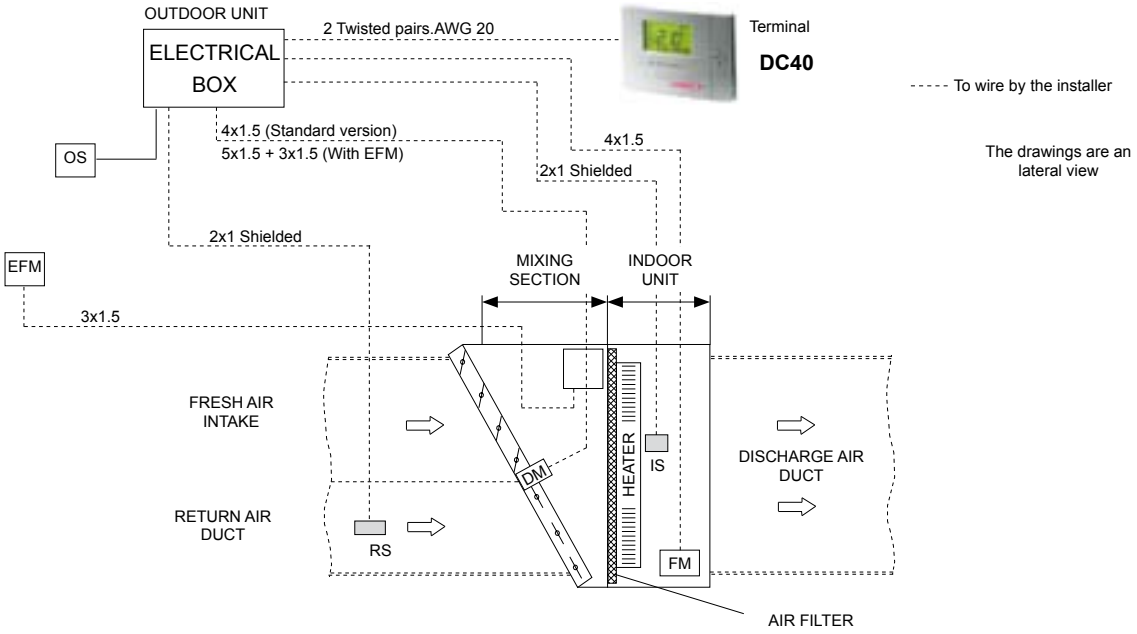
POSITION 2



FREE-COOLING

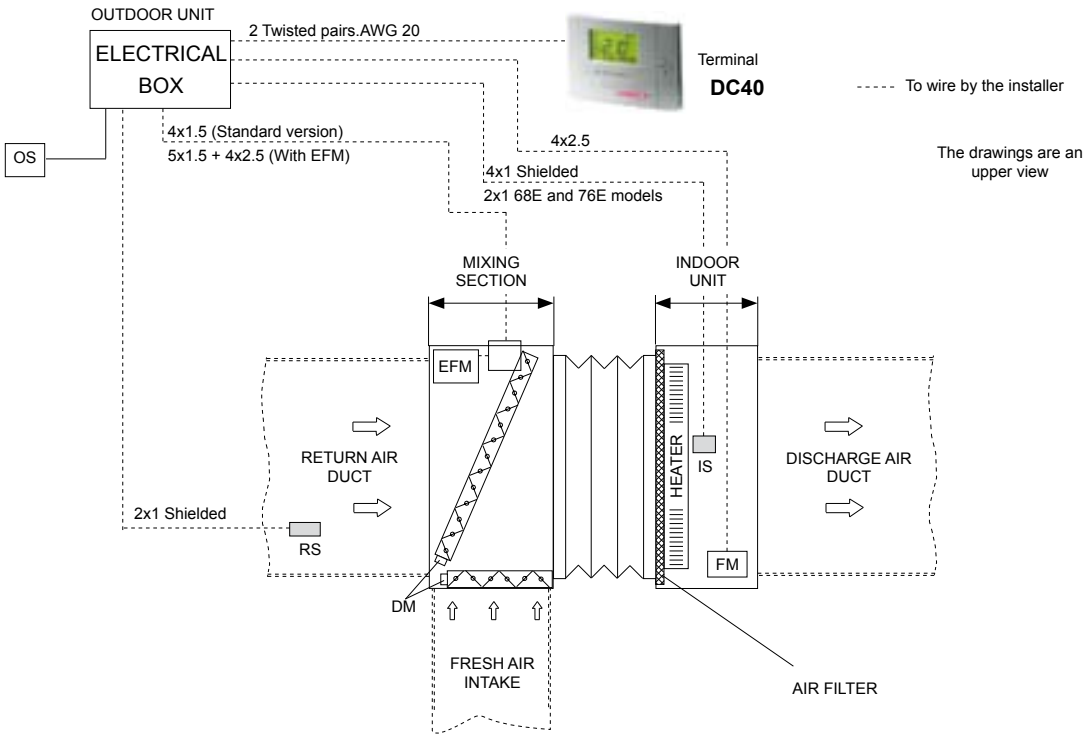
THERMOSTATIC FREE-COOLING WITHOUT RETURN FAN LECM/LEHM 22E A 52D.

STANDARD VERSION



THERMOSTATIC FREE-COOLING WITHOUT RETURN FAN LECM/LEHM 64D A 152D AND 68E TO 76E.

