Application guide
AIRCOOLAIR - ANCK/ANHK

• • • Providing indoor climate comfort

MSL78E-0805 12-2006

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 vertical air conditioning units, range AIRCOOLAIR cooling only or heat pump are air conditioning units, of the air to air type, designed for small and medium shopping center and housing.
The unit consists on an outdoor section and an indoor one and they may be supplied either as a compact unit or as a remote split and multi-split systems.
It is also possible supply the outdoor section alone, to match with other type of indoor unit that customer needs.
They are designed for installation indoors or outdoors, and adequated to work in air ducts both sections.
A wide range of optionals, completed-factory assembled are also available.

FURNITURE

Made of galvanized steel sheeting with epoxy painted finish, weather proofed with high resistant to corrosion. 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 a mesh 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.

AIR FILTER

Washable air filter; auto extinguishable material with M1 classification.

FANS

Inner 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. The outer one and two fans are axial type.

HEAT EXCHANGERS

Made of copper tubing with aluminum corrugated swirl fins, they are designed and specially dimensioned to obtain the maximum output so as to prevent ice forming in the outer heater, extending the operating cycles to a maximum obtaining maximum output and exchange on reducing the frequency of defrosting.

COOLING CIRCUIT

Made of welded dehumidifying copper tube with
plugged valves in the 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.

SWITCHBOARD

Designed according to EN 60204-1 normative. With protective fuses for compressors and fans, except for the ones adjustable and variable activating motor which are supplied with an external thermic relay. The units have a built printed circuit board which controls the unit.

GENERAL DESCRIPTION

CONTROL

These units range are available in two different versions, depending on the digital thermostat supplied with the unit: These versions are:
1- Standard unit version, supplied with two wires connection digital thermostat. (For all the unit models).
2- VFC unit version, None thermostat included but, with possibility to install a BMS "building management systems" (Only for models 24E a 86D/D2).
3- C50 version with Climatic control. (Only available for models 100D/D2-128D/D2-152D).

1- Standard unit version, with two wires connection.
Control made up with a printed control board and with a walled terminal thermostat to be placed in the room to be conditioned; with ambient sensor inside the terminal for the regulation of the system.
With LCD display with **alarm visualization, exclusive connection with two wires between terminal thermostat and electrical box** at the unit, possibility to adjust internal parameters, automatic restarting and intelligent defrosting control adapted to ambient conditions and room demand at each moment (for heat pump units).
ModBus-RS485 connection as option.

Digital thermostat corresponding to the standard unit version, with two wires connection.

Climatic 10

2- VFC unit version, with possibility to install a BMS "building management systems" (Only available for models 24E a 86D/D2)
Control made up with a printed control board, automatically restarting and intelligent defrosting control adapted to ambient conditions and room demand at each moment (for heat pump units).

In both unit versions through the voltage free contacts supplied on, lets you to obtain the following functions:
- To obtain the alarm signal of the units such as, fan OFF, compressor OFF...
- To know the unit function MODE; Unit running on fan, cooling or heating mode, compressor ON....

Also the VFC unit version, lets you make the connection from the printed control board at the electrical box of the unit, to manage the signals functioning of the unit, fan, cooling, heating, step 1, step 2 etc... to a BMS system "building management systems", and the connections will be the digital outputs of BMS system.

3- C50 unit version (Only available for models 100D/D2-128D/D2-152D)
Control made up with a printed control board and with a walled terminal thermostat 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.

Comfort display DC 50

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 Display 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 up to 90 parameters, check up to 45 faults and the last 16 faults in the alarm history.

As an option it is available a TCB printed board in order to get all inputs as voltage free contacts.
Communications: (ModBus-RS485 or LonWorks-Echelon), master/slave.

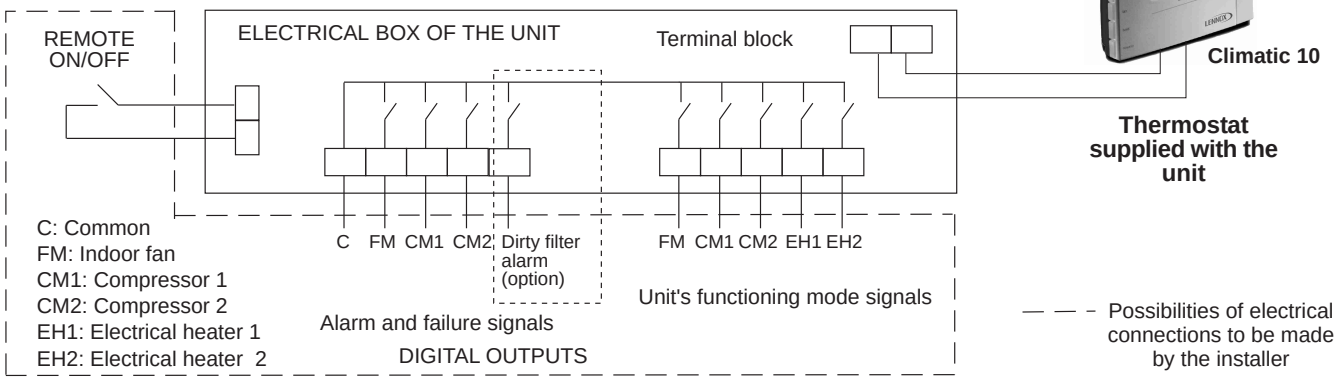
GENERAL DESCRIPTION

The following outlines shows what we explain before, and corresponding of a double circuit units "D". For more details see electrical connections on this manual.

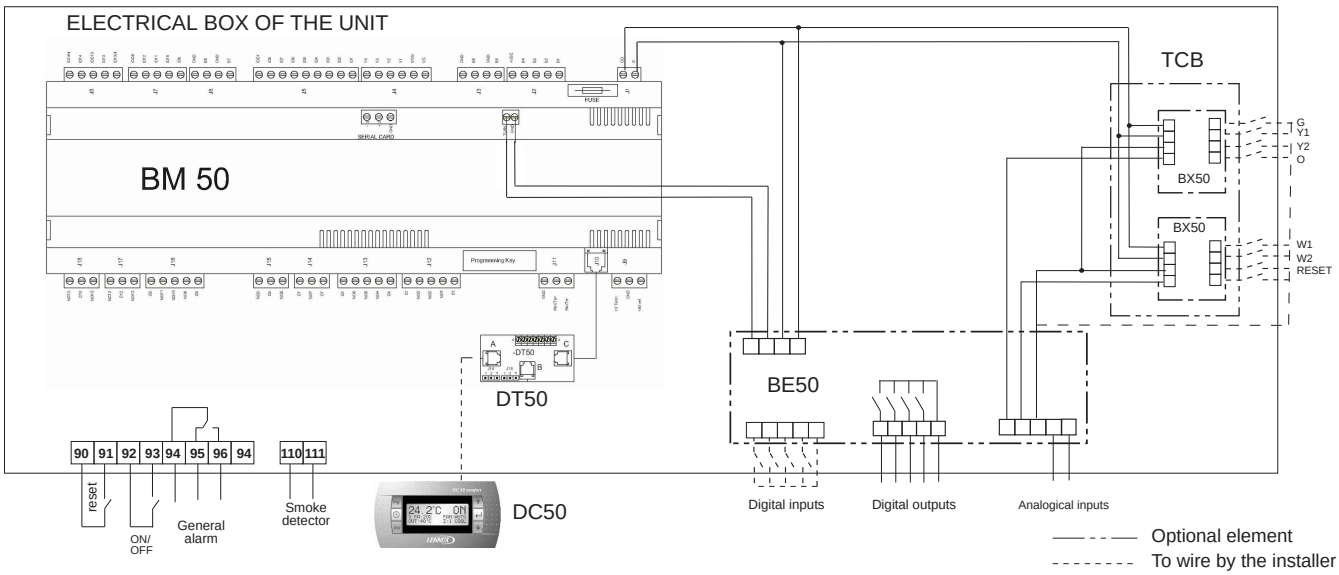
Outline of the Voltage free contact available for the standard unit version (For all the unit models)

Climatic 10

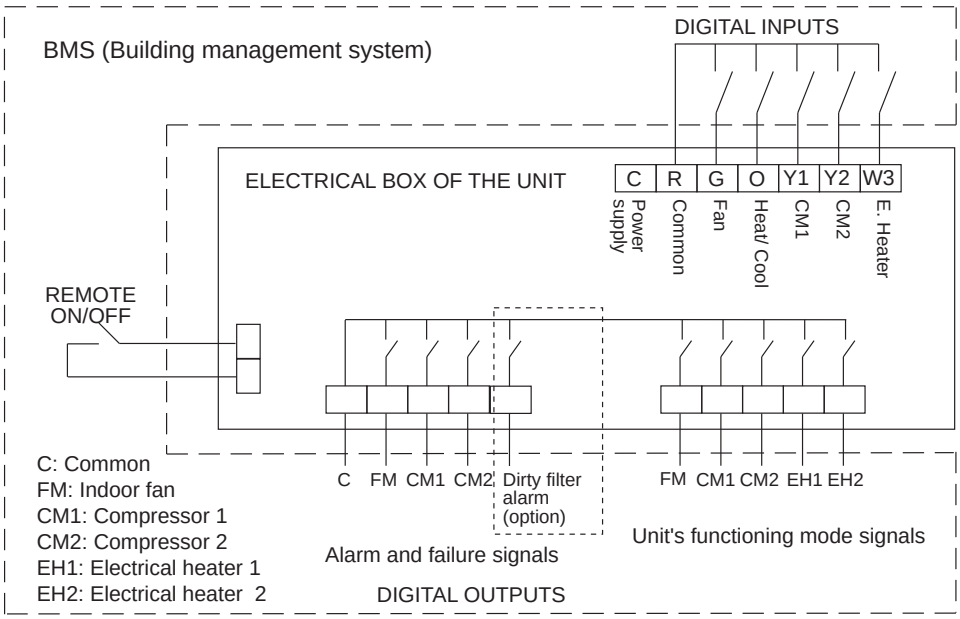
Thermostat supplied with the unit



Outline of the Voltage free contact available for the C50 unit version (Only for models 100D/D2/128D/D2/152D)



Outline of the Voltage free contact available for the VFC unit version (Only for models 24E to 86D/D2)



OPTIONS

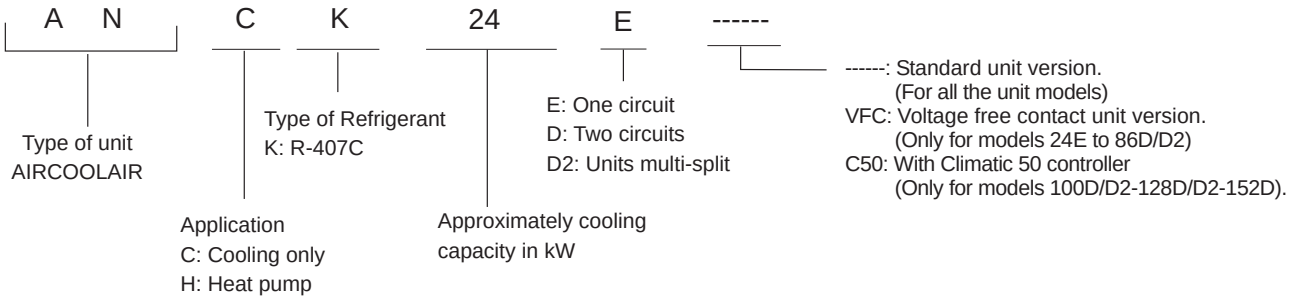
OPTIONS	STANDARD VERSION	VFC VERSION	C50 VERSION	Remarks
Condensing pressure control ON/OFF	X	X	STD	Crank case heater included in cooling only units.
Proportional condensing pressure control	X	X	X	Crank case heater included in cooling only units.
Main switch only for 400V-III	X	X	X	
Return lock three phases	X	X	X	
"Soft starter" 400V-III	X	X	X	only for 400V-III units.
Hot gas by pass	X	X	X	
Condenser coil guard	X	X	X	
Precoated coil	X	X	X	
Rubber dampers	X	X	X	
Compressor isolation	X	X	X	
Kit low noise	X	X	X	Proportional CPC and compressor isolation included.
Service valves	X	X	X	
Refrigerant factory precharged	X	X	X	Service valves included.
Programmable thermostat	X	X	STD	
Non-Programmable thermostat	STD	X	NO	
Ambient remote sensor kit	X	X (Only with free cooling)	STD	
Duct remote sensor kit	X	STD (Only with free cooling)	X	
Electrical heater	X	X	X	
Hot water coil	X	X	NO	Not available for 86D models.
Hot water coil with regulation valve	NO	NO	X	
Kit free cooling thermostatic without return fan	X	NO	X	Thermostatic free cooling supplied with sensor incorporated inside the thermostat. For C50 version supplied with ambient sensor.
Kit free cooling thermostatic with return fan	X	NO	X	Thermostatic free cooling supplied with sensor incorporated inside the thermostat. For C50 version supplied with ambient sensor.
Kit free cooling enthalpic without return fan	NO	X	X	Enthalpic free cooling supplies with duct sensor. For C50 version supplied with ambient sensor.
Kit free cooling enthalpic with return fan	NO	X	X	Enthalpic free cooling supplies with duct sensor. For C50 version supplied with ambient sensor.
Kit sensor incorporated at thermostat for free cooling	STD	X	NO	Option for free cooling
Kit more static pressure indoor unit to 400 Pa	X	X	X	
Dirty filter indication	X	X	X	
Smoke detector	X	X	X	
Communications: BMS MODBUS-RS485 connection	X	NO	X	
Long distance kit (65m)	X	NO	X	Available only for units 100D/D2-128D/D2-152D
High pressure 120Pa FP1	X	NO	X	
High pressure 250Pa FP2	X	NO	X	
Square discharge plenum FP1/FP2	X	NO	X	
Inlet plenum	X	NO	X	
Auxiliary drip tray FP1/FP2	X	NO	X	
Print board to connect user terminal for long distances DT50	X	NO	X	
Air quality probe (CO_2)	NO	NO	X	
High efficiency air filter EU4	X	NO	X	
Exhaust fan (Only for free cooling without return fan)	X	NO	X	
Communications: BMS LONWORKS-Echelon connection	NO	NO	X	
TCB: connection for voltage free contact	NO	NO	X	
Vertical discharge indoor unit	X	NO	X	
Service display DS 50	NO	NO	X	

STD: as standard
X: available
NO: not available

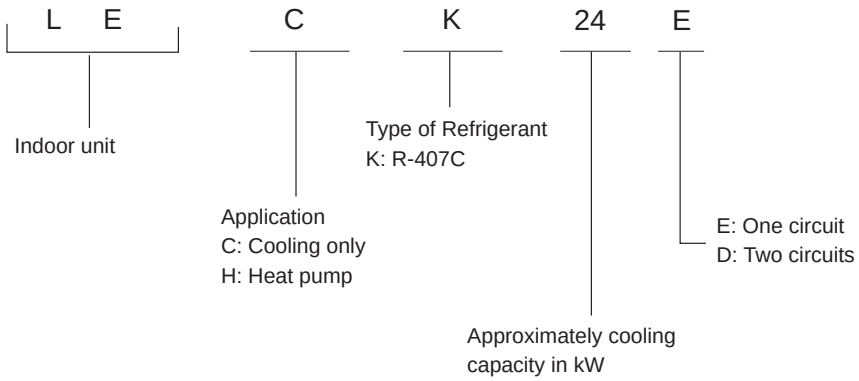
DENOMINATION

SET

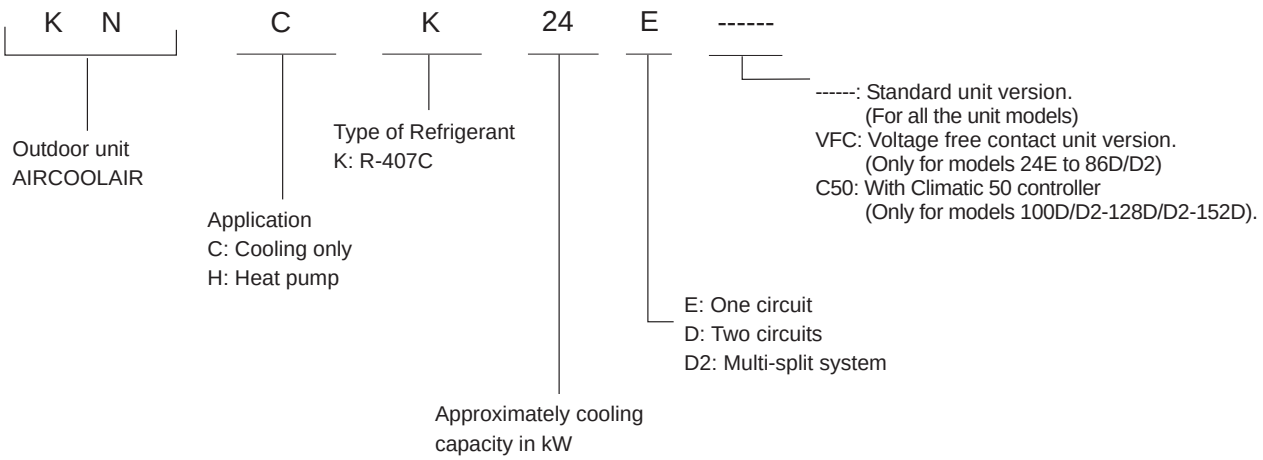
INDOOR UNIT + OUTDOOR UNIT



INDOOR UNIT



OUTDOOR UNIT

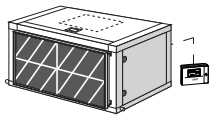


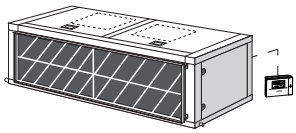
RANGE PRODUCT UNITS COOLING ONLY

SET AND SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY kW	NOMINAL CONSUMPTION kW
				COOLING	COOLING
ANCK 24E	KNCK 24E	LECK 24E	230V-400V+N/3Ph	21,30	8,69
ANCK 32E	KNCK 32E	LECK 32E	230V-400V+N/3Ph	27,50	11,70
ANCK 38E	KNCK 38E	LECK 38E	230V-400V+N/3Ph	35,50	14,50
ANCK 43E	KNCK 43E	LECK 43E	230V-400V+N/3Ph	40,00	17,10
ANCK 48D	KNCK 48D	LECK 48D	230V-400V+N/3Ph	42,20	17,60
ANCK 64D	KNCK 64D	LECK 64D	230V-400V+N/3Ph	55,00	23,40
ANCK 76D	KNCK 76D	LECK 76D	230V-400V+N/3Ph	71,00	29,00
ANCK 86D	KNCK 86D	LECK 86D	230V-400V+N/3Ph	80,00	34,20
ANCK 100D	KNCK 100D	LECK 112D	400V+N/3Ph	95,00	32,40
ANCK 128D	KNCK 128D	LECK 128D	400V+N/3Ph	117,0	44,20
ANCK 152D	KNCK 152D	LECK 152D	400V+N/3Ph	138,5	53,90

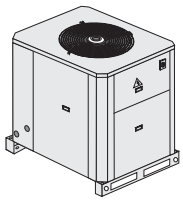
INDOOR UNIT
LECK-E

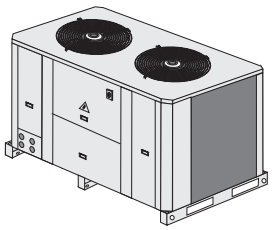




INDOOR UNIT
LECK-D

OUTDOOR UNIT
KNCK-E



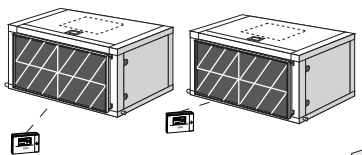


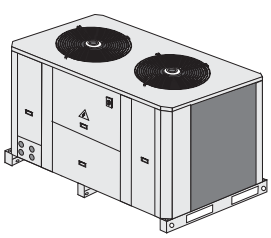
OUTDOOR UNIT
KNCK-D

MULTI-SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY kW	NOMINAL CONSUMPTION kW
				COOLING	COOLING
ANCK 48D2	KNCK 48D2	2 x LECK 24E	230V-400V+N/3Ph	21,1 + 21,1	17,60
ANCK 64D2	KNCK 64D2	2 x LECK 32E	230V-400V+N/3Ph	27,5 + 27,5	23,40
ANCK 76D2	KNCK 76D2	2 x LECK 38E	230V-400V+N/3Ph	35,5 + 35,5	29,00
ANCK 86D2	KNCK 86D2	2 x LECK 43E	230V-400V+N/3Ph	40 + 40	34,20
ANCK 100D2	KNCK 100D2	2 x LECK 56E	400V+N/3Ph	47,5 + 47,5	32,40
ANCK 128D2	KNCK 128D2	1 x LECK 76E + 1 x LECK 56E	400V+N/3Ph	**70,2 + 46,8**	44,00

INDOOR UNIT LECK-E





OUTDOOR UNIT
KNCK-D2

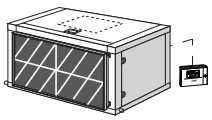
NOTE: The units at 230V-3Ph power supply are special. Ask for availability.