STANDARD VERSION

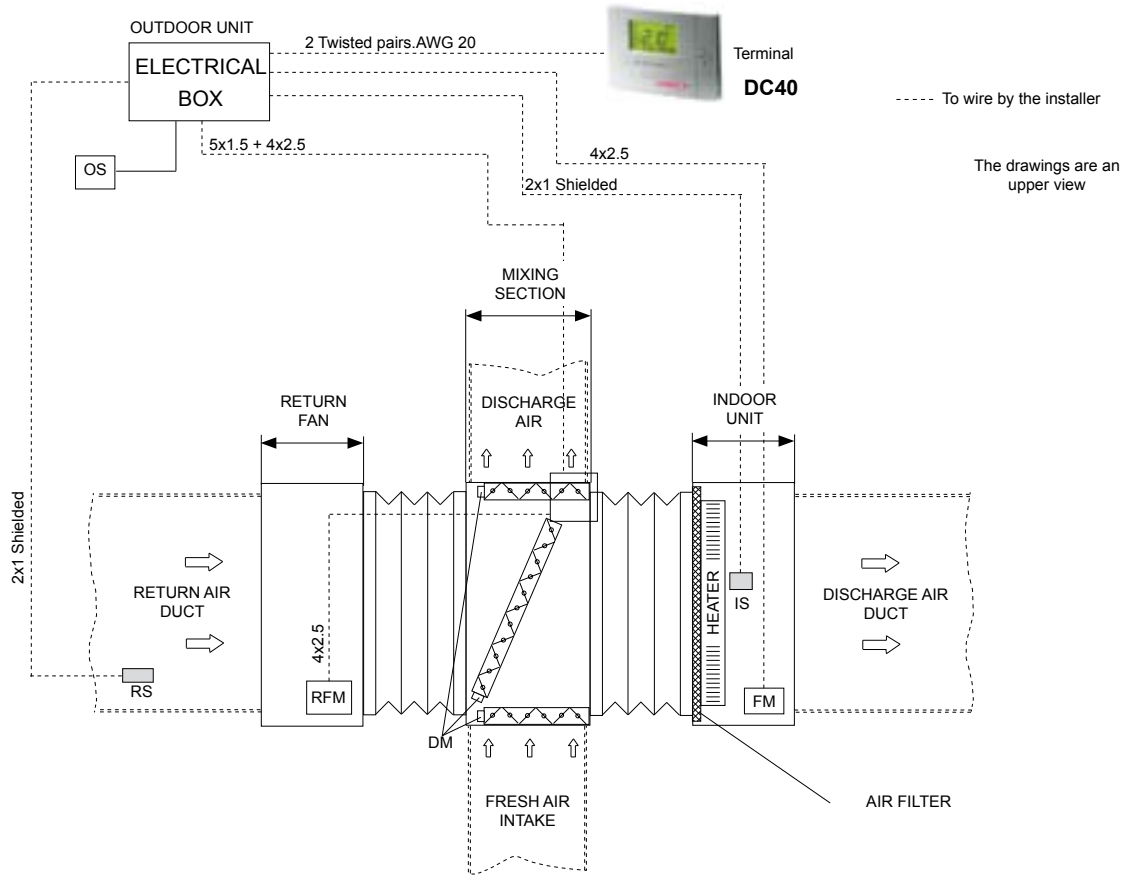


OS: Outdoor temperature sensor.
EFM: Exhaust fan motor.
DM: Damper actuator.
IS: Liquid-gas pipe sensor
FM: Indoor fan motor.
RS: Return sensor (option).

FREE-COOLING

THERMOSTATIC FREE-COOLING WITH RETURN FAN LECM/LEHM 64D A 152D AND 68E TO 76E.