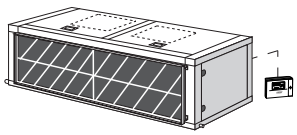
RANGE PRODUCT UNITS HEAT PUMP

SET AND SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY kW		NOMINAL CONSUMPTION kW	
				COOLING	H.PUMP	COOLING	H.PUMP
ANHK 24E	KNHK 24E	LEHK 24E	230V-400V+N/3Ph	21,30	22,30	8,69	7,69
ANHK 32E	KNHK 32E	LEHK 32E	230V-400V+N/3Ph	27,50	30,00	11,70	10,70
ANHK 38E	KNHK 38E	LEHK 38E	230V-400V+N/3Ph	35,50	37,00	14,50	12,70
ANHK 43E	KNHK 43E	LEHK 43E	230V-400V+N/3Ph	40,00	43,00	17,10	15,40
ANHK 48D	KNHK 48D	LEHK 48D	230V-400V+N/3Ph	42,20	44,60	17,60	15,90
ANHK 64D	KNHK 64D	LEHK 64D	230V-400V+N/3Ph	55,00	60,00	23,40	21,40
ANHK 76D	KNHK 76D	LEHK 76D	230V-400V+N/3Ph	71,00	74,00	29,00	25,40
ANHK 86D	KNHK 86D	LEHK 86D	230V-400V+N/3Ph	80,00	86,00	34,20	30,80
ANHK 100D	KNHK 100D	LEHK 112D	400V+N/3Ph	95,00	94,00	32,40	28,80
ANHK 128D	KNHK 128D	LEHK 128D	400V+N/3Ph	117,0	120,0	44,20	40,70
ANHK 152D	KNHK 152D	LEHK 152D	400V+N/3Ph	138,5	145,0	53,90	51,80

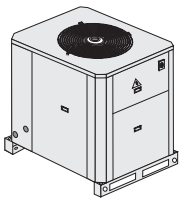
INDOOR UNIT
LEHK-E

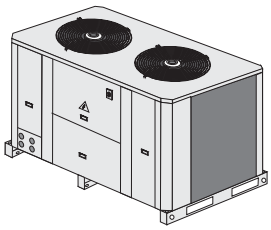




INDOOR UNIT
LEHK-D

OUTDOOR UNIT
KNHK-E



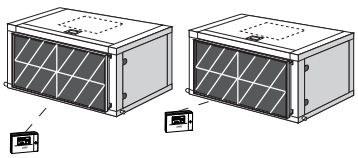


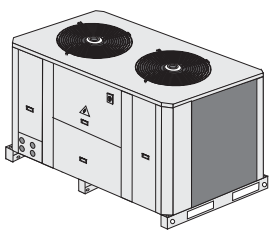
OUTDOOR UNIT
KNHK-D

MULTI-SPLIT SYSTEM

MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY kW		NOMINAL CONSUMPTION kW	
				COOLING	H.PUMP	COOLING	H.PUMP
ANHK 48D2	KNHK 48D2	2 x LEHK 24E	230V-400V+N/3Ph	21,1 + 21,1	22,3 + 22,3	17,60	15,90
ANHK 64D2	KNHK 64D2	2 x LEHK 32E	230V-400V+N/3Ph	27,5 + 27,5	30 + 30	23,40	21,40
ANHK 76D2	KNHK 76D2	2 x LEHK 38E	230V-400V+N/3Ph	35,5 + 35,5	37 + 37	29,00	25,40
ANHK 86D2	KNHK 86D2	2 x LEHK 43E	230V-400V+N/3Ph	40 + 40	43 + 43	34,20	30,80
ANHK 100D2	KNHK 100D2	2 x LEHK 56E	400V+N/3Ph	47,5 + 47,5	47 + 47	32,40	28,80
ANHK 128D2	KNHK 128D2	1 x LECK 76E + 1 x LECK 56E	400V+N/3Ph	**70,2 + 46,8**	**72,3 + 48,2**	44,00	40,80

INDOOR UNIT LEHK-E

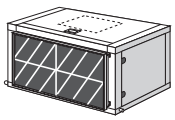




OUTDOOR UNIT
KNHK-D2

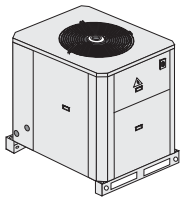
NOTE: The units at 230V-3Ph power supply are special. Ask for availability.

PHYSICAL DATA



INDOOR UNIT

OUTDOOR UNIT



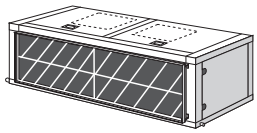
SET				ANCK/ANHK 24E	ANCK/ANHK 32E	ANCK/ANHK 38E	ANCK/ANHK 43E
Cooling capacity	(*)	ANCK/ANHK	kW	21,30	27,50	35,50	40,00
Heating capacity	(**)	ANHK	kW	22,30	30,00	37,00	43,00
OUTDOOR UNIT				**KNCK/KNHK 24E**	**KNCK/KNHK 32E**	**KNCK/KNHK 38E**	**KNCK/KNHK 43E**
COMPRESSOR	Nr / Type			1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll
FAN							
Air flow			$m^3/h.$	6300	11500	11000	10500
NET WEIGHT		KNCK	Kg	225	250	270	300
		KNHK	Kg	230	255	275	305
DIMENSIONS							
Height			mm.	1375	1375	1375	1375
Width			mm.	1195	980	980	980
Depth			mm.	660	1195	1195	1195
REFRIGERANT CONNECTION							
Liquid				5/8"	5/8"	3/4"	7/8"
Gas				1-1/8"	1-1/8"	1-3/8"	1-5/8"
INDOOR UNIT				**LECK/LEHK 24E**	**LECK/LEHK 32E**	**LECK/LEHK 38E**	**LECK/LEHK 43E**
FAN							
Max air flow			$m^3/h.$	5100	6000	7300	8750
Min air flow			$m^3/h.$	3900	4750	5800	6500
Max available pressure	(1)		Pa	195	220	240	290
NET WEIGHT			Kg	105	110	145	280
DIMENSIONS							
Height			mm.	665	665	665	665
Width			mm.	1285	1285	1410	1570
Depth			mm.	803	803	803	803
REFRIGERANT CONNECTION							
Liquid				5/8"	5/8"	3/4"	7/8"
Gas				1-1/8"	1-1/8"	1-3/8"	1-5/8"

(1) With admissible minimum air flow.

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

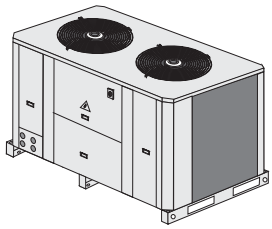
(*) Air intake temperature in the indoor exchanger: 27°C DB/19°C WB
(*) Air intake temperature in the outdoor exchanger: 35ºC DB
(**) Air intake temperature in the indoor exchanger: 20°C DB
(**) Air intake temperature in the outdoor exchanger: 7°C DB / 6ºC WB

PHYSICAL DATA



INDOOR UNIT

OUTDOOR UNIT



SET			ANCK ANHK 48D	ANCK ANHK 64D	ANCK ANHK 76D	ANCK ANHK 86D	ANCK ANHK 100D	ANCK ANHK 128D	ANCK ANHK 152D
Cooling capacity (*)	ANCK ANHK	kW	42,20	55,00	71,00	80,00	95,00	117,0	138,5
Heating capacity (**)	ANHK	kW	44,60	60,00	74,00	86,00	94,00	120,0	145,0
OUTDOOR UNIT			**KNCK KNHK 48D**	**KNCK KNHK 64D**	**KNCK KNHK 76D**	**KNCK KNHK 86D**	**KNCK KNHK 100D**	**KNCK KNHK 128D**	**KNCK KNHK 152D**
COMPRESSOR	Nr / Type		2 / Scroll	2 / Scroll	2 / Scroll	2 / Scroll	2 / Scroll	3 / Scroll	3 / Scroll
FAN Air flow		$m^3/h.$	19000	23000	22000	21000	32000	36000	40000
NET WEIGHT	KNCK	Kg	485	490	530	590	650	922	956
	KNHK	Kg	495	500	545	605	675	950	980
DIMENSIONS Height		mm.	1375	1375	1375	1375	1675	1675	1675
Width		mm.	1960	1960	1960	1960	2250	2250	2250
Depth		mm.	1195	1195	1195	1195	1420	1420	1420
REFRIGERANT CONNECTION Circuit 1 / Circuit 2	Liquid		2 x 5/8"	2 x 5/8"	2 x 3/4"	2 x 7/8"	2 x 3/4"	7/8" / 3/4"	2 x 7/8"
	Gas		2 x 1-1/8"	2 x 1-1/8"	2 x 1-3/8"	2 x 1-5/8"	2 x 1-3/8"	1-5/8" / 1-3/8"	2 x 1-5/8"
INDOOR UNIT			**LECK LEHK 48D**	**LECK LEHK 64D**	**LECK LEHK 76D**	**LECK LEHK 86D**	**LECK LEHK 112D**	**LECK LEHK 128D**	**LECK LEHK 152D**
FAN Max air flow		$m^3/h.$	10200	12000	14600	17500	22500	24500	24500
Min air flow		$m^3/h.$	7800	9500	11600	13000	18000	20000	20000
Max available pressure (1)		Pa	195	220	240	270	365	345	345
NET WEIGHT		Kg	220	240	265	270	510	520	530
DIMENSIONS Height		mm.	665	665	665	665	1140	1140	1140
Width		mm.	2340	2340	2590	3140	2900	2900	2900
Depth		mm.	803	803	803	803	1050	1050	1050
REFRIGERANT CONNECTION Circuit 1 / Circuit 2	Liquid		2 x 5/8"	2 x 5/8"	2 x 3/4"	2 x 7/8"	2 x 3/4"	7/8" / 3/4"	2 x 7/8"
	Gas		2 x 1-1/8"	2 x 1-1/8"	2 x 1-3/8"	2 x 1-5/8"	2 x 1-3/8"	1-5/8" / 1-3/8"	2 x 1-5/8"

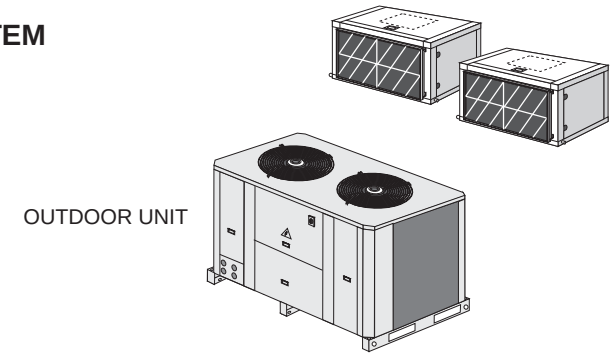
(1) With admissible minimum air flow.

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



SET			ANCK ANHK 48D2	ANCK ANHK 64D2	ANCK ANHK 76D2	ANCK ANHK 86D2	ANCK ANHK 100D2	ANCK ANHK 128D2
Cooling capacity (*)	ANCK ANHK	kW	21,1 +21,1	27,5 + 27,5	35,5 + 35,5	40,0 + 40,0	47,5 + 47,5	70,2 + 46,8
Heating capacity (**)	ANHK	kW	22,3 + 22,3	30,0 + 30,0	37,0 + 37,0	43,0 + 43,0	47,0 + 47,0	72,3 + 48,2
OUTDOOR UNIT			**KNCK KNHK 48D2**	**KNCK KNHK 64D2**	**KNCK KNHK 76D2**	**KNCK KNHK 86D2**	**KNCK KNHK 100D2**	**KNCK KNHK 128D2**
COMPRESSOR Nr / Type			2 / Scroll	2 / Scroll	2 / Scroll	2 / Scroll	2 / Scroll	3 / Scroll
FAN Air flow		$m^3/h.$	19000	23000	22000	21000	32000	36000
NET WEIGHT	KNCK	Kg	485	490	530	590	650	922
	KNHK	Kg	495	500	545	605	675	950
DIMENSIONS Height		mm.	1375	1375	1375	1375	1675	1675
Width		mm.	1960	1960	1960	1960	2250	2250
Depth		mm.	1195	1195	1195	1195	1420	1420
REFRIGERANT CONNECTION Circuit 1 / Circuit 2	Liquid		2 x 5/8"	2 x 5/8"	2 x 3/4"	2 x 7/8"	2 x 3/4"	7/8" / 3/4"
	Gas		2 x 1-1/8"	2 x 1-1/8"	2 x 1-3/8"	2 x 1-5/8"	2 x 1-3/8"	1-5/8" / 1-3/8"
INDOOR UNIT			**2 x LECK 2 x LEHK 24E**	**2 x LECK 2 x LEHK 32E**	**2 x LECK 2 x LEHK 38E**	**2 x LECK 2 x LEHK 43E**	**2 x LECK 2 x LEHK 56E**	**LECK/LEHK 1 x 76E + 1 x 56E**
FAN Max air flow		$m^3/h.$	2 x 5100	2 x 6000	2 x 7300	2 x 8750	2 x 11250	12500 + 11250
Min air flow		$m^3/h.$	2 x 3900	2 x 4750	2 x 5800	2 x 6500	2 x 9000	10000 + 9000
Max available pressure (1)		Pa	2 x 195	2 x 220	2 x 240	2 x 290	2 x 375	355 + 375
NET WEIGHT		Kg	2 x 105	2 x 110	2 x 145	2x 280	2 x 275	295 + 275
DIMENSIONS Height		mm.	2 x 665	2 x 665	2 x 665	2 x 665	2 x 940	2 x 940
Width		mm.	2 x 1285	2 x 1285	2 x 1410	2 x 1570	2 x 1800	2 x 1800
Depth		mm.	2 x 803	2 x 803	2 x 803	2 x 803	2 x 1050	2 x 1050
REFRIGERANT CONNECTION Circuit 1 / Circuit 2	Liquid		2 x 5/8"	2 x 5/8"	2 x 3/4"	2 x 7/8"	2 x 3/4"	7/8" / 3/4"
	Gas		2 x 1-1/8"	2 x 1-1/8"	2 x 1-3/8"	2 x 1-5/8"	2 x 1-3/8"	1-5/8" / 1-3/8"

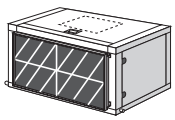
(1) With admissible minimum air flow.

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

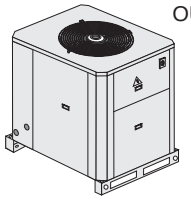
(*) Air intake temperature in the indoor exchanger: 27°C DB/19°C WB
(*) Air intake temperature in the outdoor exchanger: 35ºC DB
(**) Air intake temperature in the indoor exchanger: 20°C DB
(**) Air intake temperature in the outdoor exchanger: 7°C DB / 6ºC WB

ELECTRICAL DATA

INDOOR UNIT



OUTDOOR UNIT



ELECTRICAL CONSUMPTION FOR STANDARD UNITS

SET		ANCK 24E ANHK 24E	ANCK 32E ANHK 32E	ANCK 38E ANHK 38E	ANCK 43E ANHK 43E
Voltage	V/f (50 Hz)	230V/400V+N-3Ph			
Maximum absorbed power	kW	10,3	15,6	18,4	22,4
Maximum current	A	30,2/18,1	46,2/28,1	55,8/32,7	67,1/39,5
Start up current	A	171,9/103,1	233,7/134,1	288,7/165,1	343,8/198,5

OUTDOOR UNIT		KNCK 24E KNHK 24E	KNCK 32E KNHK 32E	KNCK 38E KNHK 38E	KNCK 43E KNHK 43E
Voltage	V/f (50 Hz)	230V/400V+N-3Ph			
Maximum absorbed power	kW	8,9	13,8	16,4	19,9
Maximum current	A	25,9/15,6	40,0/24,5	49,6/29,1	56,8/33,5
Start up current	A	167,6/100,6	227,5/130,5	282,5/161,5	333,5/192,5

INDOOR UNIT		LECK 24E LEHK 24E	LECK 32E LEHK 32E	LECK 38E LEHK 38E	LECK 43E LEHK 43E
		230V/400V+N-3Ph			
Maximum absorbed power	kW	1,4	1,8	2	2,5
Maximum current	A	4,3/2,5	6,2/3,6	6,2/3,6	10,3/6,0
Start up current	A	20,4/11,8	32,5/18,8	32,5/18,8	65,5/38,0

ADDITIONAL ELECTRICAL CONSUMPTION FOR THE OPTIONS

INDOOR UNIT

ELECTRICAL HEATER			LECK 24E-32E-38E			LECK 43E	
Voltage	V/f (50 Hz)		230V/400V+N-3Ph				
Maximum absorbed power	kW		7,5	11	15	11	15
Maximum current	A	230 / III	18,8	27,6	37,7	27,6	37,7
		400 / III	10,8	15,9	21,7	15,9	21,7

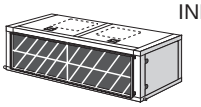
ELECTRICAL HEATER			LEHK 24E-32E-38E-43E		
Voltage	V/f (50 Hz)		230V/400V+N-3Ph		
Maximum absorbed power	kW		7,5	11	15
Maximum current	A	230 / III	18,8	27,6	37,7
		400 / III	10,8	15,9	21,7

HIGH PRESSURE FAN		LECK 24E LEHK 24E	LECK 32E LEHK 32E	LECK 38E LEHK 38E	LECK 43E LEHK 43E
Voltage	V/f (50 Hz)	230V/400V+N-3Ph			
Maximum absorbed power	kW	0,4	1,0	1,0	0,8
Maximum current	A	1,0/0,6	2,5/1,4	2,5/1,4	2,0/1,2

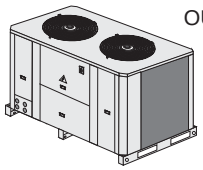
RETURN FAN		LECK 24E LEHK 24E	LECK 32E LEHK 32E	LECK 38E LEHK 38E	LECK 43E LEHK 43E
Voltage	V/f (50 Hz)	230V/400V+N-3Ph			
Maximum absorbed power	kW	1,4	1,8	2	2,5
Maximum current	A	4,3/2,5	6,2/3,6	6,2/3,6	10,3/6

ELECTRICAL DATA

INDOOR UNIT



OUTDOOR UNIT



ELECTRICAL CONSUMPTION FOR STANDARD UNITS

SET		ANCK 48D ANHK 48D	ANCK 64D ANHK 64D	ANCK 76D ANHK 76D	ANCK 86D ANHK 86D	ANCK 100D ANHK 100D	ANCK 128D ANHK 128D	ANCK 152D ANHK 152D
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph		
Maximum absorbed power	kW	21,5	31,2	36,8	44,8	47,2	61,1	73,0
Maximum current	A	63,4/39,1	92,5/56,2	111,7/65,4	134,2/78,9	76,3	98,6	118,4
Start up current	A	205,1/124,1	280,0/162,2	344,6/197,8	410,6/237,9	202,7	221,9	294

OUTDOOR UNIT		KNCK 48D KNHK 48D	KNCK 64D KNHK 64D	KNCK 76D KNHK 76D	KNCK 86D KNHK 86D	KNCK 100D KNHK 100D	KNCK 128D KNHK 128D	KNCK 152D KNHK 152D
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph		
Maximum absorbed power	kW	18,7	27,6	32,8	39,8	41,7	55,6	67,5
Maximum current	A	54,6/34,0	80,0/49,0	99,2/58,2	113,6/67,0	64,4	86,7	106,5
Start up current	A	196,3/119,0	267,5/155,0	332,1/190,6	390,0/226,0	190,8	210,0	282,1

INDOOR UNIT		LECK 48D LEHK 48D	LECK 64D LEHK 64D	LECK 76D LEHK 76D	LECK 86D LEHK 86D	LECK 112D LEHK 112D	LECK 128D LEHK 128D	LECK 152D LEHK 152D
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph		
Maximum absorbed power	kW	2,8	3,6	4,0	5,0	5,5	5,5	5,5
Maximum current	A	8,8/5,1	12,5/7,2	12,5/7,2	20,6/11,9	11,9	11,9	11,9
Start up current	A	46,7/27,0	64,7/37,4	64,7/37,4	131,0/76,0	76,0	76,0	76,0

ADDITIONAL ELECTRICAL CONSUMPTION FOR THE OPTIONS

OUTDOOR UNIT OPTION FP1-FP2		KNCK 100D KNHK 100D FP1-FP2	KNCK 128D KNHK 128D FP1-FP2	KNCK 152D KNHK 152D FP1-FP2
Voltage	V/f (50 Hz)	400V+N-3Ph		
Maximum absorbed power	kW	2,9-7,1	1,9-6,1	1-5,2
Maximum current	A	4,8-11,4	3,2-9,8	1,6-8,2

INDOOR UNIT

ELECTRICAL HEATER		LECK 48D-64D-76D				LECK 86D			LECK 112D-128D-152D	
Voltage	V/f (50 Hz)	230V/400V+N-3Ph							400V+N-3Ph	
Maximum absorbed power	kW	11	15	20	30	15	22,5	30	40	60
Maximum current	A	27,6/15,9	37,7/21,7	50,2/28,9	75,3/43,3	37,7/21,7	56,5/32,5	75,3/43,3	57,7	86,6

ELECTRICAL HEATER		LEHK 48D-64D-76D			LEHK 86D		LEHK 112D-128D-152D	
Voltage	V/f (50 Hz)	230V/400V+N-3Ph					400V+N-3Ph	
Maximum absorbed power	kW	11	15	20	15	22,5	30	40
Maximum current	A	27,6/15,9	37,7/21,7	50,2/28,9	37,7/21,7	56,5/32,5	43,3	57,7

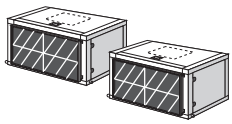
HIGH PRESSURE FAN		LECK 48D LEHK 48D	LECK 64D LEHK 64D	LECK 76D LEHK 76D	LECK 86D LEHK 86D	LECK 112D LEHK 112D	LECK 128D LEHK 128D	LECK 152D LEHK 152D
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph		
Maximum absorbed power	kW	0,8	1,5	1,7	1,5	2	2	2
Maximum current	A	2,0/1,2	3,8/2,2	4,3/2,5	3,8/2,2	2,9	2,9	2,9

RETURN FAN		LECK 48D LEHK 48D	LECK 64D LEHK 64D	LECK 76D LEHK 76D	LECK 86D LEHK 86D	LECK 112D LEHK 112D	LECK 128D LEHK 128D	LECK 152D LEHK 152D
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph		
Maximum absorbed power	kW	2,8	3,6	4,0	5,0	5,5	5,5	5,5
Maximum current	A	8,8/5,1	12,5/7,2	12,5/7,2	20,6/11,9	11,9	11,9	11,9

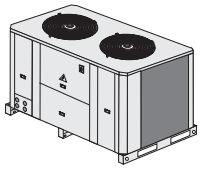
EXHAUST FAN		LECK 112D LEHK 112D	LECK 128D LEHK 128D	LECK 152D LEHK 152D
Voltage	V/f (50 Hz)	400V+N-3Ph		
Maximum absorbed power	kW	5,3	5,3	5,3
Maximum current	A	9	9	9

ELECTRICAL DATA

MULTI-SPLIT SYSTEM



INDOOR UNITS



OUTDOOR UNIT

ELECTRICAL CONSUMPTION FOR STANDARD UNITS

SET		ANCK 48D2 ANHK 48D2	ANCK 64D2 ANHK 64D2	ANCK 76D2 ANHK 76D2	ANCK 86D2 ANHK 86D2	ANCK 100D2 ANHK 100D2	ANCK 128D2 ANHK 128D2
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph	
Maximum absorbed power	kW	21,5	31,2	36,8	44,8	47,7	61,6
Maximum current	A	63,4/39,1	92,5/56,2	111,7/65,4	134,2/78,9	78,8	101,1
Start up current	A	205,1/124,1	280,0/162,2	344,6/197,8	410,6/237,9	205,2	224,4

OUTDOOR UNIT		KNCK 48D2 KNHK 48D2	KNCK 64D2 KNHK 64D2	KNCK 76D2 KNHK 76D2	KNCK 86D2 KNHK 86D2	KNCK 100D2 KNHK 100D2	KNCK 128D2 KNHK 128D2
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph	
Maximum absorbed power	kW	18,7	27,6	32,8	39,8	41,7	55,6
Maximum current	A	54,6/34,0	80,0/49,0	99,2/58,2	113,6/67,0	64,4	86,7
Start up current	A	196,3/119,0	267,5/155,0	332,1/190,6	390,0/226,0	190,8	210