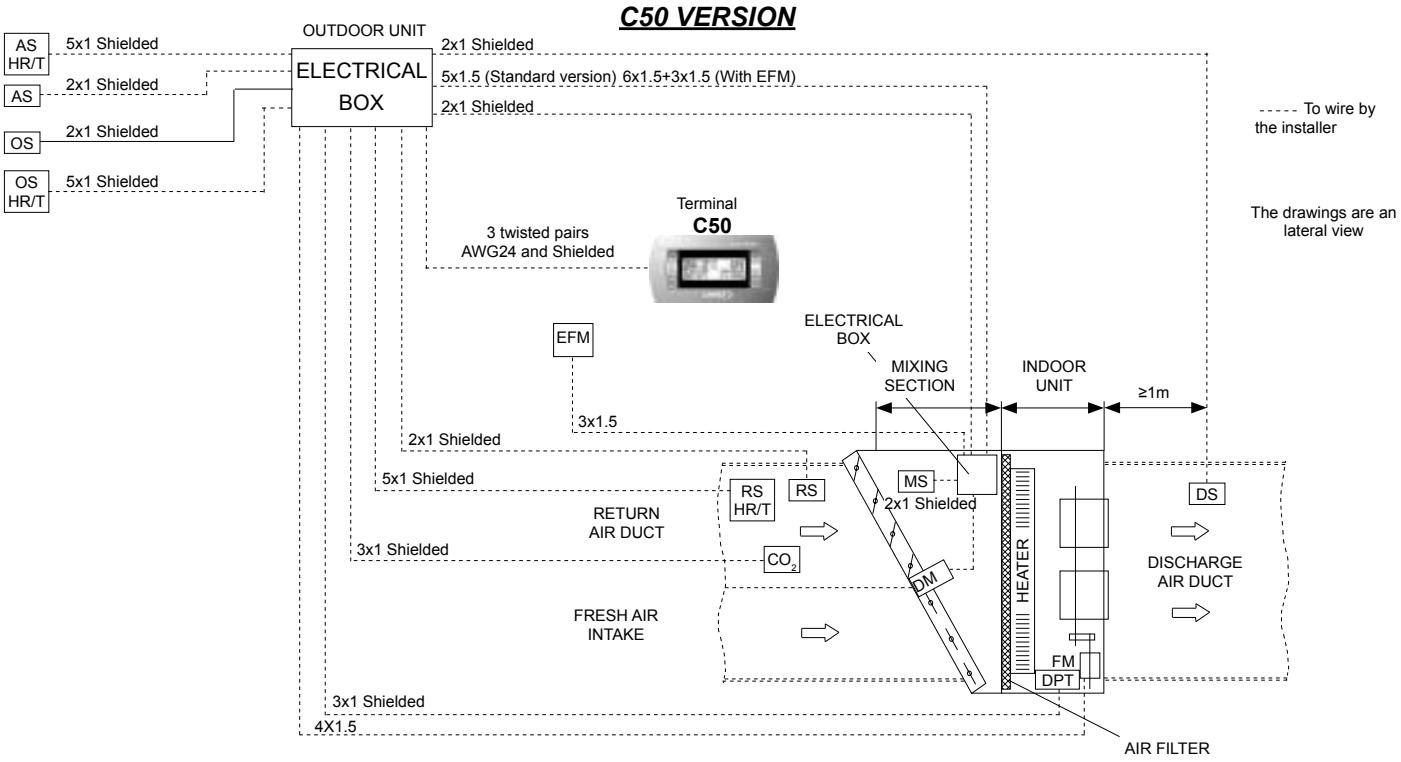
STANDARD VERSION



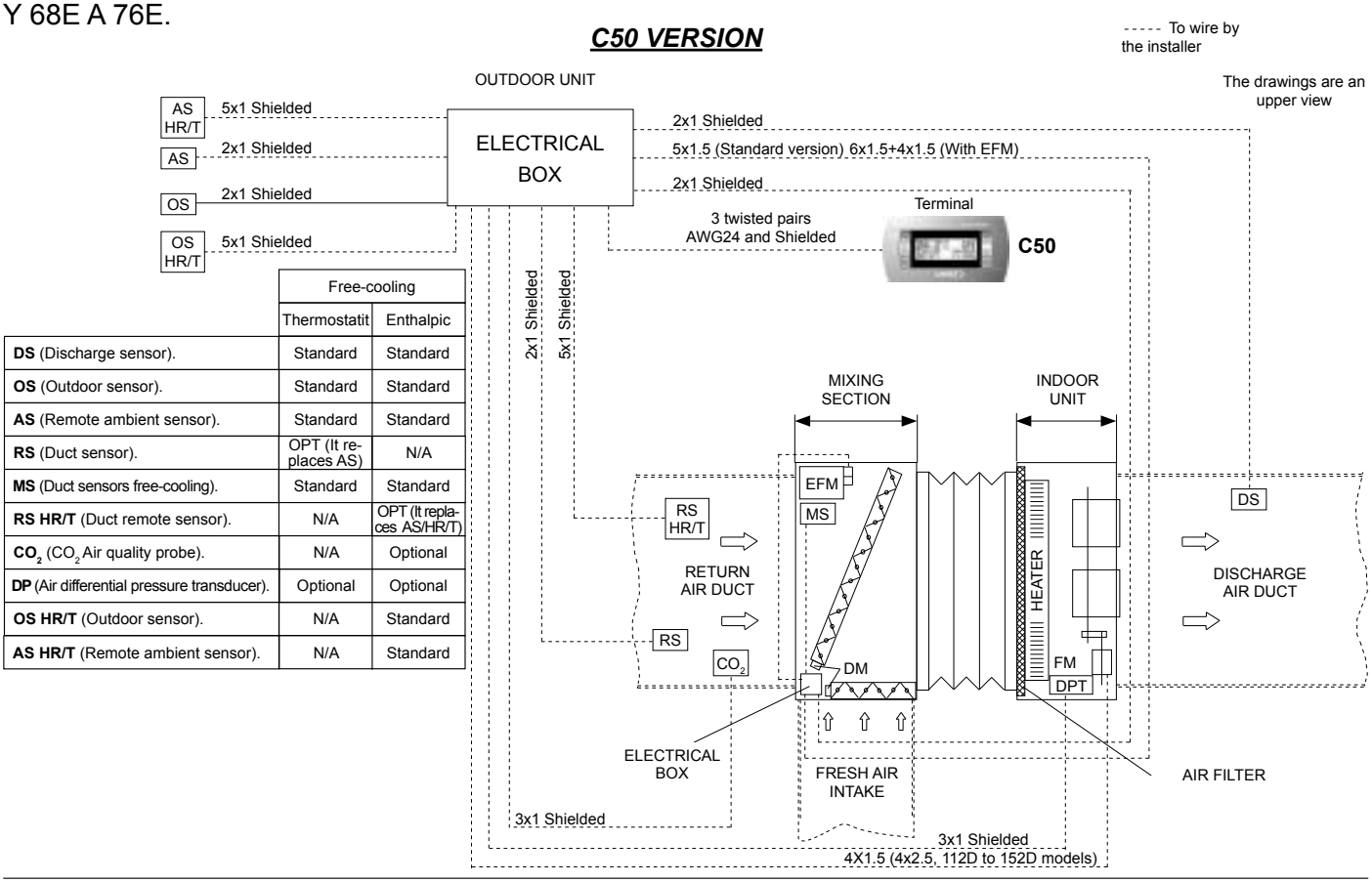
OS: Outdoor temperature sensor.
RFM: Return fan motor.
DM: Damper actuator.
IS: Liquid-gas pipe sensor.
FM: Indoor fan motor.
RS: Return sensor (option).

FREE-COOLING

THERMOSTATIC AND ENTHALPIC FREE-COOLING WITHOUT RETURN FAN LECM/LEHM 22E A 52D.



THERMOSTATIC AND ENTHALPIC FREE-COOLING WITHOUT RETURN FAN LECM/LEHM 64D A 152D Y 68E A 76E.



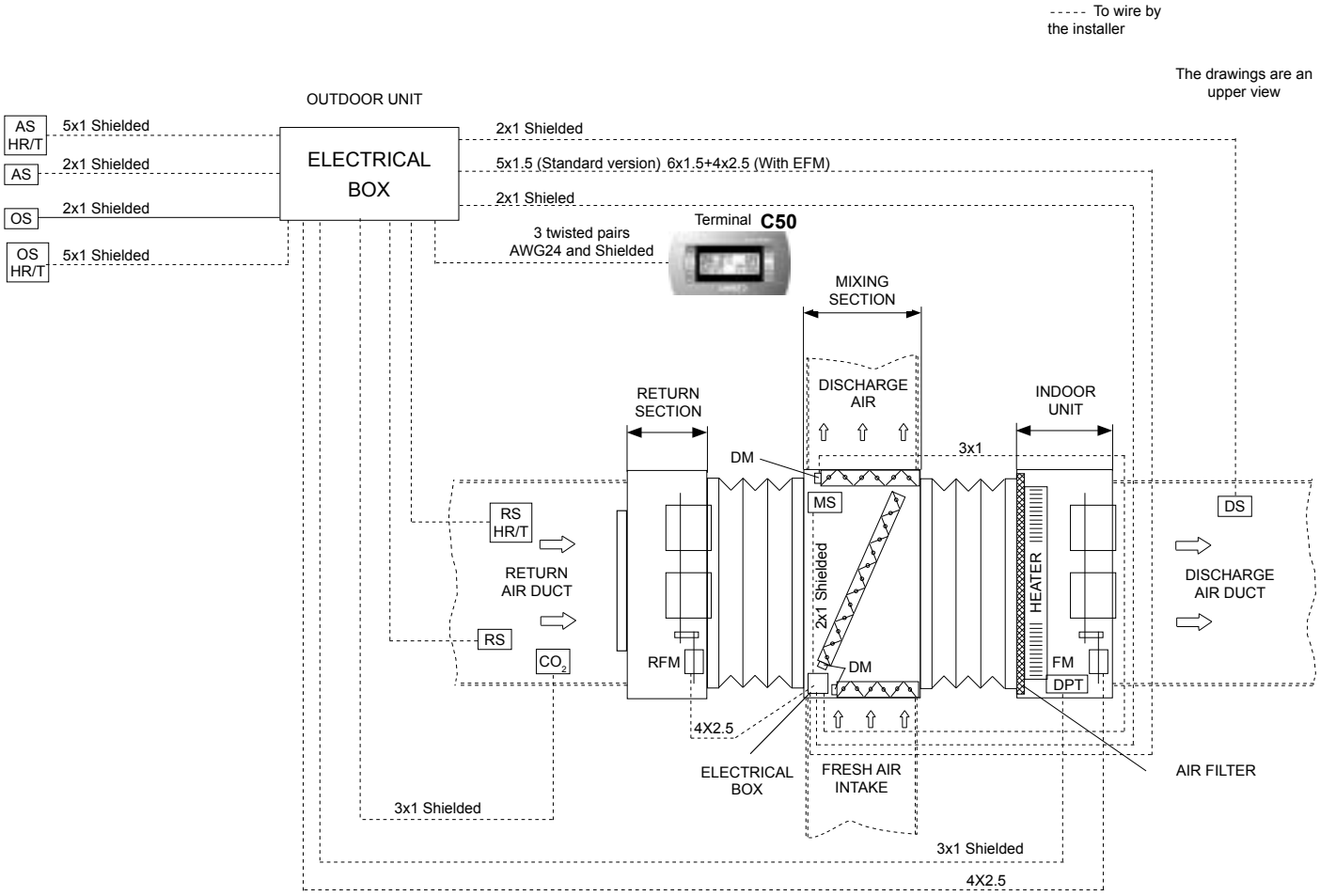
	Free-cooling	
	Thermostatit	Enthalpic
DS (Discharge sensor).	Standard	Standard
OS (Outdoor sensor).	Standard	Standard
AS (Remote ambient sensor).	Standard	Standard
RS (Duct sensor).	OPT (It replaces AS)	N/A
MS (Duct sensors free-cooling).	Standard	Standard
RS HR/T (Duct remote sensor).	N/A	OPT (It replaces AS/HR/T)
CO_2 (CO_2 Air quality probe).	N/A	Optional
DP (Air differential pressure transducer).	Optional	Optional
OS HR/T (Outdoor sensor).	N/A	Standard
AS HR/T (Remote ambient sensor).	N/A	Standard

DM: Damper actuator. EFM: Exhaust fan motor. FM: Indoor fan motor.