INDOOR UNIT		LECK / LEHK 2 x 24E	LECK / LEHK 2 x 32E	LECK / LEHK 2 x 38E	LECK/ LEHK 2 x 43E	LECK / LEHK 2 x 56E	LECK / LEHK 1x76E + 1x56E
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph	
Maximum absorbed power	kW	2,8	3,6	4,0	5,0	6,0	6,0
Maximum current	A	8,8/5,1	12,5/7,2	12,5/7,2	20,6/11,9	14,4	14,4
Start up current	A	46,7/27,0	64,7/37,4	64,7/37,4	131,0/76,0	44,6	44,6

ADDITIONAL ELECTRICAL CONSUMPTION FOR THE OPTIONS

OUTDOOR UNIT

OPTION FP1-FP2		KNCK 100D2 KNHK 100D2 FP1-FP2	KNCK 128D2 KNHK 128D2 FP1-FP2
Voltage	V/f (50 Hz)	400V+N-3Ph	
Maximum absorbed power	kW	2,9-7,1	1,9-6,1
Maximum current	A	4,8-11,4	3,2-9,8

INDOOR UNIT

ELECTRICAL HEATER		LECK 2 x 24E-32E-38E			LECK 2 x 43E		LECK 2 x 56E		LECK 1 x 76E + 1 x 56E	
Voltage	V/f (50 Hz)	230V/400V+N-3Ph					400V+N-3Ph			
Maximum absorbed power	kW	2x7,5	2x11	2x15	2x11	2x15	2x15	2x20	20+15	30+20
Maximum current	A	2x18,8/2x10,8	2x27,6/2x15,9	2x37,7/2x21,7	2x27,6/2x15,9	2x37,7/2x21,7	2x21,7	2x28,9	28,9+21,7	43,3+28,9

ELECTRICAL HEATER		LEHK 2 x 24E-32E-38E-43E			LEHK 2 x 56E		LEHK 1 x 76E + 1 x 56E	
Voltage	V/f (50 Hz)	230V/400V+N-3Ph			400V+N-3Ph			
Maximum absorbed power	kW	2x7,5	2x11	2x15	2x15	2x20	15+15	20+20
Maximum current	A	2x18,8/2x10,8	2x27,6/2x15,9	2x37,7/2x21,7	2x21,7	2x28,9	21,7+21,7	28,9+28,9

HIGH PRESSURE FAN		LECK / LEHK 2 x 24E	LECK / LEHK 2 x 32E	LECK / LEHK 2 x 38E	LECK/ LEHK 2 x 43E	LECK / LEHK 2 x 56E	LECK / LEHK 1x76E + 1x56E
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph	
Maximum absorbed power	kW	2x0,4	2x1,0	2x1,0	2x0,8	2x1	1+1
Maximum current	A	2x1,0/2x0,6	2x2,5/2x1,4	2x2,5/2x1,4	2x2,0/2x1,2	2x1,45	1,45+1,45

RETURN FAN		LECK / LEHK 2 x 24E	LECK / LEHK 2 x 32E	LECK / LEHK 2 x 38E	LECK/ LEHK 2 x 43E	LECK / LEHK 2 x 56E	LECK / LEHK 1x76E + 1x56E
Voltage	V/f (50 Hz)	230V/400V+N-3Ph				400V+N-3Ph	
Maximum absorbed power	kW	2x1,4	2x1,8	2x2	2x2,5	2x3	3+3
Maximum current	A	2x4,3/2x2,5	2x6,2/2x3,6	2x6,2/2x3,6	2x10,3/2x6	2x7,2	7,2+7,2

EXHAUST FAN		LECK / LEHK 2 x 56E	LECK / LEHK 1x76E + 1x56E
Voltage	V/f (50 Hz)	400V+N-3Ph	
Maximum absorbed power	kW	2x2,65	2,65+2,65
Maximum current	A	2x4,5	4,5+4,5

FAN PERFORMANCES

STANDARD INDOOR FAN PERFORMANCES

24E

AIR FLOW		R.P.M. \ M³/H	3900	4300	4700	5100
PULLEY POSITION	PULLEY CLOSED	890	195*	165*	130*	85*
	1 TURN	840	150*	125*	90*	50*
	2 TURNS	790	115*	90*	55*	15*
	3 TURNS	740	80*	60*	20*	___

32E

R.P.M. \ M³/H	4750	5250	5750	6000
1010	220*	175*	115*	70*
955	165*	115*	50*	0*
900	125*	65*	0*	___
845	80*	25*	___	___

38E

AIR FLOW		R.P.M. \ M³/H	5800	6400	7000	7300
PULLEY POSITION	PULLEY CLOSED	1010	240*	200*	●	●
	1 TURN	955	190*	150*	100*	●
	2 TURNS	900	150*	110*	65*	40*
	3 TURNS	845	105*	60*	15*	0*

43E

R.P.M. \ M³/H	6500	7250	8000	8750
1075	290*	245*	185*	135*
1010	235*	185*	125*	95*
940	180*	125*	60*	0*
870	140*	85*	20*	___

56E

AIR FLOW		R.P.M. \ M³/H	9000	10000	11000	11250
PULLEY POSITION	PULLEY CLOSED	800	375*	355*	330*	320*
	1 TURN	770	350*	330*	285*	275*
	2 TURNS	735	300*	285*	235*	225*
	3 TURNS	700	255*	235*	190*	180*

76E

R.P.M. \ M³/H	10000	11000	12000	12500
800	355*	330*	285*	●
770	330*	285*	255*	●
735	285*	235*	205*	180*
700	235*	190*	160*	140*

48D

AIR FLOW		R.P.M. \ M³/H	7800	8600	9400	10200
PULLEY POSITION	PULLEY CLOSED	890	195*	165*	130*	85*
	1 TURN	840	150*	125*	90*	50*
	2 TURNS	790	115*	90*	55*	15*
	3 TURNS	740	80*	60*	20*	___

64D

R.P.M. \ M³/H	9500	10500	11500	12000
1010	220*	175*	115*	70*
955	165*	115*	50*	0*
900	125*	65*	0*	___
845	80*	25*	___	___

76D

AIR FLOW		R.P.M. \ M³/H	11600	12800	14000	14600
PULLEY POSITION	PULLEY CLOSED	1140	240*	200*	●	●
	1 TURN	1070	190*	150*	100*	●
	2 TURNS	995	150*	110*	65*	40*
	3 TURNS	920	105*	60*	15*	0*

86D

R.P.M. \ M³/H	13000	14500	16000	17500
1055	270*	225*	165*	115*
1010	235*	185*	125*	95*
965	195*	145*	85*	35*
920	160*	110*	45*	___

112D

AIR FLOW		R.P.M. \ M³/H	18000	20000	22000	22500
PULLEY POSITION	2 TURNS	800	365*	345*	295*	285*
	4 TURNS	760	335*	315*	270*	260*
	6 TURNS	715	290*	270*	220*	210*
	7 TURNS	680	240*	220*	175*	165*

128D/152D

R.P.M. \ M³/H	20000	22000	24000	24500
800	345*	295*	265*	●
760	315*	270*	235*	●
715	270*	220*	185*	165*
680	220*	175*	145*	125*

(*) AVAILABLE STATIC PRESSURE Pa.

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

NOTE: Additional pressure drop with the option high efficiency air filter-EU4 is 50Pa. (Only for models 56E-76E-112D-128D-152D).

NOTE: The unit leaves factory with pulley 2 turns opened for models 24E to 86D and with pulley 6 turns opened for models 112D to 152D.

FAN PERFORMANCES

INDOOR FAN PERFORMANCES WITH KIT HIGH STATIC PRESSURE TO 400 Pa (OPTION)

24E

AIR FLOW		R.P.M. \ M³/H	3900	4300	4700	5100
PULLEY POSITION	PULLEY CLOSED	1140	405*	385*	360*	●
	1 TURN	1070	340*	315*	290*	●
	2 TURNS	995	275*	250*	205*	195*
	3 TURNS	920	215*	190*	160*	130*

32E

R.P.M. \ M³/H	4750	5250	5750	6000
1200	400*	365*	300*	270*
1125	330*	290*	220*	190*
1050	265*	225*	145*	110*
970	205*	160*	80*	40*

38E

AIR FLOW		R.P.M. \ M³/H	5800	6400	7000	7300
PULLEY POSITION	PULLEY CLOSED	1200	400*	385*	●	●
	1 TURN	1125	320*	305*	260*	●
	2 TURNS	1050	270*	235*	180*	●
	3 TURNS	970	220*	185*	110*	95*

43E

R.P.M. \ M³/H	6500	7250	8000	8750
1200	410*	390*	325*	●
1125	340*	315*	240*	205*
1050	270*	245*	165*	130*
970	215*	185*	105*	60*

56E

AIR FLOW		R.P.M. \ M³/H	9000	10000	11000	11250
PULLEY POSITION	PULLEY CLOSED	895	520*	485*	460*	450*
	1 TURN	860	460*	440*	400*	390*
	2 TURNS	820	395*	375*	340*	330*
	3 TURNS	780	355*	320*	275*	245*

76E

R.P.M. \ M³/H	10000	11000	12000	12500
895	485*	460*	415*	●
860	440*	400*	375*	●
820	375*	340*	290*	280*
780	320*	275*	245*	225

48D

AIR FLOW		R.P.M. \ M³/H	7800	8600	9400	10200
PULLEY POSITION	PULLEY CLOSED	1140	405*	385*	360*	●
	1 TURN	1070	340*	315*	290*	●
	2 TURNS	995	275*	250*	205*	195*
	3 TURNS	920	215*	190*	160*	130*

64D

R.P.M. \ M³/H	9500	10500	11500	12000
1200	400*	365*	300*	●
1125	330*	290*	220*	190*
1050	265*	225*	145*	110*
970	205*	160*	80*	40*

76D

AIR FLOW		R.P.M. \ M³/H	11600	12800	14000	14600
PULLEY POSITION	PULLEY CLOSED	1200	400*	385*	●	●
	1 TURN	1125	320*	305*	260*	●
	2 TURNS	1050	270*	235*	180*	●
	3 TURNS	970	220*	185*	110*	95*

86D

R.P.M. \ M³/H	13000	14500	16000	17500
1200	410*	390*	●	●
1150	365*	345*	265*	●
1100	315*	295*	215*	●
1050	270*	245*	165*	130*

112D

AIR FLOW		R.P.M. \ M³/H	18000	20000	22000	22500
PULLEY POSITION	2 TURNS	870	485*	460*	420*	410*
	4 TURNS	835	435*	410*	380*	370*
	6 TURNS	800	390*	365*	340*	330*
	7 TURNS	760	350*	330*	285*	275*

128D/152D

R.P.M. \ M³/H	20000	22000	24000	24500
870	460*	420*	395*	●
835	410*	380*	340*	●
800	365*	340*	290*	270*
760	330*	285*	255*	235*

(*) AVAILABLE STATIC PRESSURE Pa.

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

NOTE: Additional pressure drop with the option high efficiency air filter-EU4 is 50Pa. (Only for models 56E-76E-112D-128D-152D).

NOTE: The unit leaves factory with pulley 2 turns opened for models 24E to 86D and with pulley 6 turns opened for models 112D to 152D.

SOUND PRESSURE / SOUND POWER LEVELS FOR INDOOR UNIT

UNIT MODELS		LECK 24E LEHK 24E	LECK 32E LEHK 32E	LECK 38E LEHK 38E	LECK 43E LEHK 43E	LECK 56E LEHK 56E	LECK 76E LEHK 76E
Sound pressure level (Lp) (1)	**dBA**	59	60	61	62	58	60
Sound power level (Lw)	**dBA**	82	85	86	87	83,4	84,8

UNIT MODELS		LECK 48D LEHK 48D	LECK 64D LEHK 64D	LECK 76D LEHK 76D	LECK 86D LEHK 86D	LECK 112D LEHK 112D	LECK 128D LEHK 128D	LECK 152D LEHK 152D
Sound pressure level (Lp) (1)	**dBA**	59	61	62	63	61	63	63
Sound power level (Lw)	**dBA**	84	88	89	90	86	87,6	87,6

(1) Sound pressure level estimated and radiated by indoor fan to the room with normal absorption, measured 2m from the indoor discharge and the unit installed with intake and discharge ducts according with the unit size.

SOUND PRESSURE / SOUND POWER LEVELS FOR OUTDOOR UNIT

KNCK/ KNHK		Spectrum per octave band (dBA)								Sound Power Lw dB(A)	Sound pressure at 10m Lp dB(A)
			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
24E		(1)	67,6	71,1	74,9	73,2	72,5	69,6	57,0	78,6	50,6
		(2)	67,6	70,9	73,2	71,3	70,3	66,9	55,7	76,6	48,6
		(3)	61,8	69,9	71,9	68,8	67,6	65,3	53,6	74,6	46,6
32E		(1)	80,3	72,4	76,7	75,9	75,4	70,2	62,3	81,0	53,0
		(2)	80,3	72,3	75,2	74,9	73,9	68,0	61,3	79,7	51,7
		(3)	71,6	66,6	72,4	68,4	68,4	64,3	53,9	74,6	46,6
38E		(1)	80,3	72,6	76,1	75,8	77,6	74,2	67,3	82,5	54,5
		(2)	80,3	72,4	74,8	74,9	75,4	71,2	64,8	80,6	52,6
		(3)	71,8	67,0	69,7	68,2	71,5	68,4	59,4	76,0	48,0
43E		(1)	80,3	73,5	77,1	76,3	77,2	71,4	65,0	82,1	54,1
		(2)	80,3	72,9	75,4	75,1	75,1	68,9	63,1	80,4	52,4
		(3)	73,7	67,7	72,1	69,7	70,7	64,8	57,2	75,8	47,8
48D/D2		(1)	71,9	67,9	74,1	72,5	73,8	69,5	57,0	78,7	50,7
		(2)	71,9	67,9	72,3	69,9	69,8	66,1	56,0	75,7	47,7
		(3)	62,0	63,0	70,4	67,4	68,6	65,0	55,0	74,0	46,0
64D/D2		(1)	83,3	75,4	79,7	78,9	78,4	73,2	65,3	84,0	56,0
		(2)	83,3	75,3	78,2	77,9	76,9	71,0	64,3	82,7	54,7
		(3)	74,6	69,6	75,4	71,4	71,4	67,3	56,9	77,6	49,6
76D/D2		(1)	83,3	75,6	79,1	78,8	80,6	77,2	70,3	85,5	57,5
		(2)	83,3	75,4	77,8	77,9	78,4	74,2	67,8	83,6	55,6
		(3)	74,8	70,0	72,7	71,2	74,5	71,4	62,4	79,0	51,0
86D/D2		(1)	83,3	76,5	80,1	79,3	80,2	74,4	68,0	85,1	57,1
		(2)	83,3	75,9	78,4	78,1	78,1	71,9	66,1	83,4	55,4
		(3)	76,7	70,7	75,1	72,7	73,7	67,8	60,2	78,8	50,8
100D/D2		(1)	76,3	75,5	79,7	80,1	79,2	73,8	66,8	84,7	56,7
		(2)	76,3	74,7	77,8	79,1	76,3	70,7	64,1	82,8	54,8
		(3)	70,6	70,7	75,6	75,2	75,3	70,0	63,2	80,4	52,4
128D/D2		(1)	81,9	79,1	81,8	83,1	81,4	75,7	68,6	87,2	59,2
		(2)	81,9	78,8	80,2	82,4	79,4	73,3	66,7	85,9	57,9
		(3)	73,4	72,6	77,5	77,4	76,4	71,4	64,1	82,1	54,1
152D		(1)	84,2	81,0	82,3	85,5	84,4	77,3	69,6	89,5	61,5
		(2)	84,2	80,8	81,0	84,6	82,0	75,1	68,0	88,0	60,0
		(3)	75,0	73,7	77,1	80,0	79,0	72,7	64,1	84,1	56,1
OPTION FP1	**100D/D2**	(1)	84,2	81,0	82,0	84,4	82,0	75,6	69,3	88,0	
		(2)	84,2	80,8	81,0	84,1	80,7	73,9	67,9	87,2	
	128D/D2	(1)	84,2	81,1	82,7	84,6	82,4	76,4	69,6	88,4	
		(2)	84,2	80,8	81,4	84,2	81,0	74,4	68,2	87,5	
	152D	(1)	84,2	80,9	81,9	84,4	81,5	75,2	68,5	87,8	
		(2)	84,2	80,7	80,9	84,1	80,4	73,6	67,5	87,1	
OPTION FP2	**100D/D2**	(1)	96,4	93,6	91,7	93,1	89,5	86,4	81,9	97,0	
		(2)	96,4	93,6	91,6	93,0	89,3	86,3	81,8	96,9	
	128D/D2	(1)	96,4	93,6	91,8	93,1	89,6	86,5	81,9	97,0	
		(2)	96,4	93,6	91,6	93,0	89,4	86,3	81,8	96,9	
	152D	(1)	96,4	93,6	91,7	93,1	89,4	86,3	81,9	97,0	
		(2)	96,4	93,6	91,6	93,0	89,3	86,2	81,8	96,9	

(1) The above data shows noise levels **without** isolation for compressor (standard unit).
(2) The above data shows noise levels **with** isolation for compressor (optional).
(3) The above data shows noise levels **with** Kit "low noise" (optional).

- 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.
- The above data shows noise levels of standard unit and unit with compressor isolation when unit's fan is working on cooling or heating mode at maximum speed.
- The above data shows noise levels of unit with Kit "low noise" when cooling only units, or heat pump units (on cooling mode) are working with outdoor temperatures of 35ºC, because on heating mode the Kit "low noise" is disabled.

COOLING CAPACITIES

SPLIT SYSTEM KNCK + LECK / KNHK+ LEHK
MULTI-SPLIT SYSTEM KNCK-D2 + 2 x LECK / KNHK - D2 + 2 x LEHK

AIR ENTRY TEMPERATURE INDOOR UNIT	CAPACITY IN kW	MODEL 24E					MODEL 32E				
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC DRY BULB									
		25°C	**30°C**	**35°C**	**40°C**	**45°C**	**25°C**	**30°C**	**35°C**	**40°C**	**45°C**
21°C DB 15°C WB	TOTAL CAP.	19,81	19,10	18,36	17,59	16,78	25,80	24,83	23,84	22,82	21,77
	SENSIBLE CAP.	15,58	15,23	14,86	14,48	14,09	19,88	19,42	18,95	18,47	17,99
	POWER INPUT	7,53	8,02	8,57	9,17	9,83	9,91	10,64	11,45	12,33	13,31
24°C DB 17°C WB	TOTAL CAP.	21,33	20,57	19,78	18,96	18,10	27,70	26,67	25,62	24,53	23,41
	SENSIBLE CAP.	16,73	16,37	16,00	15,62	15,23	21,33	20,87	20,40	19,92	19,43
	POWER INPUT	7,59	8,08	8,64	9,25	9,92	10,02	10,76	11,58	12,48	13,47
27°C DB 19°C WB	TOTAL CAP.	22,96	22,15	21,30	20,43	19,52	29,73	28,64	27,50	26,36	25,17
	SENSIBLE CAP.	17,83	17,47	17,10	16,72	16,32	22,73	22,27	21,80	21,32	20,83
	POWER INPUT	7,65	8,15	8,70	9,33	10,02	10,14	10,89	11,70	12,64	13,65
29°C DB 21°C WB	TOTAL CAP.	24,73	23,86	22,96	22,02	21,05	31,92	30,75	29,56	28,32	-----
	SENSIBLE CAP.	17,84	17,48	17,10	16,72	16,33	22,70	22,23	21,76	21,29	-----
	POWER INPUT	7,72	8,22	8,79	9,42	10,12	10,26	11,03	11,88	12,81	-----
32°C DB 23°C WB	TOTAL CAP.	26,62	25,69	24,73	23,72	22,68	34,23	32,99	31,72	30,41	-----
	SENSIBLE CAP.	18,90	18,53	18,16	17,77	17,38	24,03	23,57	23,10	22,62	-----
	POWER INPUT	7,79	8,30	8,88	9,52	10,22	10,40	11,18	12,04	13,00	-----

AIR ENTRY TEMPERATURE INDOOR UNIT	CAPACITY IN kW	MODEL 38E					MODEL 43E				
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC DRY BULB									
		25°C	**30°C**	**35°C**	**40°C**	**45°C**	**25°C**	**30°C**	**35°C**	**40°C**	**45°C**
21°C DB 15°C WB	TOTAL CAP.	33,33	32,10	30,82	29,47	28,06	37,00	35,74	34,39	32,92	31,30
	SENSIBLE CAP.	26,19	25,59	24,97	24,33	23,66	28,67	28,07	27,42	26,72	25,97
	POWER INPUT	12,13	13,05	14,06	15,15	16,32	14,54	15,50	16,58	17,81	19,20
24°C DB 17°C WB	TOTAL CAP.	35,75	34,44	33,08	31,65	30,16	39,92	38,59	37,15	35,59	33,87
	SENSIBLE CAP.	28,09	27,48	26,86	26,22	25,56	30,85	30,24	29,59	28,90	28,14
	POWER INPUT	12,32	13,24	14,27	15,39	16,58	14,71	15,68	16,77	18,00	19,39
27°C DB 19°C WB	TOTAL CAP.	38,35	36,95	35,50	33,99	32,41	43,07	41,65	40,00	38,46	-----
	SENSIBLE CAP.	29,92	29,32	28,70	28,06	27,40	32,96	32,35	31,70	31,00	-----
	POWER INPUT	12,52	13,46	14,50	15,64	16,86	14,90	15,88	17,10	18,22	-----
29°C DB 21°C WB	TOTAL CAP.	41,16	39,66	38,11	36,51	-----	46,47	44,95	43,32	41,54	-----
	SENSIBLE CAP.	29,87	29,26	28,65	28,01	-----	33,00	32,39	31,74	31,04	-----
	POWER INPUT	12,74	13,69	14,75	15,91	-----	15,11	16,10	17,21	18,46	-----
32°C DB 23°C WB	TOTAL CAP.	44,15	42,55	40,90	39,19	-----	50,10	48,48	46,74	44,83	-----
	SENSIBLE CAP.	31,63	31,02	30,41	29,77	-----	35,02	34,40	33,75	33,05	-----
	POWER INPUT	12,98	13,95	15,02	16,21	-----	15,35	16,34	17,46	18,72	-----