FREE-COOLING

THERMOSTATIC AND ENTHALPIC FREE-COOLING WITH RETURN FAN LECM/LEHM 64D A 152D Y 68E A76E.

C50 VERSION

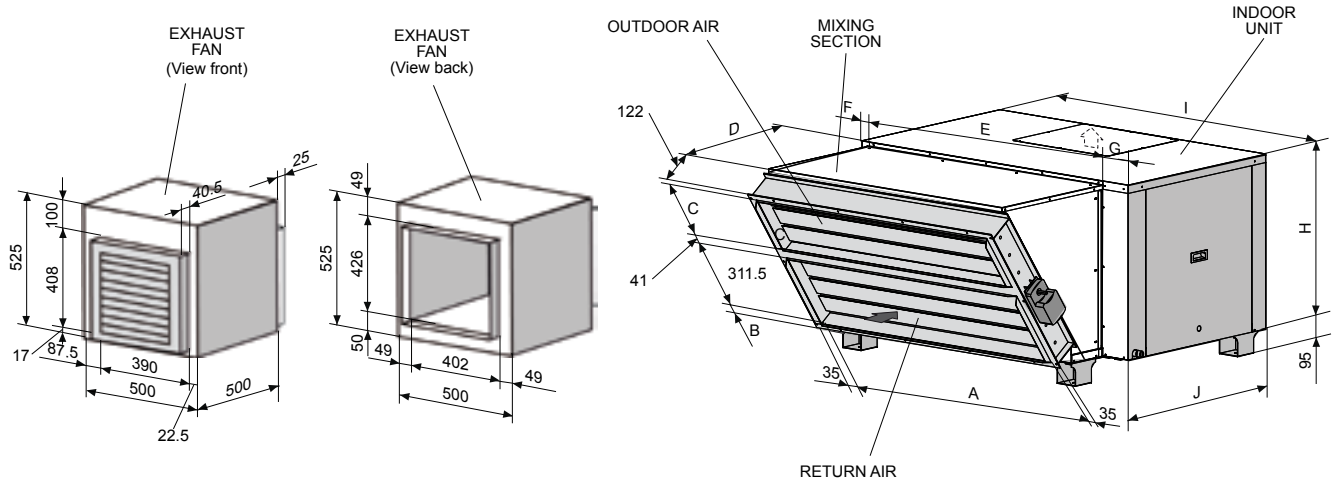


DM: Damper actuator. RFM: Return fan motor. FM: Indoor fan motor.

FREE-COOLING

DIMENSIONS FREE-COOLING WITHOUT RETURN FAN

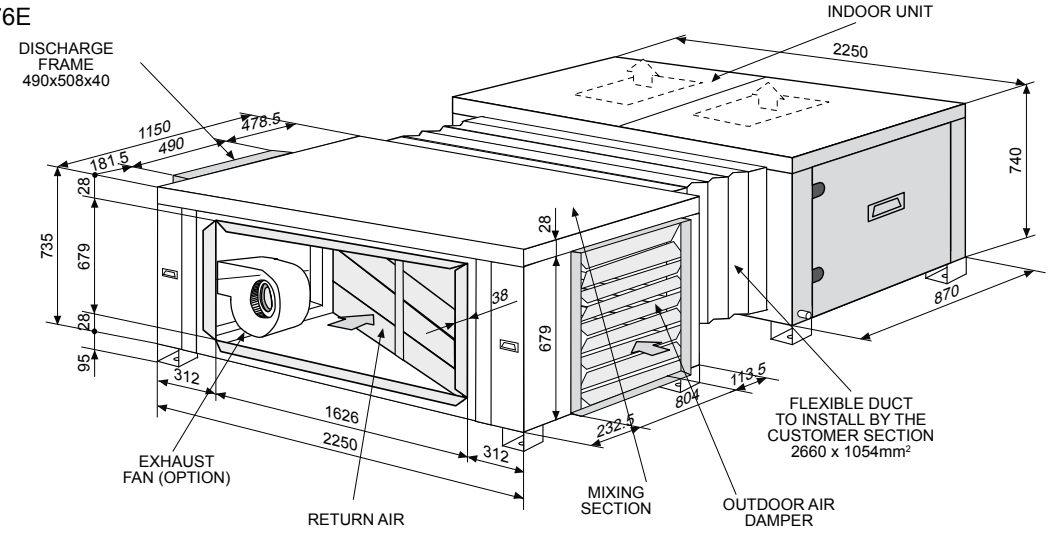
MODELS 22E-26E-32E-43E-44E-52D



The damper position can be different than the picture shows. See drawings.