AIR ENTRY TEMPERATURE INDOOR UNIT	CAPACITY IN kW	MODELS 48D / 48D2 (MULTI)					MODELS 64D / 64D2 (MULTI)				
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC DRY BULB									
		25°C	**30°C**	**35°C**	**40°C**	**45°C**	**25°C**	**30°C**	**35°C**	**40°C**	**45°C**
21°C DB 15°C WB	TOTAL CAP.	39,24	37,84	36,37	34,85	33,25	51,47	49,54	47,56	45,53	43,45
	SENSIBLE CAP.	30,07	29,39	28,68	27,95	27,20	39,86	38,92	37,98	37,02	36,04
	POWER INPUT	15,30	16,30	17,42	18,64	19,99	19,88	21,30	22,87	24,60	26,49
24°C DB 17°C WB	TOTAL CAP.	42,25	40,75	39,19	37,56	35,86	55,31	53,26	51,16	48,99	46,77
	SENSIBLE CAP.	32,28	31,59	30,88	30,14	29,38	42,77	41,84	40,89	39,92	38,94
	POWER INPUT	15,42	16,43	17,55	18,80	20,17	20,09	21,53	23,13	24,88	26,81
27°C DB 19°C WB	TOTAL CAP.	45,50	43,89	42,20	40,48	38,67	59,42	57,24	55,00	52,70	50,33
	SENSIBLE CAP.	34,41	33,72	33,00	32,26	31,50	45,58	44,65	43,70	42,73	41,75
	POWER INPUT	15,55	16,56	17,50	18,97	20,35	20,31	21,78	23,40	25,19	27,15
29°C DB 21°C WB	TOTAL CAP.	49,00	47,28	45,49	43,63	41,70	63,84	61,52	59,13	56,68	-----
	SENSIBLE CAP.	34,43	33,73	33,01	32,27	31,51	45,53	44,60	43,65	42,69	-----
	POWER INPUT	15,68	16,71	17,86	19,15	20,56	20,56	22,05	23,70	25,52	-----
32°C DB 23°C WB	TOTAL CAP.	52,74	50,90	48,99	47,00	44,93	68,53	66,07	63,53	60,91	-----
	SENSIBLE CAP.	36,47	35,76	35,04	34,30	33,54	48,21	47,28	46,34	45,37	-----
	POWER INPUT	15,83	16,87	18,04	19,34	20,77	20,83	22,34	24,02	25,87	-----

AIR ENTRY TEMPERATURE INDOOR UNIT	CAPACITY IN kW	MODELS 76D / 76D2 (MULTI)					MODELS 86D / 86D2 (MULTI)				
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC DRY BULB									
		25°C	**30°C**	**35°C**	**40°C**	**45°C**	**25°C**	**30°C**	**35°C**	**40°C**	**45°C**
21°C DB 15°C WB	TOTAL CAP.	66,62	64,12	61,55	58,91	56,21	75,11	72,34	69,44	66,42	63,24
	SENSIBLE CAP.	52,35	51,13	49,89	48,64	47,36	57,85	56,53	55,16	53,75	52,28
	POWER INPUT	24,56	26,37	28,37	30,57	32,98	28,62	30,78	33,17	35,75	38,51
24°C DB 17°C WB	TOTAL CAP.	71,52	68,86	66,13	63,33	60,45	80,57	77,61	74,54	71,33	67,97
	SENSIBLE CAP.	56,17	54,95	53,71	52,45	51,17	62,04	60,71	59,35	57,93	56,47
	POWER INPUT	24,83	26,67	28,70	30,94	33,39	29,06	31,24	33,67	36,30	39,12
27°C DB 19°C WB	TOTAL CAP.	76,77	73,94	71,00	68,05	64,98	86,43	83,28	80,00	76,59	-----
	SENSIBLE CAP.	59,86	58,64	57,40	56,14	54,85	66,10	64,77	63,40	61,99	-----
	POWER INPUT	25,12	26,99	29,00	31,33	33,83	29,53	31,75	34,20	36,89	-----
29°C DB 21°C WB	TOTAL CAP.	82,40	79,39	76,31	73,13	-----	92,75	89,38	85,89	82,27	-----
	SENSIBLE CAP.	59,76	58,54	57,31	56,05	-----	65,98	64,65	63,28	61,87	-----
	POWER INPUT	25,44	27,34	29,44	31,76	-----	30,06	32,30	34,80	37,54	-----
32°C DB 23°C WB	TOTAL CAP.	88,38	85,19	81,90	78,51	-----	99,49	95,90	92,17	88,32	-----
	SENSIBLE CAP.	63,27	62,06	60,83	59,57	-----	69,86	68,53	67,17	65,77	-----
	POWER INPUT	25,79	27,71	29,85	32,22	-----	30,63	32,90	35,45	38,23	-----

Nominal capacities

DB - Dry Bulb
WB - Wet Bulb

COOLING CAPACITIES

SPLIT SYSTEM KNCK + LECK / KNHK+ LEHK
MULTI-SPLIT SYSTEM KNCK-D2 + 2 x LECK / KNHK - D2 + 2 x LEHK

AIR ENTRY TEMPERATURE INDOOR UNIT	CAPACITY IN kW	MODELS 100D / 100D2 (MULTI) — AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC DRY BULB					MODELS 128D / 128D2 (MULTI) — AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC DRY BULB					MODEL 152D — AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC DRY BULB				
		25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C
21°C DB / 15°C WB	TOTAL CAP.	89,20	85,90	82,46	78,87	75,10	109,85	105,79	101,56	97,13	92,49	130,04	125,24	120,22	114,98	109,49
	SENSIBLE CAP.	69,34	67,76	66,12	64,43	62,67	85,40	83,45	81,44	79,35	77,18	99,58	97,31	94,95	92,52	89,99
	POWER INPUT	27,12	29,16	31,42	33,87	36,48	36,82	39,60	42,67	46,00	49,54	45,11	48,51	52,27	56,34	60,69
24°C DB / 17°C WB	TOTAL CAP.	95,68	92,17	88,51	84,70	80,71	117,83	113,51	109,01	104,31	99,40	139,49	134,37	129,04	123,48	117,67
	SENSIBLE CAP.	74,37	72,78	71,14	69,44	67,69	91,60	89,64	87,61	85,53	83,37	106,80	104,52	102,16	99,72	97,20
	POWER INPUT	27,53	29,60	31,89	34,39	37,06	37,38	40,19	43,31	46,70	50,33	45,80	49,24	53,06	57,21	61,65
27°C DB / 19°C WB	TOTAL CAP.	102,63	98,89	95,00	90,95	86,73	126,40	121,79	117,00	112,01	106,81	149,63	144,17	138,50	132,60	126,44
	SENSIBLE CAP.	79,24	77,64	76,00	74,31	72,56	97,59	95,62	93,60	91,52	89,37	113,79	111,50	109,14	106,71	104,20
	POWER INPUT	27,98	30,08	32,40	34,95	37,68	38,00	40,84	44,00	47,46	51,17	46,55	50,03	53,90	58,14	62,68
29°C DB / 21°C WB	TOTAL CAP.	110,14	106,14	102,00	97,69	93,22	135,65	130,72	125,62	120,32	114,80	160,57	154,74	148,70	142,43	135,90
	SENSIBLE CAP.	79,09	77,49	75,85	74,17	72,44	97,41	95,44	93,42	91,35	89,21	113,58	111,28	108,93	106,51	104,02
	POWER INPUT	28,47	30,60	32,97	35,56	38,35	38,67	41,55	44,78	48,29	52,07	47,37	50,90	54,85	59,16	63,79
32°C DB / 23°C WB	TOTAL CAP.	118,15	113,88	109,46	104,88	100,13	145,51	140,25	134,81	129,17	-----	172,24	166,02	159,58	152,90	-----
	SENSIBLE CAP.	83,75	82,15	80,52	78,84	77,12	103,14	101,18	99,16	97,10	-----	120,27	117,97	115,62	113,21	-----
	POWER INPUT	29,01	31,17	33,58	36,22	39,06	39,40	42,33	45,60	49,19	-----	48,27	51,85	55,86	60,26	-----

Nominal capacities

DB - Dry Bulb
WB - Wet Bulb

CAPACITY PARTIALITY "MODELS D2"

ANCK / ANHK D2	48D2	64D2	76D2	86D2	100D2	128D2	
LECK / LEHK	2 x 24E	2 x 32E	2 x 38E	2 x 43E	2 x 56E	1 x 76E	1 x 56E
% Total capacity - circuit 1	50%	50%	50%	50%	50%	60%	-----
% Total capacity - circuit 2	50%	50%	50%	50%	50%	-----	40%

CALCULATION OF COOLING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow:

MODELS	24E	32E	38E	43E	56E	76E	48D	64D	76D	86D	112D	128D	152D
INDOOR AIR FLOW M^3/H	4700	5750	7000	8000	11000	12000	9400	11500	14000	16000	22000	24000	24000

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW

MODELS 24E-32E-38E-43E-56E-76E-48D-64D-76D-86D-112D-128D-152D	% NOMINAL AIR FLOW				
	70%	80%	90%	100%	110%
Total capacity	0,96	0,97	0,98	1	1,01
Sensible capacity	0,9	0,93	0,96	1	1,03
Power input	0,98	0,99	1	1	1,01

Data based on the following nominal outdoor fan air flow:

MODELS	24E	32E	38E	43E	48D/D2	64D/D2	76D/D2	86D/D2	100D/D2	128D/D2	152D
OUTDOOR AIR FLOW M^3/H	6300	11500	11000	10500	19000	23000	22000	21000	32000	36000	40000

CORRECTION FACTORS FOR UNITS WITH AIR DUCTS IN OUTDOOR UNIT

Units with fan pressure up to 50 Pa

Available static pressure Pa	30								50							
Description	24E	32E 38E	43E	48D/D2	64D/D2 76D/D2	86D/D2	100D/D2	128D/D2 152D	24E	32E 38E	43E	48D/D2	64D/D2 76D/D2	86D/D2	100D/D2	128D/D2 152D
Maximum ambient temperature ºC	44	43	42	44	43	42	44	43	43	42	41	43	42	41	43	42
Correction Coefficient Capacity	0,991								0,982							
Correction Coefficient Consumption	1,019								1,04							

CORRECTION FACTORS FOR UNITS WITH HIGH PRESSURE FANS (OPTION)

Units with fan pressure up to 120Pa (FP1)

Available static pressure Pa	Description	100D/D2 +FP1	128D/D2 +FP1	152D +FP1
50	Maximum ambient temperature ºC (3)	42	42	42
	Correction Coefficient Capacity	1,008	0,998	0,99
	Correction Coefficient Consumption (1)	0,983	1,008	1,02
75	Maximum ambient temperature ºC (3)	41	41	41
	Correction Coefficient Capacity	1,004	0,994	0,983
	Correction Coefficient Consumption (1)	0,991	1,016	1,033
100	Maximum ambient temperature ºC (3)	40,5	40,5	40,5
	Correction Coefficient Capacity	1	0,988	0,977
	Correction Coefficient Consumption (1)	1	1,033	1,047
125	Maximum ambient temperature ºC (3)	40	40	40
	Correction Coefficient Capacity	0,993	0,978	0,964
	Correction Coefficient Consumption (1)	1,016	1,057	1,073

Units with fan pressure up to 250Pa (FP2)

Available static pressure Pa	Description	100D/D2 +FP2	128D/D2 +FP2	152D +FP2
150	Maximum ambient temperature ºC (3)	46	46	46
	Correction Coefficient Capacity	1,019	1,012	1,008
	Correction Coefficient Consumption (1)	0,959	0,973	0,984
200	Maximum ambient temperature ºC (3)	45	45	45
	Correction Coefficient Capacity	1,014	1,006	1
	Correction Coefficient Consumption (1)	0,969	0,989	1
250	Maximum ambient temperature ºC (3)	42	42	42
	Correction Coefficient Capacity	1,008	0,998	0,99
	Correction Coefficient Consumption (1)	0,983	1,008	1,02

(3) The maximum temperature is with an evaporating temperature of +7ºC (dew point).

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

MODELS	Extra power consumption
100D/D2+FP1	3,1 kW
128D/D2+FP1	2,15 kW
152D+FP1	1,2 kW

MODELS	Extra power consumption
100D/D2+FP2	7,3 kW
128D/D2+FP2	6,35 kW
152D+FP2	5,4 kW

OPERATING LIMITS FOR (COOLING ONLY) UNITS

		MAXIMUM TEMPERATURES	MINIMUM TEMPERATURES
COOLING CYCLE OPERATION	INDOOR TEMPERATURE	32ºC DB / 23ºC WB	21ºC DB / 15ºC WB
	OUTDOOR TEMPERATURE	DEPENDING ON MODEL (see Tables for cooling capacities)	+19ºC STANDARD UNIT +15ºC WITH MINIMUM INDOOR TEMPERATURES 24ºC DB/ 18ºC WB 0ºC WITH OPTIONAL CPC ON/OFF -10ºC (*)

(*) With hot gas bypass kit or proportional CPC (options).

DB.- Dry Bulb Temperature
WB.- Wet Bulb Temperature

HEATING CAPACITIES

SPLIT SYSTEM KNHK + LEHK
MULTI-SPLIT SYSTEM KNHK - D2 + 2 x LEHK

AIR ENTRY TEMPERATURE INDOOR UNIT	kW	MODEL 24E							MODEL 32E						
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC WET BULB													
		-8°C	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**	**-8°C**	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**
15°C DB	Total capacity	15,71	17,41	19,27	22,47	24,91	28,37	30,68	21,04	23,30	25,84	30,26	33,70	38,64	41,98
	Power input	6,58	6,77	6,97	7,32	7,60	8,01	8,30	9,04	9,25	9,49	9,91	10,24	10,75	11,11
18°C DB	Total capacity	15,70	17,38	19,22	22,37	24,78	28,18	30,44	21,03	23,27	25,77	30,13	33,52	38,39	41,68
	Power input	6,81	7,00	7,22	7,59	7,88	8,31	8,61	9,40	9,62	9,87	10,32	10,67	11,21	11,58
20°C DB	Total capacity	15,70	17,37	19,20	22,30	24,69	28,05	30,29	21,03	23,25	25,74	30,00	33,42	38,24	41,49
	Power input	6,96	7,17	7,39	7,70	8,07	8,52	8,83	9,65	9,88	10,14	10,70	10,97	11,52	11,92
24°C DB	Total capacity	15,70	17,34	19,14	22,20	24,53	27,80	29,98	21,07	23,25	25,69	29,94	33,23	37,95	-----
	Power input	7,29	7,50	7,74	8,15	8,48	8,95	9,28	10,17	10,43	10,71	11,21	11,61	12,20	-----
27°C DB	Total capacity	15,70	17,33	19,11	22,12	24,40	27,62	-----	21,12	23,28	25,69	29,87	33,11	37,75	-----
	Power input	7,54	7,77	8,02	8,46	8,80	9,29	-----	10,59	10,86	11,17	11,70	12,12	12,74	-----

AIR ENTRY TEMPERATURE INDOOR UNIT	kW	MODEL 38E							MODEL 43E						
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC WET BULB													
		-8°C	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**	**-8°C**	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**
15°C DB	Total capacity	25,55	28,47	31,70	37,26	41,56	47,74	51,92	29,57	33,31	37,19	43,81	48,83	54,39	60,50
	Power input	10,50	10,83	11,19	11,82	12,32	13,08	13,62	12,98	13,26	13,58	14,14	14,60	15,12	15,74
18°C DB	Total capacity	25,53	28,43	31,62	37,10	41,34	47,42	51,53	29,78	33,21	37,02	43,60	48,58	54,09	60,16
	Power input	10,95	11,30	11,68	12,34	12,86	13,65	14,21	13,38	13,66	14,00	14,58	15,06	15,60	16,24
20°C DB	Total capacity	25,52	28,40	31,57	37,00	41,20	47,21	51,27	29,74	33,12	36,93	43,00	48,41	53,90	59,90
	Power input	11,27	11,62	12,02	12,70	13,24	14,05	14,62	13,66	13,96	14,30	15,40	15,70	15,94	16,60
24°C DB	Total capacity	25,50	28,36	31,48	36,82	40,93	46,80	50,78	29,67	33,00	36,81	43,17	48,07	53,47	-----
	Power input	11,92	12,30	12,73	13,46	14,03	14,89	15,49	14,24	14,56	14,92	15,56	16,08	16,68	-----
27°C DB	Total capacity	25,49	28,32	31,41	36,68	40,72	46,50	-----	29,65	32,93	36,61	42,96	47,79	-----	-----
	Power input	12,42	12,83	13,28	14,05	14,66	15,55	-----	14,72	15,06	15,44	16,10	16,64	-----	-----

AIR ENTRY TEMPERATURE INDOOR UNIT	kW	MODELS 48D / 48D2 (MULTI)							MODELS 64D / 64D2 (MULTI)						
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC WET BULB													
		-8°C	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**	**-8°C**	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**
15°C DB	Total capacity	31,57	34,97	38,72	45,14	50,05	57,00	61,63	42,22	46,71	51,72	60,43	67,16	76,76	83,21
	Power input	13,59	13,97	14,39	15,12	15,70	16,55	17,14	18,17	18,62	19,13	20,03	20,76	21,86	22,64
18°C DB	Total capacity	31,55	34,92	38,62	44,95	49,78	56,61	61,16	42,18	46,62	51,58	60,17	66,80	76,26	82,61
	Power input	14,05	14,46	14,90	15,67	16,27	17,16	17,78	18,85	19,33	19,87	20,83	21,59	22,75	23,57
20°C DB	Total capacity	31,54	34,89	38,56	44,80	49,61	56,35	60,85	42,18	46,59	51,50	60,00	66,58	75,94	82,22
	Power input	14,38	14,80	15,25	15,90	16,67	17,58	18,23	19,33	19,83	20,39	21,40	22,18	23,37	24,22
24°C DB	Total capacity	31,53	34,84	38,46	44,60	49,27	55,85	60,23	42,24	46,58	51,40	59,75	66,19	75,35	-----
	Power input	15,04	15,50	15,99	16,84	17,50	18,48	19,16	20,33	20,87	21,48	22,56	23,41	24,69	-----
27°C DB	Total capacity	31,53	34,81	38,38	44,44	49,03	55,49	-----	42,33	46,61	51,37	59,60	65,93	74,95	-----
	Power input	15,57	16,05	16,57	17,46	18,16	19,18	-----	21,12	21,71	22,35	23,49	24,40	25,74	-----

AIR ENTRY TEMPERATURE INDOOR UNIT	kW	MODELS 76D / 76D2 (MULTI)							MODELS 86D / 86D2 (MULTI)						
		AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC WET BULB													
		-8°C	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**	**-8°C**	**-4°C**	**0°C**	**6°C**	**10°C**	**14°C**	**18°C**
15°C DB	Total capacity	51,91	57,48	63,73	74,64	83,12	95,31	103,54	59,38	66,18	73,67	86,60	96,60	110,96	120,68
	Power input	21,46	21,96	22,52	23,51	24,31	25,52	26,38	25,46	26,25	27,13	28,67	29,89	31,72	33,02
18°C DB	Total capacity	51,88	57,39	63,56	74,33	82,69	94,70	102,80	59,34	66,08	73,49	86,24	96,09	110,21	119,77
	Power input	22,31	22,84	23,44	24,49	25,33	26,60	27,50	26,56	27,40	28,32	29,92	31,20	33,10	34,46
20°C DB	Total capacity	51,88	57,36	63,48	74,00	82,43	94,32	102,34	59,32	66,02	73,38	86,00	95,76	109,73	119,18
	Power input	22,90	23,46	24,08	25,40	26,05	27,36	28,29	27,32	28,19	29,14	30,80	32,11	34,07	35,46
24°C DB	Total capacity	51,97	57,36	63,38	73,84	81,96	93,60	101,46	59,28	65,91	73,17	85,58	95,13	108,78	-----
	Power input	24,15	24,75	25,43	26,61	27,56	28,96	29,96	28,90	29,84	30,87	32,64	34,03	36,10	-----
27°C DB	Total capacity	52,09	57,42	63,36	73,67	81,67	93,12	-----	59,24	65,82	73,01	85,26	94,66	-----	-----
	Power input	25,13	25,78	26,51	27,77	28,76	30,25	-----	30,12	31,12	32,21	34,08	35,54	-----	-----

Nominal capacities

DB - Dry Bulb
WB - Wet Bulb

HEATING CAPACITIES

SPLIT SYSTEM KNHK + LEHK
MULTI-SPLIT SYSTEM KNHK - D2 + 2 x LEHK

AIR ENTRY TEMPERATURE INDOOR UNIT	kW	MODELS 100D / 100D2 (MULTI) AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC WET BULB							MODELS 128D / 128D2 (MULTI) AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC WET BULB							MODEL 152D AIR ENTRY TEMPERATURE INTO THE OUTDOOR UNIT ºC WET BULB						
		-8°C	-4°C	0°C	6°C	10°C	14°C	18°C	-8°C	-4°C	0°C	6°C	10°C	14°C	18°C	-8°C	-4°C	0°C	6°C	10°C	14°C	18°C
15°C	Total capacity	64,91	72,33	80,52	94,65	105,59	121,28	131,91	82,86	92,34	102,79	120,83	134,79	154,83	168,40	100,12	111,57	124,21	146,01	162,87	187,08	203,48
	Power input	23,80	24,55	25,37	26,81	27,95	29,66	30,88	33,64	34,69	35,85	37,88	39,50	41,92	43,64	42,81	44,15	45,63	48,22	50,27	53,35	55,54
18°C DB	Total capacity	64,86	72,22	80,33	94,27	105,03	120,46	130,91	82,80	92,20	102,54	120,34	134,08	153,78	167,12	100,05	111,41	123,91	145,41	162,01	185,82	201,94
	Power input	24,83	25,62	26,48	27,98	29,17	30,95	32,22	35,10	36,20	37,42	39,54	41,23	43,74	45,53	44,67	46,08	47,63	50,33	52,47	55,67	57,95
20°C DB	Total capacity	64,84	72,16	80,21	94,00	104,67	119,94	130,27	82,77	92,12	102,39	120,00	133,62	153,11	166,30	100,02	111,32	123,72	145,00	161,46	185,01	200,94
	Power input	25,55	26,36	27,25	28,80	30,03	31,86	33,16	36,10	37,25	38,51	40,70	42,43	45,02	46,86	45,95	47,41	49,01	51,80	54,01	57,30	59,64
24°C DB	Total capacity	64,80	72,04	79,98	93,54	103,98	118,90	129,00	82,72	91,97	102,10	119,42	132,74	151,79	-----	99,95	111,13	123,37	144,30	160,39	183,41	-----
	Power input	27,03	27,90	28,86	30,52	31,82	33,76	35,13	38,19	39,43	40,79	43,13	44,97	47,71	-----	48,61	50,19	51,91	54,89	57,24	60,72	-----
27°C DB	Total capacity	64,75	71,95	79,80	93,19	103,46	118,14	128,06	82,66	91,85	101,87	118,97	132,08	150,82	-----	99,88	110,98	123,10	143,75	159,60	182,24	-----
	Power input	28,17	29,10	30,12	31,87	33,24	35,26	36,68	39,81	41,13	42,57	45,03	46,97	49,83	-----	50,66	52,34	54,17	57,32	59,78	63,42	-----

Nominal capacities

DB - Dry Bulb
WB - Wet Bulb

CAPACITY PARTIALITY "MODELS D2"

ANCK / ANHK D2	48D2	64D2	76D2	86D2	100D2	128D2	
LECK / LEHK	2 x 24E	2 x 32E	2 x 38E	2 x 43E	2 x 56E	1 x 76E	1 x 56E
% Total capacity - circuit 1	50%	50%	50%	50%	50%	60%	-----
% Total capacity - circuit 2	50%	50%	50%	50%	50%	-----	40%

CALCULATION OF HEATING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow:

MODELS	24E	32E	38E	43E	56E	76E	48D	64D	76D	86D	112D	128D	152D
INDOOR AIR FLOW M^3/H	4700	5750	7000	8000	11000	12000	9400	11500	14000	16000	22000	24000	24000

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW

MODELS 24E-32E-38E-43E-56E-76E-48D-64D-76D-86D-112D-128D-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	0,99

Data based on the following nominal outdoor fan air flow:

MODELS	24E	32E	38E	43E	48D/D2	64D/D2	76D/D2	86D/D2	100D/D2	128D/D2	152D
OUTDOOR AIR FLOW M^3/H	6300	11500	11000	10500	19000	23000	22000	21000	32000	36000	40000

CORRECTION FACTORS FOR UNITS WITH AIR DUCTS IN OUTDOOR UNIT

Units with fan pressure up to 50 Pa

Available static pressure Pa	30	50
Description	24E a 152D y 48D2 a 128D2	24E a 152D y 48D2 a 128D2
Minimum ambient temperature ºC	-9	-8
Correction Coefficient Capacity	0,988	0,98
Correction Coefficient Consumption	0,996	0,991

CORRECTION FACTORS FOR UNITS WITH HIGH PRESSURE FANS (OPTION)

Units with fan pressure up to 120Pa (FP1)

Available static pressure Pa	Description	100D/D2 +FP1	128D/D2 +FP1	152D +FP1
50	Minimum ambient temperature ºC	-10	-10	-10
	Correction Coefficient Capacity	1,01	1	0,989
	Correction Coefficient Consumption (1)	1,004	0,999	0,994
75	Minimum ambient temperature ºC	-8	-8	-8
	Correction Coefficient Capacity	1,005	0,992	0,983
	Correction Coefficient Consumption (1)	1,002	0,995	0,991
100	Minimum ambient temperature ºC	-6	-6	-6
	Correction Coefficient Capacity	1	0,986	0,976
	Correction Coefficient Consumption (1)	1	0,992	0,988
125	Minimum ambient temperature ºC	-5	-5	-5
	Correction Coefficient Capacity	0,991	0,975	0,964
	Correction Coefficient Consumption (1)	0,997	0,987	0,982

Units with fan pressure up to 250Pa (FP2)

Available static pressure Pa	Description	100D/D2 +FP2	128D/D2 +FP2	152D +FP2
150	Minimum ambient temperature ºC	-10	-10	-10
	Correction Coefficient Capacity	1,024	1,014	1,009
	Correction Coefficient Consumption (1)	1,009	1,005	1,005
200	Minimum ambient temperature ºC	-10	-10	-10
	Correction Coefficient Capacity	1,017	1,007	1
	Correction Coefficient Consumption (1)	1,007	1,002	1
250	Minimum ambient temperature ºC	-8	-8	-8
	Correction Coefficient Capacity	1,01	0,998	0,989
	Correction Coefficient Consumption (1)	1,004	0,997	0,994

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

MODELS	Extra power consumption
100D/D2+FP1	3,1 kW
128D/D2+FP1	2,15 kW
152D+FP1	1,2 kW

MODELS	Extra power consumption
100D/D2+FP2	7,3 kW
128D/D2+FP2	6,35 kW
152D+FP2	5,4 kW

OPERATING LIMITS FOR (HEATING PUMP) UNITS

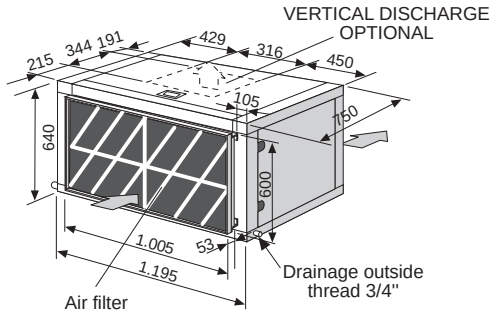
		MAXIMUM TEMPERATURES	MINIMUM TEMPERATURES
COOLING CYCLE OPERATION	INDOOR TEMPERATURE	32ºC DB / 23ºC WB	21ºC DB / 15ºC WB
	OUTDOOR TEMPERATURE	DEPENDING ON MODEL (see Tables for cooling capacities)	+19ºC STANDARD UNIT +15ºC WITH MINIMUM INDOOR TEMPERATURES 24ºC DB/ 18ºC WB 0ºC WITH OPTIONAL CPC ON/OFF -10ºC (*)
HEATING CYCLE OPERATION	INDOOR TEMPERATURE	27ºC DB	15ºC DB
	OUTDOOR TEMPERATURE	DEPENDING ON MODEL (see Tables for heating capacities)	-10ºC DB / -11ºC WB

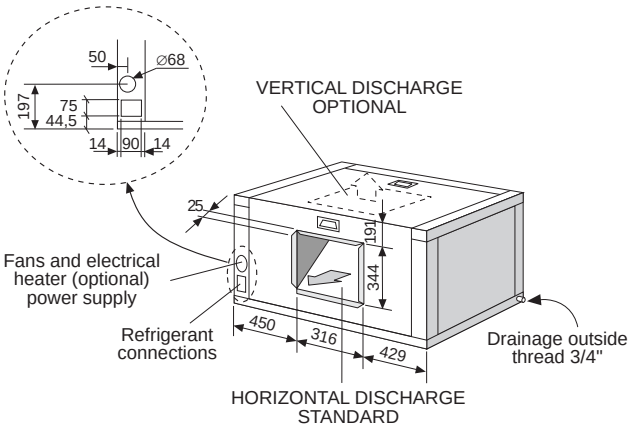
(*) With hot gas bypass kit or proportional CPC (options).

DB.- Dry Bulb Temperature
WB.- Wet Bulb Temperature

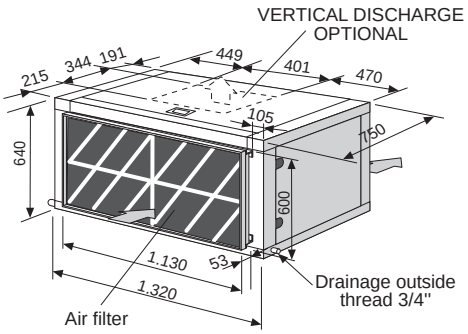
INDOOR UNITS DIMENSIONS

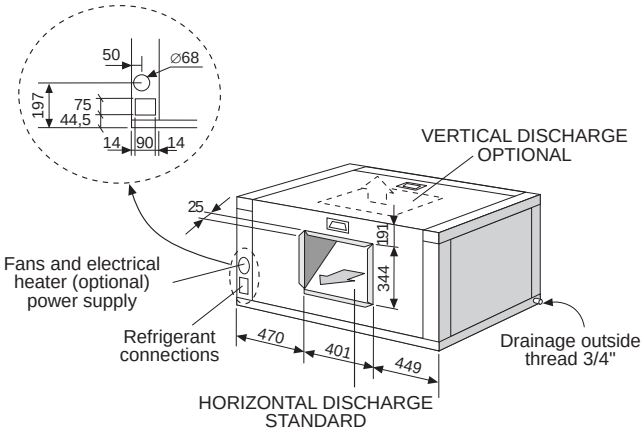
MODELS 24E-32E



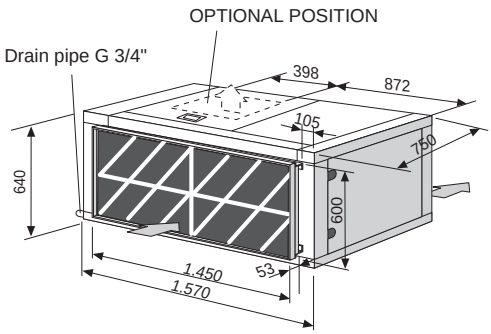


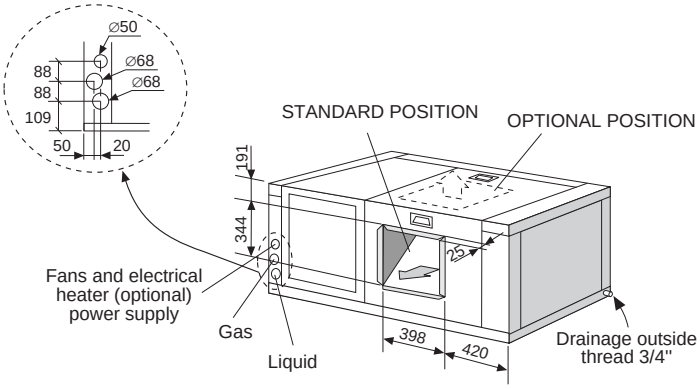
MODEL 38E



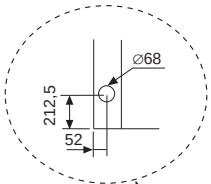


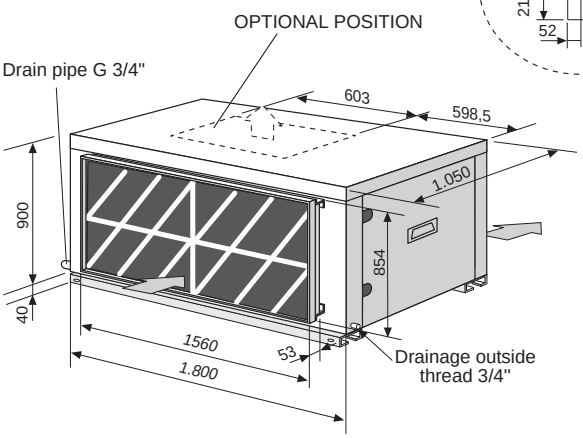
MODEL 43E

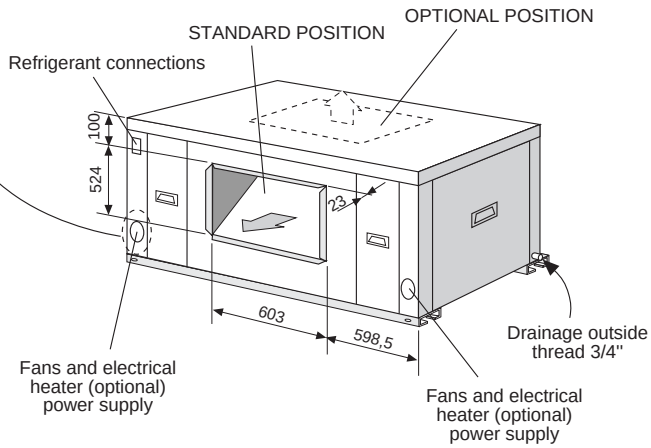




MODELS 56E-76E

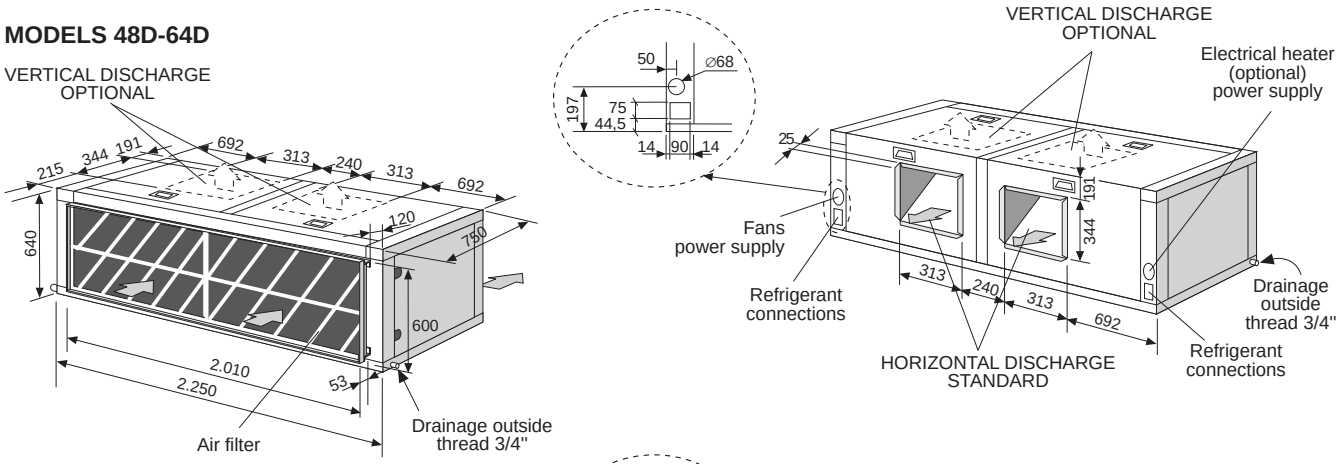




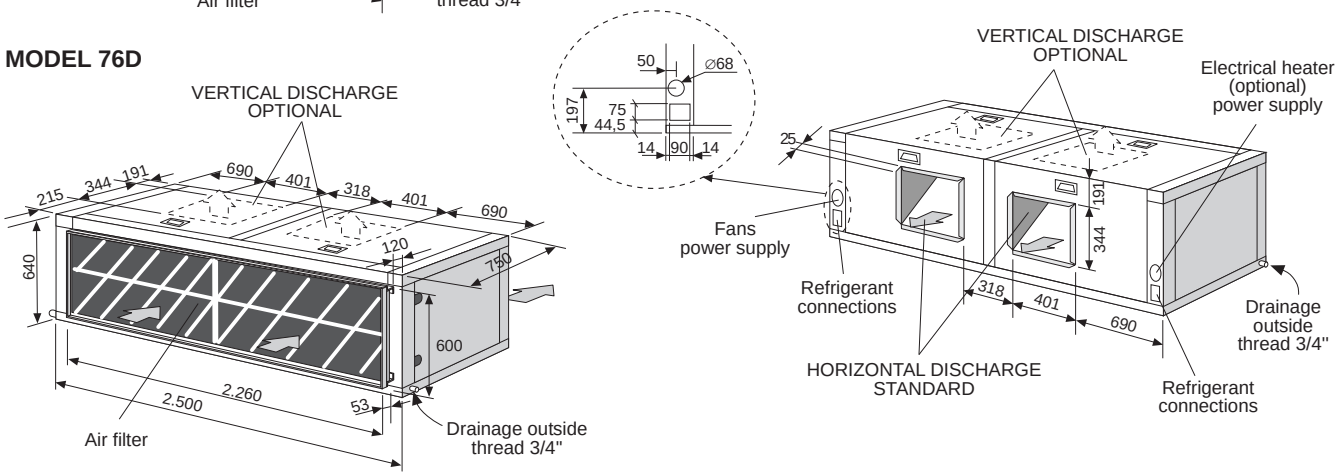


INDOOR UNITS DIMENSIONS

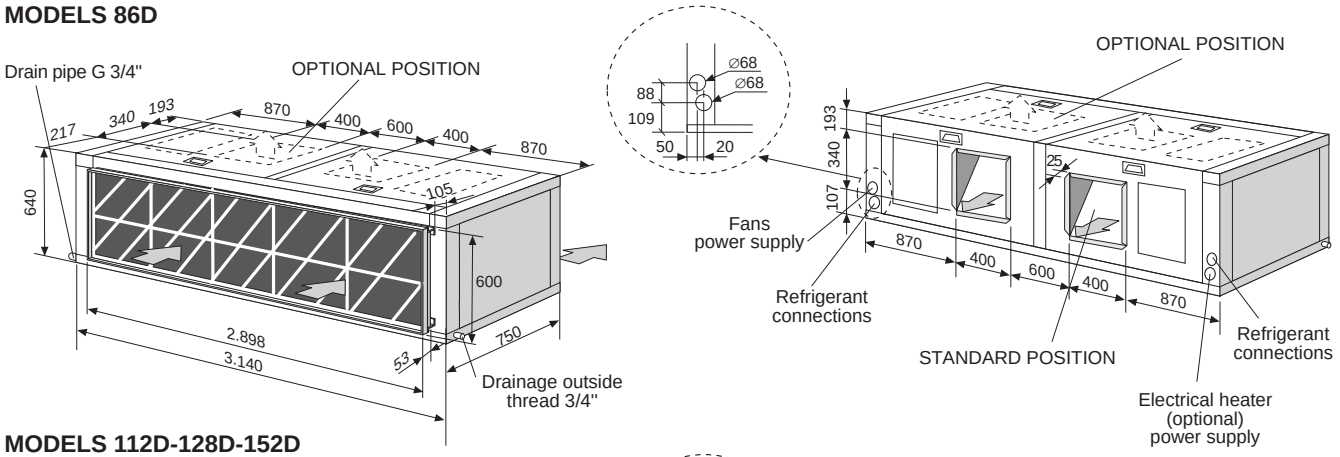
MODELS 48D-64D



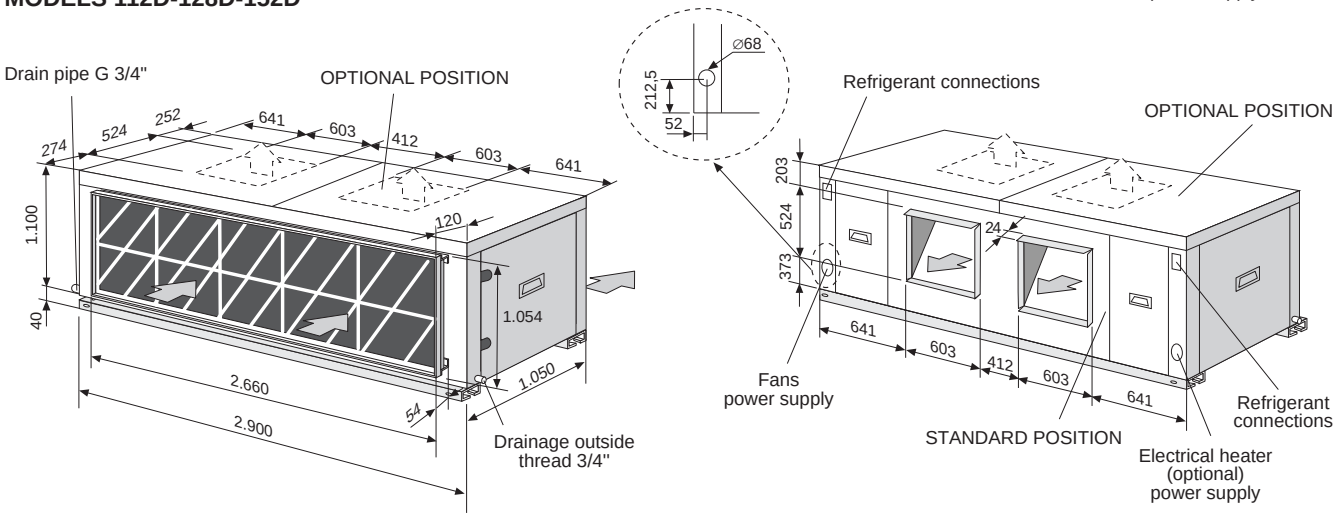
MODEL 76D



MODELS 86D

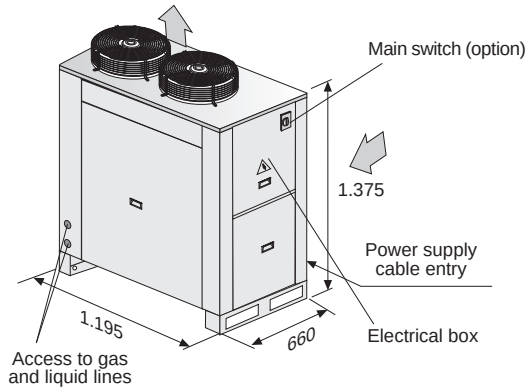


MODELS 112D-128D-152D

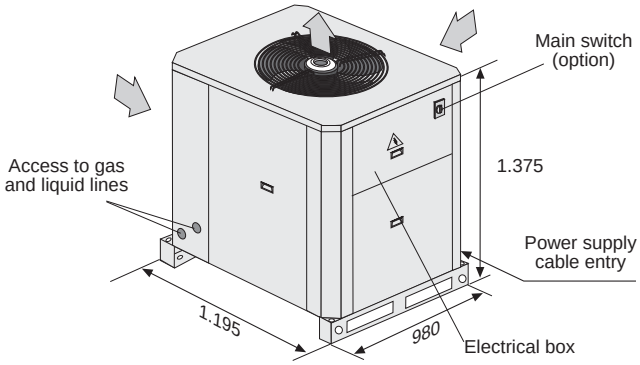


OUTDOOR UNITS DIMENSIONS

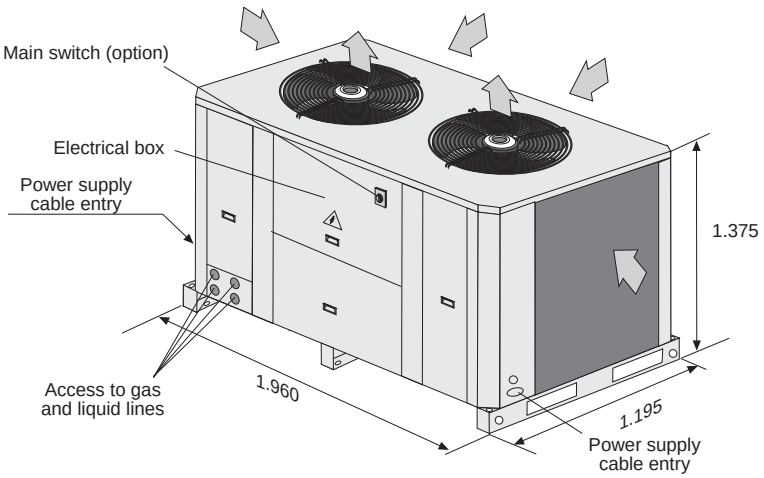
MODELS KNCK/KNHK 24E



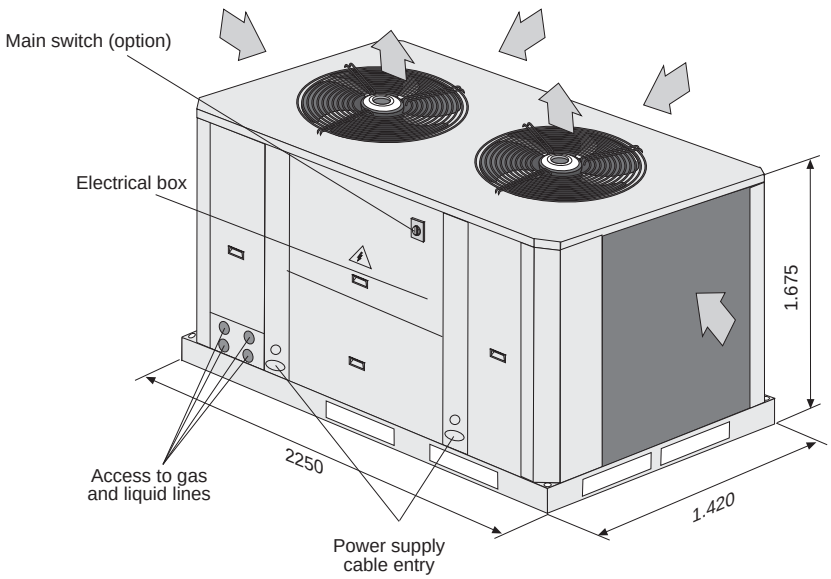
MODELS KNCK/KNHK 32E-38E-43E



MODELS KNCK/KNHK 48D/D2-64D/D2-76D/D2-86D/D2



MODELS KNCK/KNHK 100D/D2-128D/D2-152D



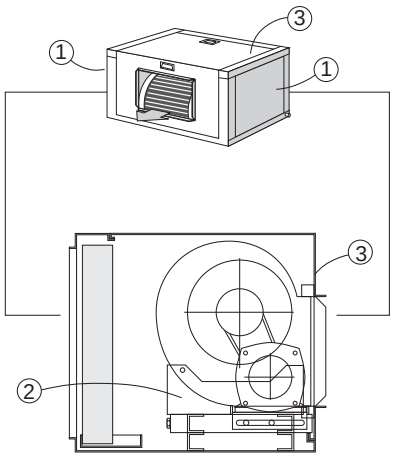
TRANSFORMATION OF AIR DISCHARGE

UNITS MODELS LECK-LEHK 24E-32E-38E-43E-56E-76E

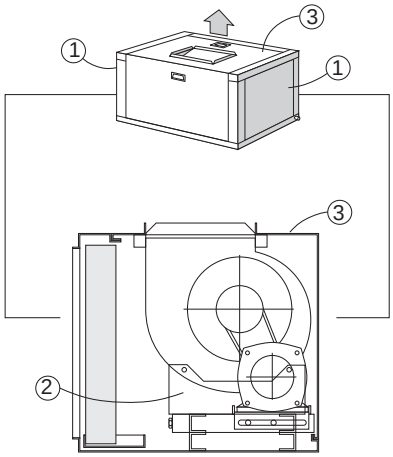
STANDARD AIR DISCHARGE

OPTIONAL AIR DISCHARGE

HORIZONTAL DISCHARGE **(STANDARD)**



VERTICAL DISCHARGE (OPTIONAL)