MODELOS	22E-32E	38E-52D
A	1000	1250
B	25	19.5
C	147.5	229.5
D	648	642
E	1013	1268
F	80.5	41
G	100.5	136
H	645	740
I	1195	1445
J	750	870

MODELS 64D-76D-86D
68E-76E

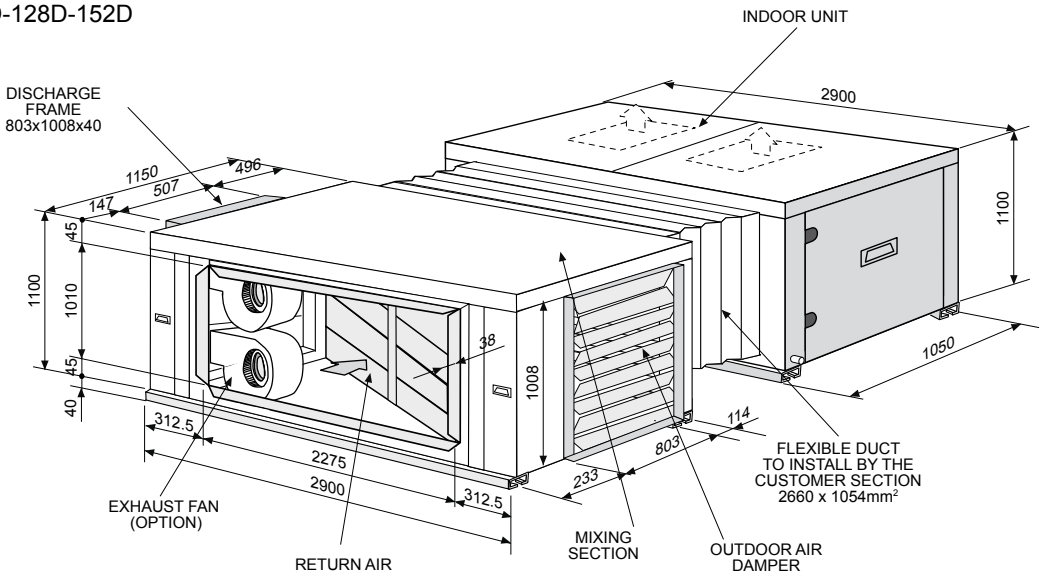


It is possible to include an exhaust fan with free cooling without return fan.

FREE-COOLING

DIMENSIONS FREE-COOLING WITHOUT RETURN FAN

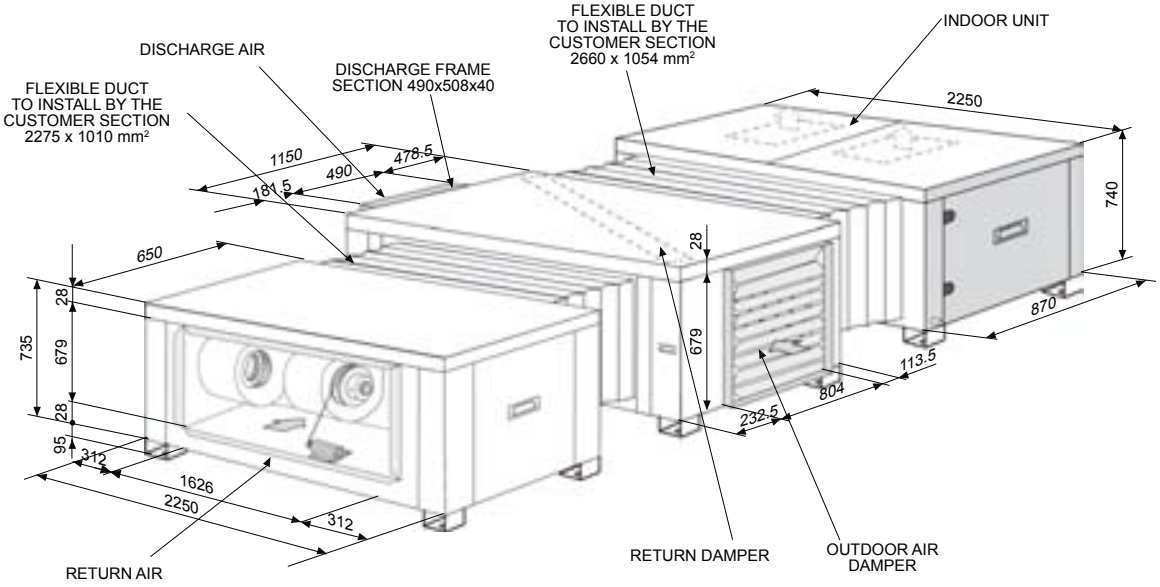
MODELS 112D-128D-152D



MODELS		22E	26E	32E	38E	43E	52D	64D-68E	76D-76E	86D	112D	128D	152D
Weigth kg	Indoor unit	108	111	115	150	160	170	285	305	325	470	480	490
	Mixing section	50	50	50	75	75	75	165	165	165	190	190	190