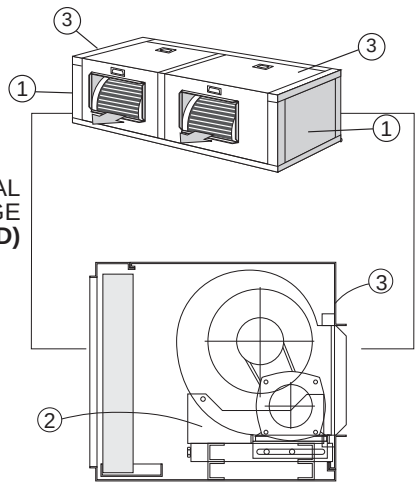


UNITS MODELS LECK-LEHK 48D-64D-76D-86D-112D-128D-152D

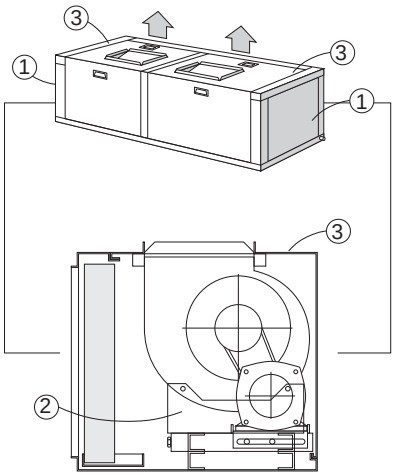
STANDARD AIR DISCHARGE

OPTIONAL AIR DISCHARGE

HORIZONTAL DISCHARGE **(STANDARD)**



VERTICAL DISCHARGE **(OPTIONAL)**



1. Check that unit is electrically disconnected.
2. Unscrew and remove side covers (1) and (3).
3. Loosen the transmission belts and disassemble them.
4. Remove the pulley from the fan axle.

ATTENTION!! Models 86D: unscrew the bottom bedplate.

5. Remove the fan and its supports (2).
6. Turn the fan until horizontal discharge position is reached.
7. Replace the fan on the supports (2) which should not be moved.

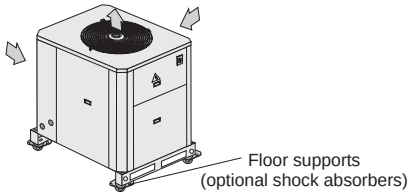
ATTENTION!! Models 86D: screw the bottom bedplate.

8. Place the pulley on the fan axle on the side which coincides with the motor, assemble the belts and align them.
9. Tense the belts correctly.
10. Replace the upper and lateral covers and screw them down (1) and (3).

NOTE: This option for indoor units 56E-76E-112D-128D-152D needs another option kit which includes some metal parts in order to assemble the unit with vertical discharge.

UNIT INSTALLATION

UNIT INSTALLED ON SHOCK ABSORBERS



OUTDOOR UNIT LOCATION

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

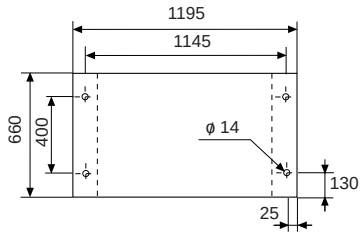
- If the unit is floor mounted, then the profiles should be isolated with shock absorbing material such as anti-vibration or pads. Keep in mind that fans rotate at approximately 850 rpm.

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

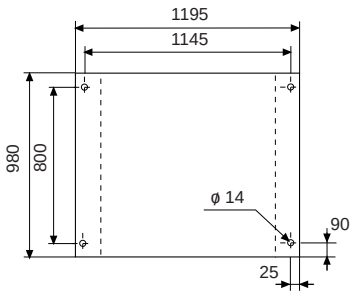
- If the outside temperature in the area where the heat pump unit is to be installed is low or the cycle functioning are too long, it may necessary to install an electrical heater, below the likely coils on the drip tray, which avoids the causing of ice in the coil during defrost cycle.

MOUNTING PLATES (OUTDOOR UNITS)

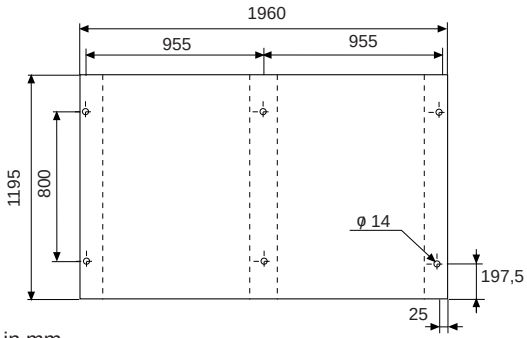
MODEL 24E



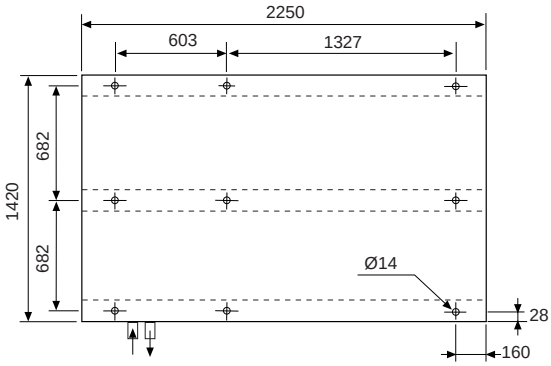
MODELS 32E-38E-43E



MODELS 48D/D2-64D/D2-76D/D2-86D/D2



MODELS 100D/D2-128D/D2-152D



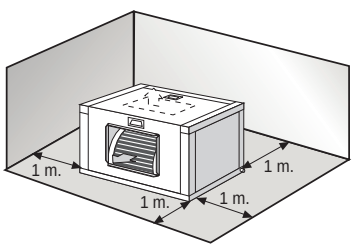
Sizes in mm

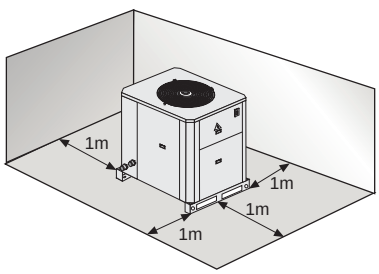
INSTALLATION CLEARANCES

Clearance around the unit for service and maintenance.

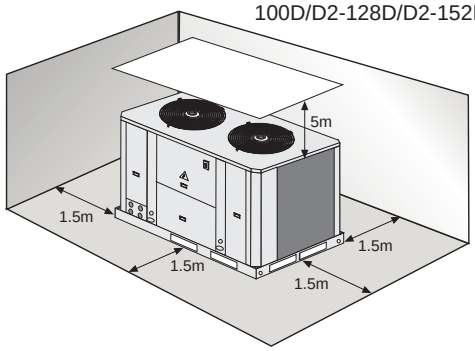
SERVICE SPACE

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.





UNITS
100D/D2-128D/D2-152D

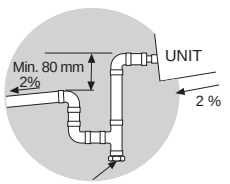


DRAINS (INDOOR UNITS)

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.

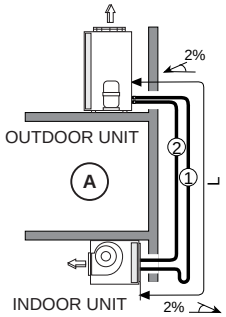
Also slightly tip the unit (2%) toward the drainage side. Check that the condensation trays are clean and free from dirt and other debris from the works and that water drains correctly.

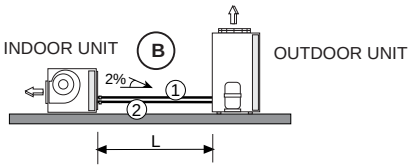


Inspection and cleaning stopper.

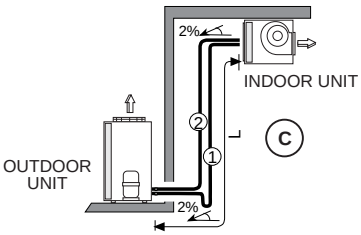
REFRIGERANT CONNECTIONS

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.

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.

TABLE 1: REFRIGERANT LINES SELECTION

REFRIGERANT LINES			UNIT - MODEL										
			24E	32E	38E	43E	48D 48D2	64D 64D2	76D 76D2	86D 86D2	100D 100D2	128D 128D2	152D
Total line length	0 to 10 m.	Ø Liquid	5/8"	5/8"	3/4"	7/8"	2x5/8"	2x5/8"	2x3/4"	2x7/8"	2x3/4"	7/8" 3/4"	2x7/8"
		Ø Gas	1-1/8"	1-1/8"	1-3/8"	1-5/8"	2x 1-1/8"	2x 1-1/8"	2x 1-3/8"	2x 1-5/8"	2x 1-3/8"	1-5/8" 1-3/8"	2x 1-5/8"
	10 to 30 m.	Ø Liquid	5/8"	3/4"	7/8"	7/8"	2x5/8"	2x3/4"	2x7/8"	2x7/8"	2x3/4"	7/8" 3/4"	2x7/8"
		Ø Gas	1-1/8"	1-3/8"	1-5/8"	1-5/8"	2x 1-1/8"	2x 1-3/8"	2x 1-5/8"	2x 1-5/8"	2x 1-3/8"	1-5/8" 1-3/8"	2x 1-5/8"
	30 to 50 m.	Ø Liquid	3/4"	3/4"	7/8"	7/8"	2x3/4"	2x3/4"	2x7/8"	2x7/8"	2x7/8"	1-1/8" 7/8"	2x 1-1/8"
		Ø Gas	1-3/8"	1-3/8"	1-5/8"	2-1/8"	2x 1-3/8"	2x 1-3/8"	2x 1-5/8"	2x 2-1/8"	2x 1-5/8"	2-1/8" 1-5/8"	2x 2-1/8"
Unit connections		Ø Liquid	5/8"	5/8"	3/4"	7/8"	2x5/8"	2x5/8"	2x3/4"	2x7/8"	2x3/4"	7/8" 3/4"	2x7/8"
		Ø Gas	1-1/8"	1-1/8"	1-3/8"	1-5/8"	2x 1-1/8"	2x 1-1/8"	2x 1-3/8"	2x 1-5/8"	2x 1-3/8"	1-5/8" 1-3/8"	2x 1-5/8"
Maximum vertical line length (m.)			16	16	16	16	16	16	16	16	16	16	16
Maximum number of bends			12	12	12	12	12	12	12	12	12	12	12

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


Liquid service valve


Gas service valve

- 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.

Between lengths of 30 and 50 m or superior, you have to make a recalculation according to our technical commercial department or distribution itself to maintain certain aspects how to make the installation (additional charge of oil, solenoid valves etc...)

- 128D/D2 UNIT MODELS USES DIFFERENT SIZES OF PIPE CONNECTIONS: BIG SIZE FOR CIRCUIT 1 AND SMALL SIZE FOR CIRCUIT 2.
128D/D2 units include a sticker in order to clarify piping connection (see below).

PLEASE, CHECK PIPE CONNECTIONS FOR CIRCUITS C1 Y C2 ACCORDING TO THE TABLE BELOW:

		ANCK/ANHK 128D	ANCK/ANHK 128D2	
INDOOR UNIT		**LECK/LEHK 128D**	**LECK/LEHK 76E**	**LECK/LEHK 56E**
C1	Ø Liquid	7/8"	7/8"	N/A
	Ø Gas	1 5/8"	1 5/8"	
C2	Ø Liquid	3/4"	N/A	3/4"
	Ø Gas	1 3/8"		1 3/8"
OUTDOOR UNIT		**KNCK/KNHK 128D**	**KNCK/KNHK 128D2**	
C1	Ø Liquid	7/8"		
	Ø Gas	1-5/8"		
C2	Ø Liquid	3/4"		
	Ø Gas	1-3/8"		

- Connect circuit C1 of outdoor unit with circuit C1 of indoor unit LECK/LEHK 128D or with LECK/LEHK 76E unit.
- Connect circuit C2 of outdoor unit with circuit C2 of indoor unit LECK/LEHK 128D or with LECK/LEHK 56E unit.

REFRIGERANT CONNECTIONS

PRECAUTIONS TO BE TAKEN IN THE USE OF R-407C REFRIGERANT:

R-407C Refrigerant is used in the unit; therefore, the following precautions characteristic of this gas should be taken:
- The Vacuum Pump must have a Check Valve or Solenoid Valve.
- Pressure Gauges and Hoses for the exclusive use with R-407C Refrigerant should be used.
- The charge should be carried out in the Liquid Phase.
- Always use scales to weight-in charge.
- Use the Leak Detector exclusive for R-407C Refrigerant.
- Do not use mineral oil, only synthetic oil to ream, expand or make connections.
- Keep pipes wrapped before using them and be very thorough about any possible dirt (dust, filings, burrs, etc.).
- When there is a leak, gather what is left of the charge, create a vacuum in the unit and completely recharge with new R-407C Refrigerant.
- Brazing should always be carried out in a nitrogen atmosphere.
- Reamers should always be well sharpened.

Indoor and outdoor units are factory pre-charged with Nitrogen (N2). The installer should remove this gas and charge the units with refrigerant R-407C 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-407C PER METER OF LINE

	FROM 0 TO 10M			FROM 10 TO 30M			FROM 30 TO 50M		
	Suction	**Liquid**	**gr/m**	**Suction**	**Liquid**	**gr/m**	**Suction**	**Liquid**	**gr/m**
MODEL 24E	1-1/8"	5/8"	155	1-1/8"	5/8"	155	1-3/8"	3/4"	232
MODEL 32E	1-1/8"	5/8"	155	1-3/8"	3/4"	232	1-3/8"	3/4"	232
MODEL 38E	1-3/8"	3/4"	232	1-5/8"	7/8"	327	1-5/8"	7/8"	327
MODEL 43E	1-5/8"	7/8"	327	1-5/8"	7/8"	327	2-1/8"	7/8"	340
MODELS 48D / D2	2x1-1/8"	2x5/8"	2x155	2x1-1/8"	2x5/8"	2x155	2x1-3/8"	2x3/4"	2x232
MODELS 64D / D2	2x1-1/8"	2x5/8"	2x155	2x1-3/8"	2x3/4"	2x232	2x1-3/8"	2x3/4"	2x232
MODELS 76D / D2	2x1-3/8"	2x3/4"	2x232	2x1-5/8"	2x7/8"	2x327	2x1-5/8"	2x7/8"	2x327
MODELS 86D / D2	2x1-5/8"	2x7/8"	2x327	2x1-5/8"	2x7/8"	2x327	2x2-1/8"	2x7/8"	2x340
MODELS 100D / D2	2x1-3/8"	2x3/4"	2x232	2x1-3/8"	2x3/4"	2x232	2x1-5/8"	2x7/8"	2x327
MODELS 128D / D2	1-5/8" 1-3/8"	7/8" 3/4"	1x327 1x232	1-5/8" 1-3/8"	7/8" 3/4"	1x327 1x232	2-1/8" 1-5/8"	1-1/8" 7/8"	1x581 1x327
MODEL 152D	2x1-5/8"	2x7/8"	2x327	2x1-5/8"	2x7/8"	2x327	2x2-1/8"	2x1-1/8"	2x581

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

TABLE 3.1.: CHARGE OF REFRIGERANT

Charge of refrigerant (gr) R-407C for 0 meters of line KNCK + LECK										
24E	**32E**	**38E**	**43E**	**48D**	**64D**	**76D**	**86D**	**100D**	**128D**	**152D**
6200	8250	11100	11850	2x6450	2x8250	2x11100	2x11850			

Charge of refrigerant (gr) R-407C for 0 meters of line KNHK + LEHK										
24E	**32E**	**38E**	**43E**	**48D**	**64D**	**76D**	**86D**	**100D**	**128D**	**152D**
7000	9300	12500	13400	2x7300	2x9300	2x12500	2x13400			2x20500

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

Charge of refrigerant (gr) R-407C KNCK + 2 x LECK					
48D2	**64D2**	**76D2**	**86D2**	**100D2**	**128D2**
2 x 6450	2 x 8250	2 x 11100	2 x 11850		

Charge of refrigerant (gr) R-407C KNHK + 2 x LEHK					
48D2	**64D2**	**76D2**	**86D2**	**100D2**	**128D2**
2 x 7300	2 x 9300	2 x 12500	2 x 13400		

- 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 KNHK 32E + LEHK 32E set, with a 22m refrigerant line length between outdoor and indoor unit, then the refrigerant charge must be calculated as follow:

1st The TABLE 2 shows, that for 22m of line length between indoor unit and outdoor unit, the line sizes are: liquid 3/4", and gas 1-3/8".

2nd TABLE 2 shows, for line sizes of 3/4"- 1-3/8", the charge per meter line is: 232 gr/m.

3rd TABLE 3.1. shows, charge of refrigerant for the set with 0m of line length is 9300 gr.

4th To determine the charge of the set:

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

Total charge for the set: (232 gr/m) x 22 m + 9300 gr = 14404 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.

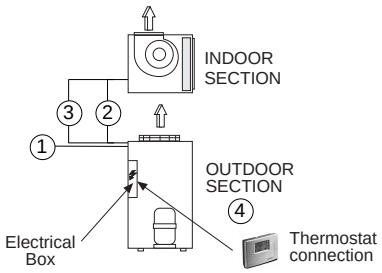
ELECTRICAL CONNECTION

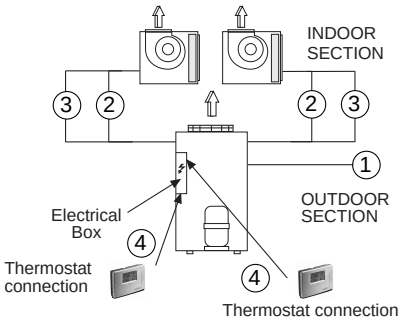
- BEFORE MAKING ANY ELECTRICAL CONNECTIONS, BE SURE THAT ALL CIRCUIT BREAKERS ARE OPEN.
- IN ORDER TO CARRY OUT THE ELECTRICAL CONNECTIONS, FOLLOW THE ELECTRICAL DIAGRAM SUPPLIED WITH THE UNIT.