DIMENSIONS FREE-COOLING WITH RETURN FAN

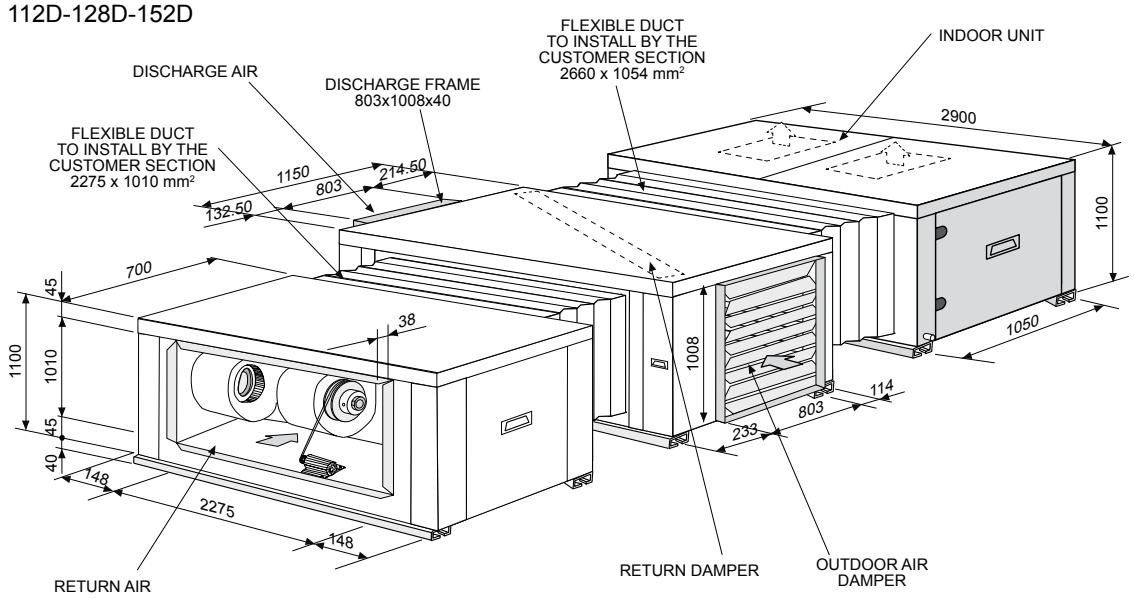
MODELS 64D-76D-86D
68E-76E



FREE-COOLING

DIMENSIONS FREE-COOLING WITH RETURN FAN

MODELS 112D-128D-152D



MODELS		22E	26E	32E	38E	43E	52D	64D-68E	76D-76E	86D	112D	128D	152D
Weigth kg	Indoor unit	108	111	115	150	160	170	285	305	325	470	480	490
	Mixing section	50	50	50	75	75	75	310	310	310	420	420	420
	Return section	n/a	n/a	n/a	n/a	n/a	n/a	145	145	145	230	230	230

n/a: Not available

6.- SERVICE

R-410A REFRIGERANT FACTORY PRECHARGED (outdoor unit)

This option includes service valves and R-410A refrigerant charged in outdoor unit (for 0 meters of connection lines)

SERVICE VALVES (outdoor unit)

The unit is filted with gas and liquid service valves, in order to make easier installation and maintenance operations.

7.- COMMUNICATION CAPABILITIES

7.1. Standard and D2 versions

BMS MODBUS_RS485 connection .

Controller Climatic 40 offers the possibility to communicate to Building Management Systems (BMS) via Modbus protocol.

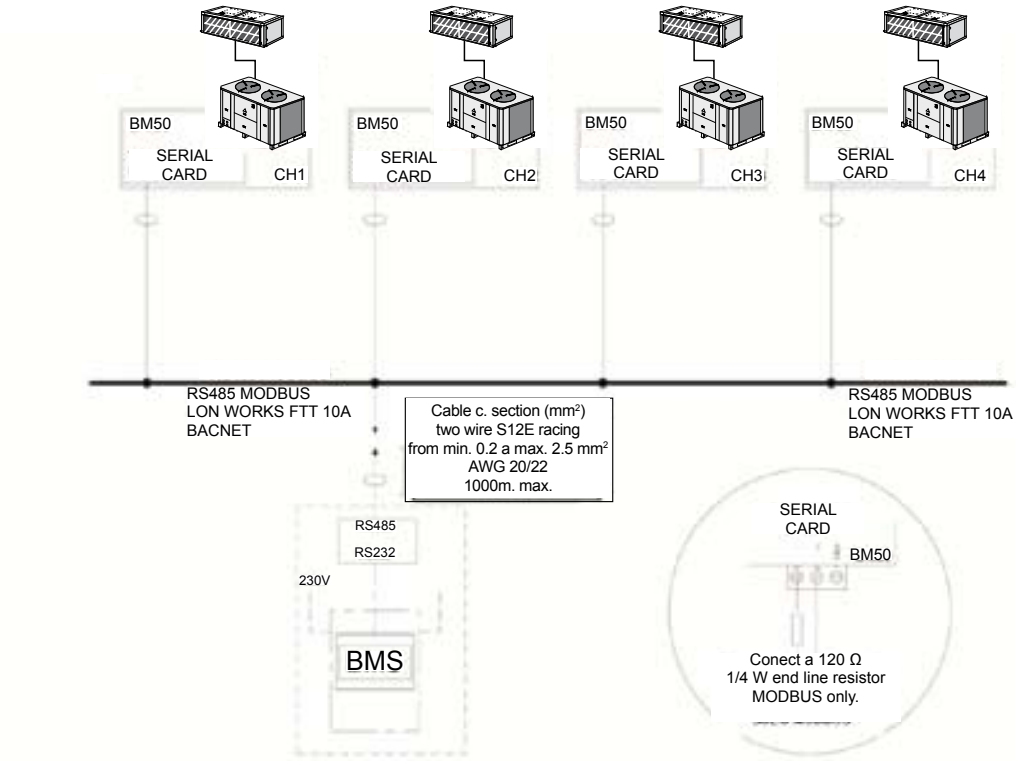
This option includes remote sensor and eliminates DC40 terminal-thermostat.

7.2. C50 Version

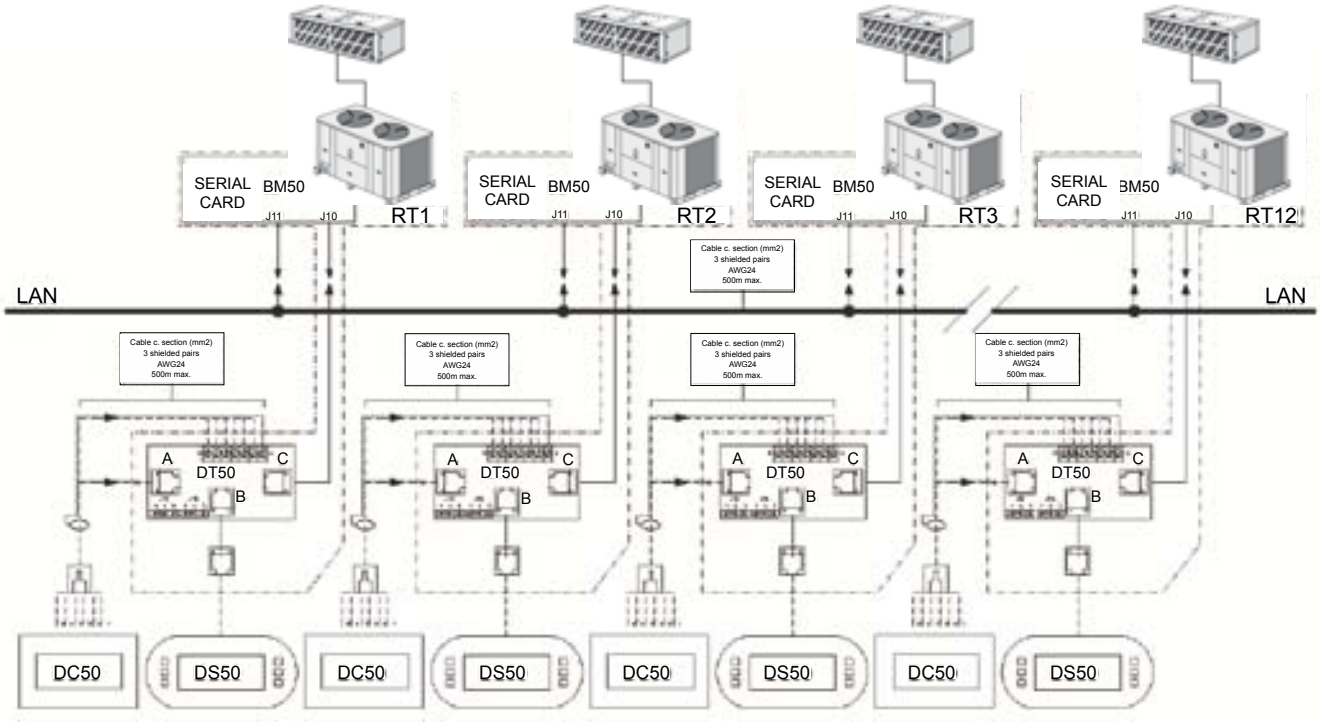
BMS MODBUS_RS485 connection

BMS LONWORKS_Echelon connection

BMS BACnet connection



With C50 unit version, is possible a master-slave connection:



8.- CLIMATIC 50 ADVANCED CONTROL

BE 50 EXPANSION.
BE50 expansion module is placed in the electrical box and connected to the main control BM50 in order to get additional inputs and outputs. 4 analogical inputs, 4 digital inputs and 4 digital outputs can be used. It is needed with options: Exhaust fan, TCB for voltage free contact and enthalpic free cooling.

TCB CONNECTIONS FOR "Voltage Free Contact".
For voltage free contact. All the signals, fan, compressor, electrical heater, cooling, heating, etc. Are available as voltage free contact.
BE50 expansion module is needed with this option.

AIR QUALITY PROBE CO_2.
It includes an air quality probe (CO_2).
Air fresh damper is opened when the air quality is below the desired value.

SERVICE DISPLAY DS50.
As an option it is available a service display controller, which allows service personal to set up to 90 settings, read up to 125 variables, up to 45 faults and read the history of the last 16 faults.

COMFORT DISPLAY DC50.
Remote controller with LCD display and very easy to use. This graphical display gives information such as running mode of the unit, status of the fan, set point, %of fresh air, and outside temperature.

DM50 TERMINAL.
Remote control with LCD display to make the same functions that comfort terminal, but with an only terminal up to 12 units connected through a network.

9.- EXTENDED LIFECYCLE

PRECOATED COIL FOR INDOOR UNIT, OUTDOOR UNIT.
Special protection of the aluminium coil fins, to protect it from aggressive external environmental conditions. It is available for indoor unit and outdoor unit.

NOTES

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Installation and service must be performed by a qualified installer and servicing agency.

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