FOR CLIMATIC 10 UNITS

MODELS: **24E-32E-38E-43E-48D-64D-76D-86D-100D-128D-152D** **48D2-64D2-76D2-86D2-100D/D2-128D/D2**

① Power supply.
② Indoor motor fan electrical connection.
③ Electrical heater connection (optional).
④ Terminal-Thermostat connection
(See electrical connection for the controller)





POWER SUPPLY 230V THREE-PHASE UNITS	UNIT MODEL	Nr OF CABLES X SECTION (mm^2)				
		① Power supply without electrical heater (*)	① Power supply with electrical heater (*)	② Indoor motor fan electrical connection	③ Power supply electrical heater (optional)	
					1 STAGE	2 STAGES
PE L1 L2 L3 X1	**24E**	4 x 10	3 x 25 + 1 x 16	4 x 1,5	4 x 10 + 5 x 1,5	-------
	32E	4 x 16	3 x 25 + 1 x 16	4 x 1,5	4 x 10 + 5 x 1,5	-------
	38E	4 x 16	3 x 35 + 1 x 16	4 x 1,5	4 x 10 + 5 x 1,5	-------
	43E	3 x 25 + 1 x 16	3 x 35 + 1 x 16	4 x 2,5	4 x 10 + 5 x 1,5	-------
	48D	3 x 25 + 1 x 16	3 x 70 + 1 x 35	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5
	64D	3 x 50 + 1 x 25	3 x 95 + 1 x 50	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5
	76D	3 x 50 + 1 x 25	3 x 95 + 1 x 50	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5
3 ~ 230V - 50 Hz + PE	**86D**	3 x 95 + 1 x 50	3 x 120 + 1 x 70	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5

POWER SUPPLY 400V THREE-PHASE UNITS	UNIT MODEL	Nr OF CABLES X SECTION (mm^2)				
		① Power supply without electrical heater (*)	① Power supply with electrical heater (*)	② Indoor motor fan electrical connection	③ Power supply electrical heater (optional)	
					1 STAGE	2 STAGES
PE L1 L2 L3 N X1	**24E**	5 x 4	5 x 10	4 x 1,5	4 x 4 + 5 x 1,5	-------
	32E	5 x 6	5 x 16	4 x 1,5	4 x 4 + 5 x 1,5	-------
	38E	5 x 10	5 x 16	4 x 1,5	4 x 4 + 5 x 1,5	-------
	43E	5 x 10	3 x 25 + 2 x 16	4 x 2,5	4 x 4 + 5 x 1,5	-------
	48D	5 x 10	3 x 25 + 2 x 16	4 x 2,5	4 x 6 + 5 x 1,5	2 x (4 x 4) + 6 x 1,5
	64D	5 x 25	3 x 35 + 2 x 16	4 x 2,5	4 x 6 + 5 x 1,5	2 x (4 x 4) + 6 x 1,5
	76D	5 x 25	3 x 50 + 2 x 25	4 x 2,5	4 x 6 + 5 x 1,5	2 x (4 x 4) + 6 x 1,5
	86D	3 x 35 + 2 x 16	3 x 50 + 2 x 25	4 x 2,5	4 x 6 + 5 x 1,5	2 x (4 x 4) + 6 x 1,5
3N ~ 400V - 50 Hz + PE	**100D**	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5
	128D	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5
	152D	3 x 50 + 2 x 25	3 x 70 + 2 x 35	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5

POWER SUPPLY 230V THREE-PHASE UNITS	UNIT MODEL	Nr OF CABLES X SECTION (mm^2)				
		① Power supply without electrical heater (*)	① Power supply with electrical heater (*)	② Indoor motor fan electrical connection	③ Power supply electrical heater (optional)	
					1 STAGE	2 STAGES
PE L1 L2 L3 X1	**48D2**	3 x 25 + 1 x 16	3 x 70 + 1 x 35	4 x 1,5	4 x 10 + 5 x 1,5	-------
	64D2	3 x 50 + 1 x 25	3 x 95 + 1 x 50	4 x 1,5	4 x 10 + 5 x 1,5	-------
	76D2	3 x 50 + 1 x 25	3 x 95 + 1 x 50	4 x 1,5	4 x 10 + 5 x 1,5	-------
3 ~ 230V - 50 Hz + PE	**86D2**	3 x 95 + 1 x 50	3 x 120 + 1 x 70	4 x 2,5	4 x 10 + 5 x 1,5	-------

POWER SUPPLY 400V THREE-PHASE UNITS	UNIT MODEL	Nr OF CABLES X SECTION (mm^2)				
		① Power supply without electrical heater (*)	① Power supply with electrical heater (*)	② Indoor motor fan electrical connection	③ Power supply electrical heater (optional)	
					1 STAGE	2 STAGES
PE L1 L2 L3 N X1	**48D2**	5 x 10	3 x 25 + 2 x 16	4 x 1,5	4 x 4 + 5 x 1,5	-------
	64D2	3 x 25 + 2 x 16	3 x 35 + 2 x 16	4 x 1,5	4 x 4 + 5 x 1,5	-------
	76D2	3 x 25 + 2 x 16	3 x 50 + 2 x 25	4 x 1,5	4 x 4 + 5 x 1,5	-------
	86D2	3 x 35 + 2 x 16	3 x 50 + 2 x 25	4 x 2,5	4 x 4 + 5 x 1,5	-------
	100D2	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 6 + 5 x 1,5	-------
3N ~ 400V - 50 Hz + PE	**128D2**	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 6 + 5 x 1,5	2 x (4 x 4) + 6 x 1,5

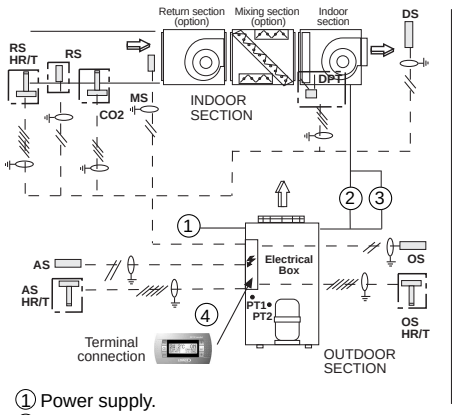
- The sections have been calculated for a length no longer than 50 m and a voltage drop of 10V.
(*) According to standards, you can use different sections for PE and N.

ELECTRICAL CONNECTION

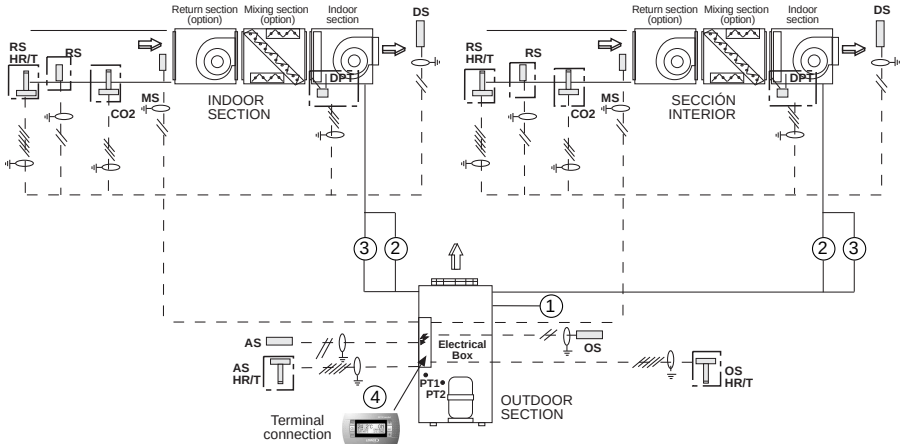
- BEFORE MAKING ANY ELECTRICAL CONNECTIONS, BE SURE THAT ALL CIRCUIT BREAKERS ARE OPEN.
- IN ORDER TO CARRY OUT THE ELECTRICAL CONNECTIONS, FOLLOW THE ELECTRICAL DIAGRAM SUPPLIED WITH THE UNIT.

FOR CLIMATIC 50 UNITS

MODELS: **100D-128D-152D**



100D2-128D2



① Power supply.
② Indoor motor fan electrical connection.
③ Electrical heater connection (optional).
④ Terminal connection
(See electrical connection for the controller)

POWER SUPPLY 400V THREE-PHASE UNITS	UNIT MODEL	Nr OF CABLES X SECTION (mm^2)				
		① Power supply without electrical heater (*)	① Power supply with electrical heater (*)	② Indoor motor fan electrical connection	③ Power supply electrical heater (optional)	
					1 STAGE	2 STAGES
PE L1 L2 L3 N X1	**100D**	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5
	128D	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5
3N ~ 400V - 50 Hz + PE	**152D**	3 x 50 + 2 x 25	3 x 70 + 2 x 35	4 x 2,5	4 x 16 + 5 x 1,5	2 x (4 x 10) + 6 x 1,5

POWER SUPPLY 400V THREE-PHASE UNITS	UNIT MODEL	Nr OF CABLES X SECTION (mm^2)				
		① Power supply without electrical heater (*)	① Power supply with electrical heater (*)	② Indoor motor fan electrical connection	③ Power supply electrical heater (optional)	
					1 STAGE	2 STAGES
PE L1 L2 L3 N X1	**100D2**	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 6 + 5 x 1,5	-------
	128D2	3 x 35 + 2 x 16	3 x 70 + 2 x 35	4 x 2,5	4 x 6 + 5 x 1,5	2 x (4 x 4) + 6 x 1,5
3N ~ 400V - 50 Hz + PE						

- The sections have been calculated for a length no longer than 50 m and a voltage drop of 10V.
(*) According to standards, you can use different sections for PE and N.

CONTROL CONNECTION ELEMENTS			Nr OF CABLES X SECTION (mm^2)
COMPONENTS	STANDARD	**DS** (Discharge sensor)	2 x 1 mm^2 (shielded)
		OS (Outdoor sensor)	2 x 1 mm^2 (shielded)
		AS (Remote ambient sensor)	2 x 1 mm^2 (shielded)
	OPTIONS	**RS** (Duct sensor). It replaces AS	2 x 1 mm^2 (shielded)
		MS (Duct sensor for thermostatic and enthalpic free cooling)	2 x 1 mm^2 (shielded)
		RS HR/T (Duct remote sensor) for enthalpic free cooling	5 x 1 mm^2 (shielded)
		CO_2 (CO_2 Air Quality Probe) available only with enthalpic free cooling	3 x 1 mm^2 (shielded)
		DPT (Air differential pressure transducer)	3 x 1 mm^2 (shielded)
		OS HR/T (Outdoor sensor) for enthalpic free cooling	5 x 1 mm^2 (shielded)
		AS HR/T (Remote ambient sensor) for enthalpic free cooling	5 x 1 mm^2 (shielded)

NOTE: DS, OS, OS HR/T, AS, AS HR/T, RS y RS HR/T sensors are supplied inside the outdoor unit, perfectly identified. All these sensors have to be connected by the installer.

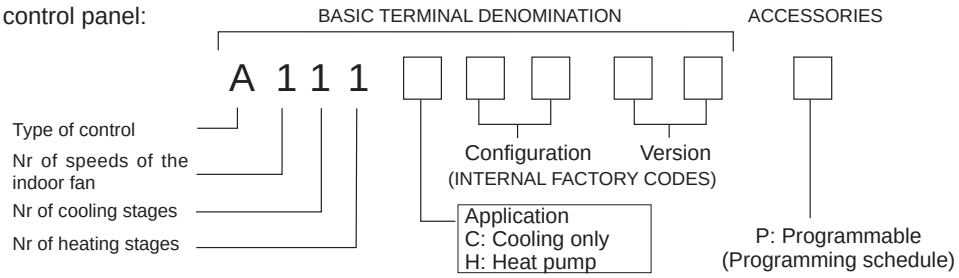
VOLTAGE OPERATING LIMITS

MODELS	VOLTAGE	LIMIT
24E/48D/48D2	230 V-3Ph-50Hz	180-242 V -3Ph- 50Hz
32E/64D/64D2	230 V-3Ph-50Hz	198-264 V -3Ph- 50Hz
38E/76D/76D2	400 V-3Ph-50Hz	342-462 V -3Ph- 50Hz
86D/86D2	230 V-3Ph-50Hz	198-264 V -3Ph- 50Hz
86D/86D2/100D/100D2/128D/128D2/152D	400 V-3Ph-50Hz	342-462 V -3Ph- 50Hz

ELECTRICAL CONNECTION

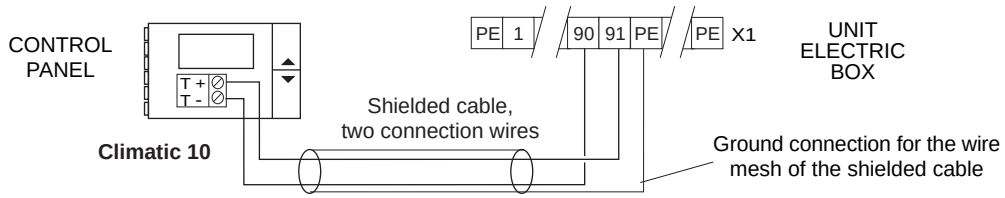
CLIMATIC 10 ELECTRICAL CONNECTION

Identification code
for the control panel:



TWO SHIELDED WIRES CONNECTION (STANDARD UNIT)

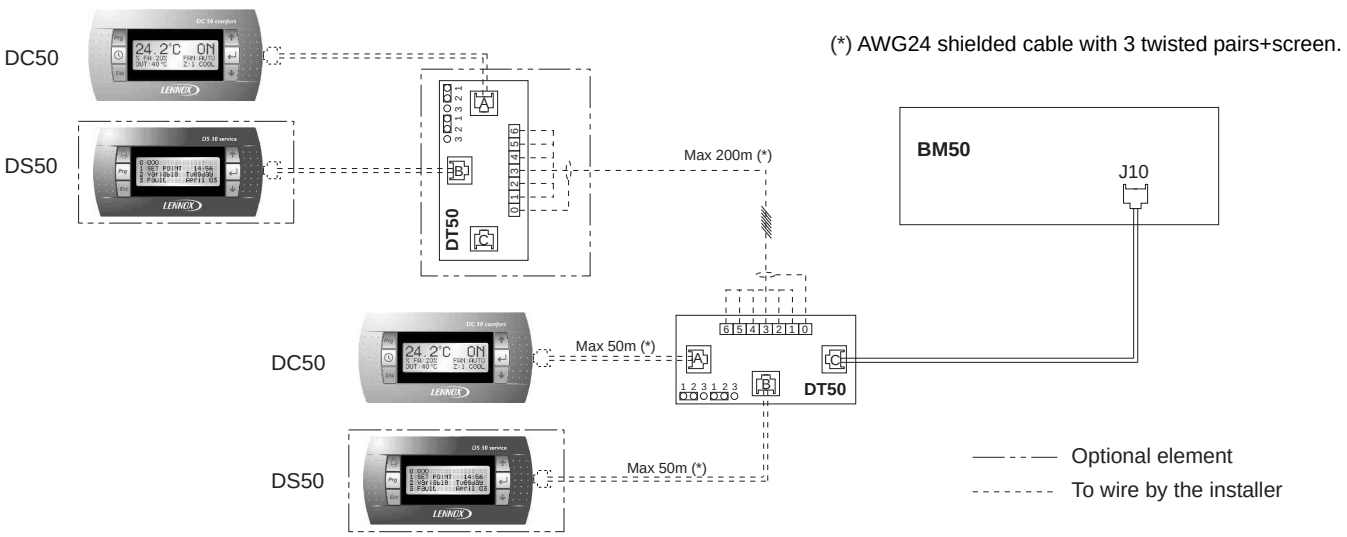
IMPORTANT
THE SHIELDED CONNECTION CABLE BETWEEN THE CONTROL PANEL AND THE UNIT MUST BE SEPARATE FROM ANY OTHER TYPE OF ELECTRICAL WIRING. CONNECT IT TO THE ELECTRIC BOX LOCATED IN THE OUTDOOR UNIT.



- For securing and connecting the Control Panel, consult the control Panel Manual supplied with the unit.
- Keep in mind that the Control Panel cable is a SHIELDED CABLE and the wire mesh is only grounded through the electric box.
- The T+ and T- polarity must strictly agree with the electrical diagram supplied with the unit.

Since this type of control panel is factory-configured for each application, an identification code located on the control plate of the terminal itself has been given to each panel.
Any query or request for a replacement of the control panel must be accompanied by this identification code.

TERMINAL DC50 COMFORT AND DS50 SERVICE CONNECTION (CONTROL CLIMATIC 50)

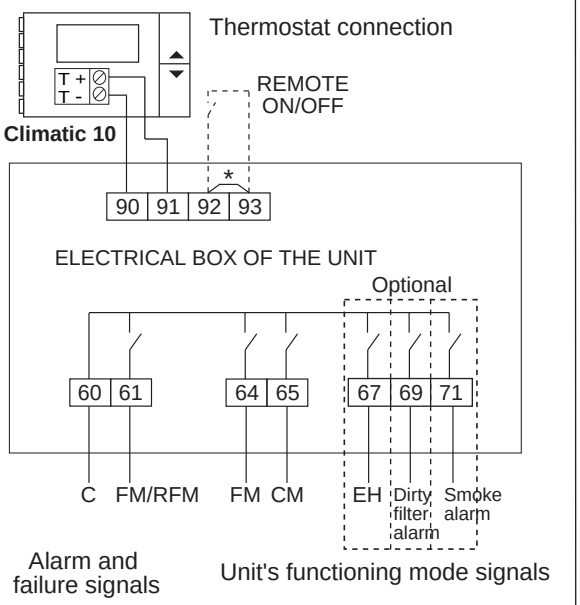


NOTE: Jumpers in the expansion module BE50 have to be connected between 1 and 2 in order to get power supply available to all connectors.

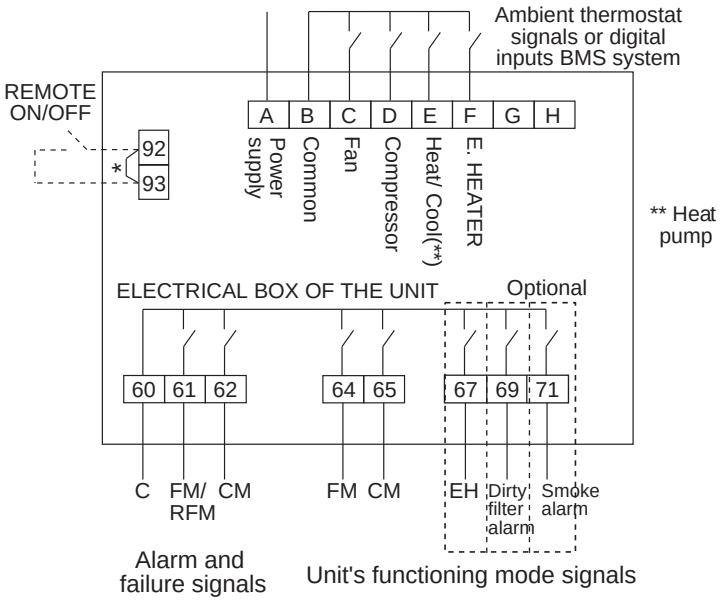
ELECTRICAL CONNECTION " REMOTE SIGNALS"

The electrical box of all the range, lets you obtain the following functions:
- Remote ON / OFF.
- Alarm and failure signals for the unit's components: FM, CM.
- The unit's functioning mode signals: FM,CM, EH.
- Dirty air filter indication (option).
- Manage the unit operation, through the supplied thermostat or through the digital inputs for a BMS system (only for VFC unit version).

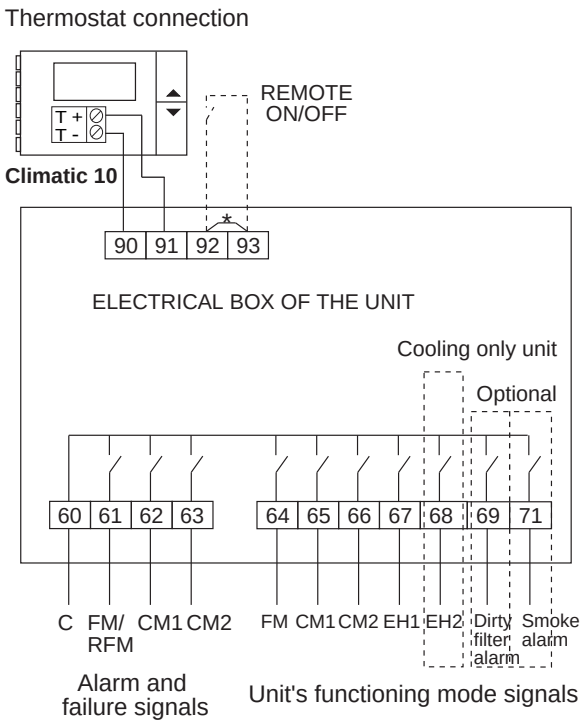
SINGLE CIRCUIT UNIT, STANDARD VERSION (24E ÷ 43E)



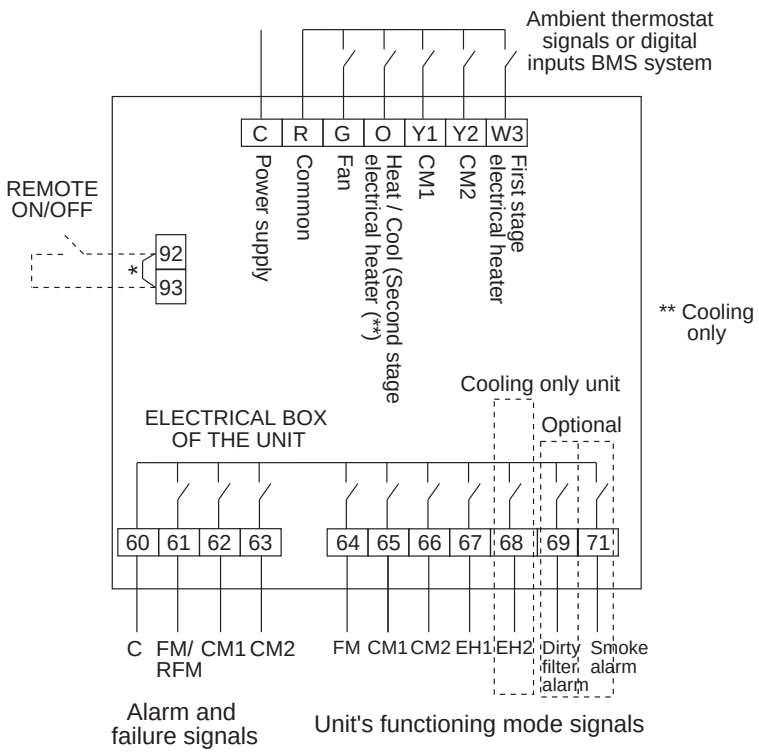
SINGLE CIRCUIT UNIT, VFC VERSION (24E ÷ 43E)



DOUBLE CIRCUIT UNIT, STANDARD VERSION (48D ÷ 152D)



DOUBLE CIRCUIT UNIT, VFC VERSION (48D ÷ 86D)



C: Common
FM: Indoor fan
RFM: Return fan motor
CM: Compressor
CM1: Compressor 1 or circuit 1
CM2: Compressor 2 or circuit 2
EH1: Electrical heater 1
EH2: Electrical heater 2

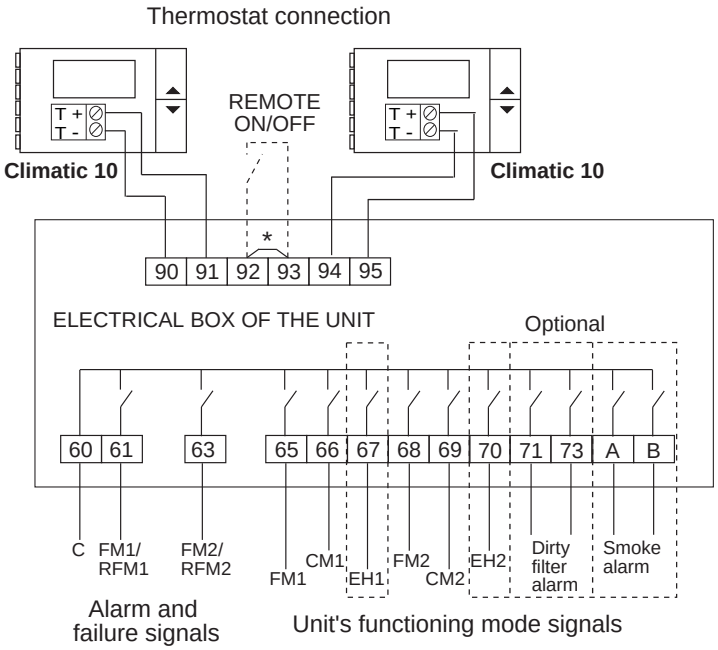
When unit switches off, the system will show CM, CM1 and CM2 failure signal.

* Remove wire, if ON/OFF remote is used.

Compressor alarm may indicate thermic CM, CFM, High pressure, Low pressure.

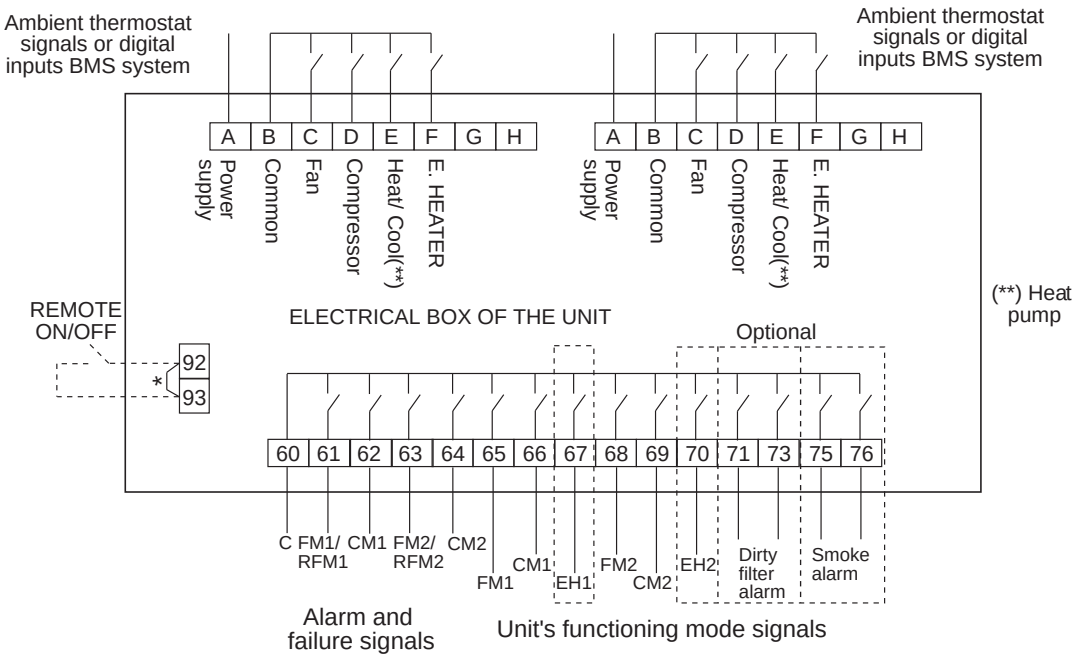
ELECTRICAL CONNECTION " REMOTE SIGNALS"

STANDARD VERSION UNIT MULTI-SPLIT SYSTEM (48D2 ÷ 128D2)



	A	B
48D2 ÷ 86D2	75	76
100D2 / 128D2	62	64

VFC VERSION UNIT MULTI-SPLIT SYSTEM (48D2 ÷ 86D2)



C: Common
FM: Indoor fan
RFM: Return fan motor
CM1: Compressor 1 or circuit 1
CM2: Compressor 2 or circuit 2
EH1: Electrical heater 1
EH2: Electrical heater 2

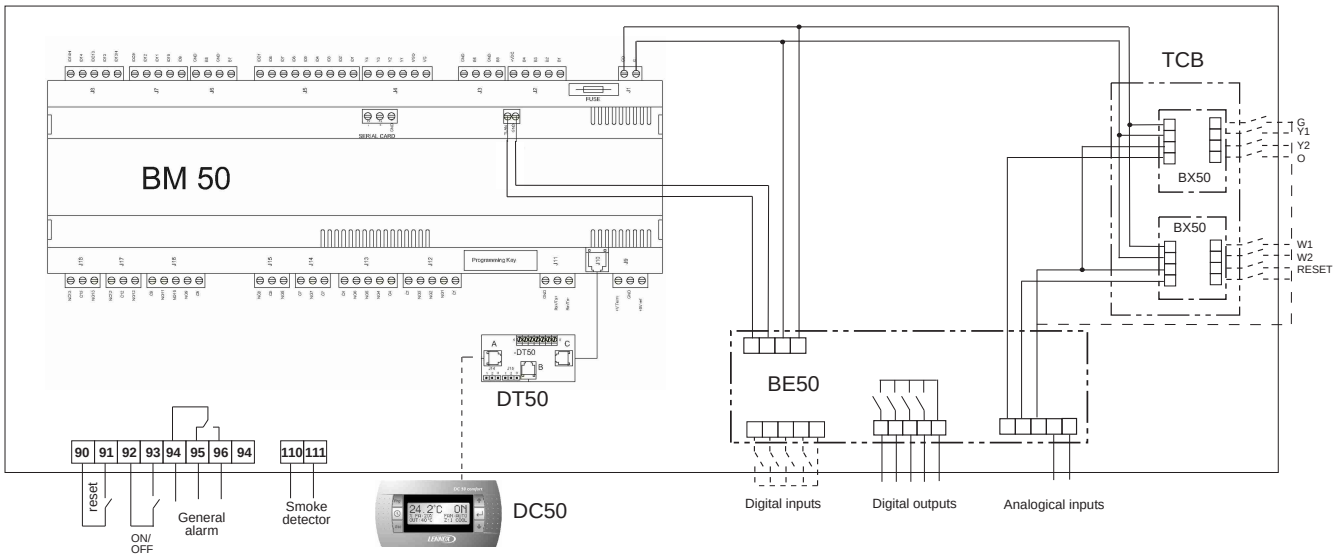
When unit switches off, the system will show CM1 and CM2 failure signal.

* Remove wire, if ON/OFF remote is used.

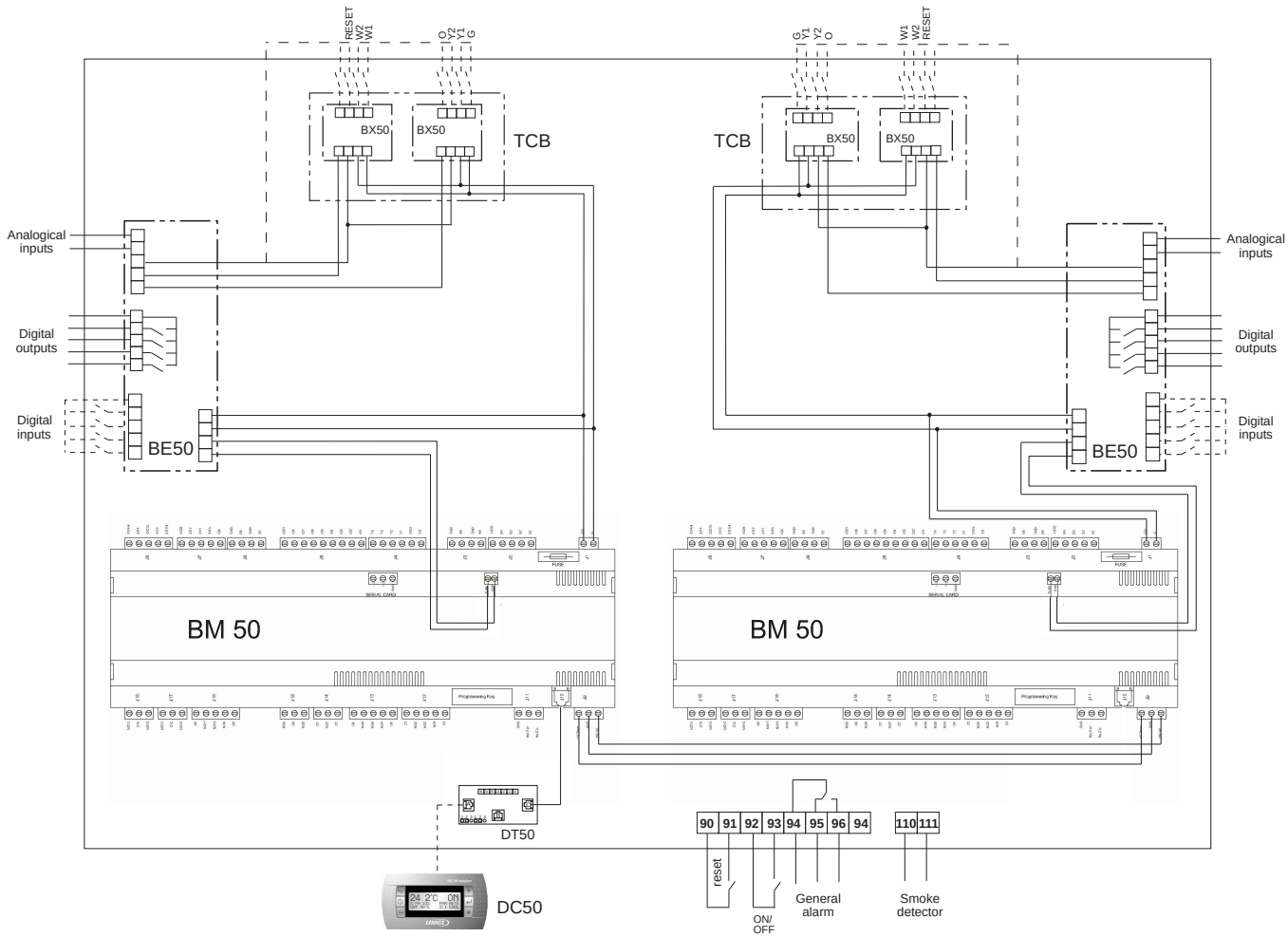
Compressor alarm may indicate thermic CM, CFM, High pressure, Low pressure.

ELECTRICAL CONNECTION " REMOTE SIGNALS"

C50 VERSION (56E-76E-100D-128D-152D)



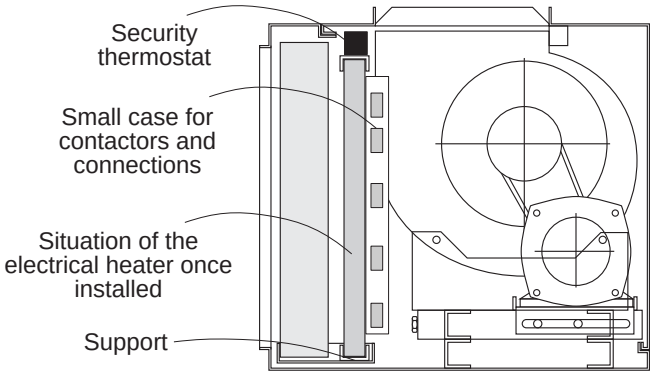
C50 VERSION UNIT MULTI-SPLIT SYSTEM (100D2-128D2)



OPTIONS

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.



MODELS LECK (INDOOR UNIT)		24E-32E-38E			43E		56E		76E		48D-64D-76D				86D			112D-128D 152D	
POWER kW		7,5	11	15	11	15	15	20	20	30	11	15	20	30	15	22,5	30	40	60
MAXIMUM CURRENT (A)	230 / III	18,8	27,6	37,7	27,6	37,7	----	----	----	----	27,6	37,7	50,2	75,3	37,7	56,5	75,3	----	----
	400 / III	10,8	15,9	21,7	15,9	21,7	21,7	28,9	28,9	43,3	15,9	21,7	28,9	43,3	21,7	32,5	43,3	57,7	86,6
WEIGHTS Kg (*)		10			10		24		24		20				30			45	
STAGES		1			1		1		2		1	1 ó 2		2	1	1 ó 2	2	2	

(*) Add to the unit's weight.

MODELS LEHK (U. INTERIOR)		24E-32E-38E-43E			56E-76E		48D-64D-76D			86D		112D-128D 152D	
POWER kW		7,5	11	15	15	20	11	15	20	15	22,5	30	40
MAXIMUM CURRENT (A)	230 / III	18,8	27,6	37,7	----	----	27,6	37,7	50,2	37,7	56,5	----	----
	400 / III	10,8	15,9	21,7	21,7	28,9	15,9	21,7	28,9	21,7	32,5	43,3	57,7
WEIGHTS Kg (*)		10			24		20			30		45	
STAGES		1			1		1			1		1	

(*) Add to the unit's weight.

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.

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

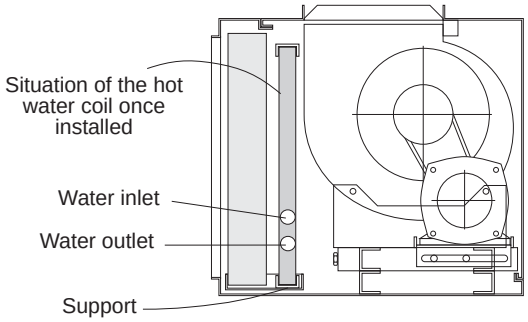
The phase sequencer is located in the electrical box in the outdoor section, thus assuring that the unit will not begin operation while the phase connection of the compressor is not correct. Should this occur, then just switch two phase connections.

OPTIONS

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 LECK / LEHK INDOOR UNIT (CAPACITY IN 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 (*)	Nr ROWS	WEIGHT Kg	WATER OUTLET DIAMETER Inches
24E	29.000	36.000	44.000	2.200	8	40	2	10	3/4"
32E	33.000	40.000	47.000	2.500	10	40	2	10	3/4"
38E	40.000	48.000	56.000	3.000	15	40	2	12	3/4"
56E-76E	61.000	74.000	86.000	6.000	10	30	2	20	1"
48D	58.000	62.000	88.000	4.400	8	40	2	20	3/4"
64D	66.000	80.000	94.000	5.000	10	40	2	20	3/4"
76D	80.000	96.000	112.000	6.000	15	39	2	24	3/4"
112D-128D-152D	124.000	150.000	175.000	11.000	20	30	2	40	1-1/2"

(*) Nominal air flow volume.

PROTECTION AGAINST FREEZING:

• Use glycol water. GLYCOL IS THE ONLY EFFECTIVE PROTECTION AGAINST FREEZING.

• 1.) **For Standard and VFC versions** 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.

Two wires between indoor and outdoor unit have to be added with this option.

Security thermostat working mode:

- *Electrical boxes with Climatic 10 controller:* The security stop valve is 4ºC. When the valve is more than 4ºC + thermostat differential, you can reset the unit pressing "resume" button in the Climatic 10 terminal.
- *Electrical boxes with VFC:* The security stop valve is 4ºC too. When the valve is more than 4ºC + thermostat differential, the unit will reset automatically after 5 min of timer.

2.) **For C50 version,** hot water coil includes a regulation valve which is managed by Climatic 50 controller. Drain the installation. 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.

SMOKE DETECTOR

Located downstream of the filter, the ionic 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.

ON/OFF CONDENSATION PRESSURE CONTROL (outdoor unit)

The condensation pressure control consists of one or two pressure switches, which starts and stops the outdoor fan, regulating the condensation temperature; thus the unit will be able to operate in the cooling cycle when the outdoor temperature is below 19ºC (until 0ºC).

It includes crankcase heater for cooling only units. The purpose of the heater is to keep the oil in the compressor at the correct temperature while the compressor is stopped, so that it can be properly lubricated when starts again.

When the unit is operating at low outdoor temperatures (below 19ºC), it is advisable to fit a crankcase heater.

CPC on/off as standard for C50 units.

PROPORTIONAL CONDENSING PRESSURE CONTROL (outdoor unit)

It is an element which regulates outdoor fan speed, in order to control condensation temperature. Thus, the unit will be able to operate in the cooling cycles when the outdoor temperature is below 19ºC (until -10ºC). This kit includes crankcase heater for cooling only units (Standard version and VFC).

COMPRESSOR STARTING CURRENT CONSTRAINED ("SOFT STARTER") 400V-III (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)	WEIGHTS (*)
24E-32E-38E-43E	3
48D/D2-64D/D2-76D/D2 86D/D2-100D/D2	6
128D/D2-152D	9

(*) Add to the unit's weight.

OPTIONS

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.

Electrical data for these optional fans:

MODELS LECK/LEHK (INDOOR)		24E	32E	38E	43E	56E	76E	48D	64D	76D	86D	112D	128D	152D
POWER (*) kW		0,4	1,0	1,0	0,8	1	1	0,8	1,5	1,7	1,5	2	2	2
MAXIMUM CURRENT (*)	(A) 230 / III	1,0	2,5	2,5	2,0	---	---	2,0	3,8	4,3	3,8	---	---	---
	(A) 400 / III	0,6	1,4	1,4	1,2	1,45	1,45	1,2	2,2	2,5	2,2	2,9	2,9	2,9
WEIGHTS Kg (*)		0	2	0	0	5	5	5	9	9	0	20	20	20

(*) Add to the standard unit's data

HOT GAS BYPASS VALVE (outdoor unit)

The purpose of the BYPASS valve is to let the unit operate at low outdoor temperatures (until -10°C), to be used in cooling only and heat pump units in cooling cycle.
It regulates the capacity of the compressor by injecting hot gas from the compressor discharge side to the coil.

CONTROL USING A PROGRAMMABLE CONTROLLER (for Standard version with Climatic 10)

With the programmable controller option, the desired temperature can be programmed in the area 24 hours a day, 7 days a week.

REMOTE AMBIENT SENSOR AND REMOTE DUCT SENSOR

Standard version with Climatic 10: Both of them 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.

CONDENSER COIL GUARD (outdoor unit)

The condenser coil protection grill prevents light damage to the coil when shipping and when installed.
It cannot protect against very heavy impacts.

PRECOATED COIL (outdoor unit)

Special protection of the aluminum condenser coil fins, to protect it from aggressive external environmental conditions.

RUBBER DAMPERS (outdoor unit)

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

COMPRESSOR ACOUSTIC JACKET (outdoor unit)

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

KIT LOW NOISE

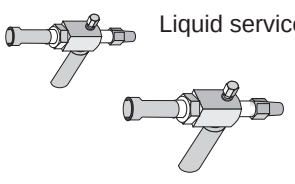
With this kit (for models 24E to 86D), each compressor is fitted with a compressor acoustic jacket and also includes proportional pressure control, which through a special regulation decreases the fan speed and provides attenuation of sound level. Regulation used on cooling mode with outdoor temperatures below 35ºC. See page 16 for Noise level performances.
This kit includes for 100D to 152D models (standard version with Climatic 10) compressor acoustic jacket and on/off condensing pressure control. The fan works in low speed with ambient temperatures below 40ºC in cooling mode and higher than 6ºC in heating mode.
Option not available with C50 units version.

R-407C REFRIGERANT FACTORY PRECHARGED (outdoor unit)

This option includes service valves and R-407C refrigerant charged in outdoor unit (for 0 meters of connection lines).

SERVICE VALVES (outdoor unit)

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



Liquid service valve

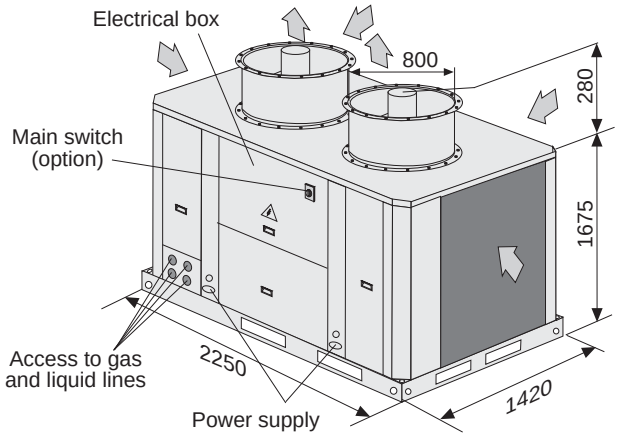
Gas service valve

OPTIONS

KIT HIGH PRESSURE 120Pa FP1 (Only available for units 100D/D2-128D/D2-152D)
Units with high pressure fans.
Available static pressure up to 120Pa.

MODELS KNCK/HK	100D/D2	128D/D2	152D
POWER kW	44,6	57,5	68,5
MAXIMUM CURRENT (A) 400 / III	69,2	89,9	108,1
WEIGHTS Kg (*)	40	40	40

(*) Add to the unit's weight.



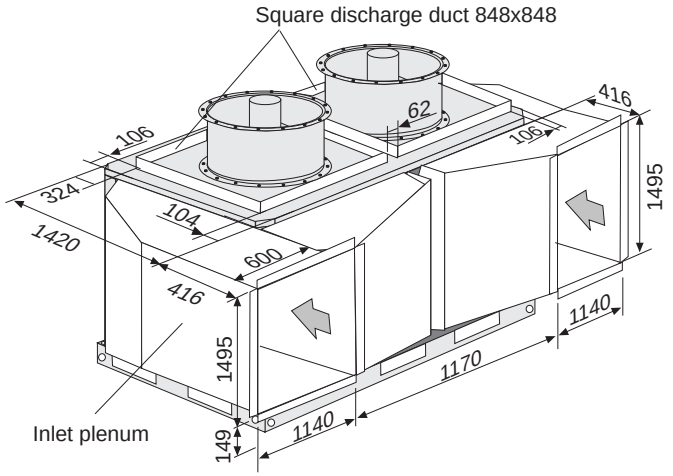
KIT HIGH PRESSURE 250Pa FP2 (Only available for units 100D/D2-128D/D2-152D)
Units with high pressure fans.
Available static pressure up to 250Pa.

MODELS KNCK/HK	100D/D2	128D/D2	152D
POWER kW	48,8	61,7	72,7
MAXIMUM CURRENT (A) 400 / III	75,8	96,5	114,7
WEIGHTS Kg (*)	40	40	40

(*) Add to the unit's weight.

INLET PLENUM (FP1 and FP2 unit versions only)
It is a accessory 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 unit to a square duct.



LONG DISTANCE KIT (65m) (Only for models 100D/D2-128D/D2-152D)
With this option the distance between indoor and outdoor units can be up to 65 m.

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

PRINT BOARD FOR LONG DISTANCES CONNECTIONS (DT50) (Only C50 version)
This option includes a print board (DT50) to connect the control for long distances up to 200m.

AIR QUALITY PROBE CO_2 (Only for C50 version with enthalpic free cooling)
It includes an air quality probe (CO_2).
Air fresh damper is opened when the air quality is below the desired value.

HIGH EFFICIENCY AIR FILTER EU4 (Only for units 100D/D2-128D/D2-152D)
This kit includes an high efficiency air filter EU4.

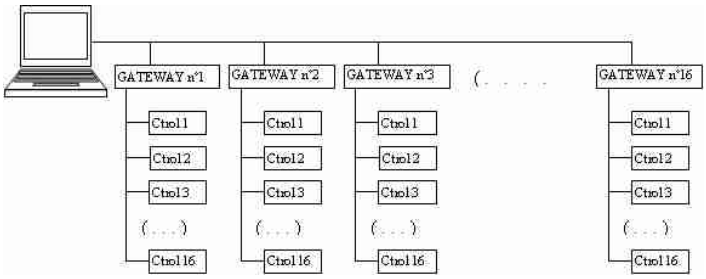
AIR DIFFERENTIAL PRESSURE TRANSDUCER-DPT (Only for C50 version)
It is included with the option Dirty filter indication.

OPTIONS

COMMUNICATIONS:

CLIMATIC 10

One or several units can be connected through the CLIMATIC 10 to a BMS system. For this we use the interface GATEWAY that allows us to use a net of CLIMATIC 10 through MODBUS protocol. We can connect up to 16 units with the CLIMATIC 10 thermostat (we can connect together different sizes) to the same interface, and up to 16 GATEWAY in the same net.



The CLIMATIC 10 must be specific, and substitutes the standard controller of the unit. There is not possibility of programmable option for this thermostat.

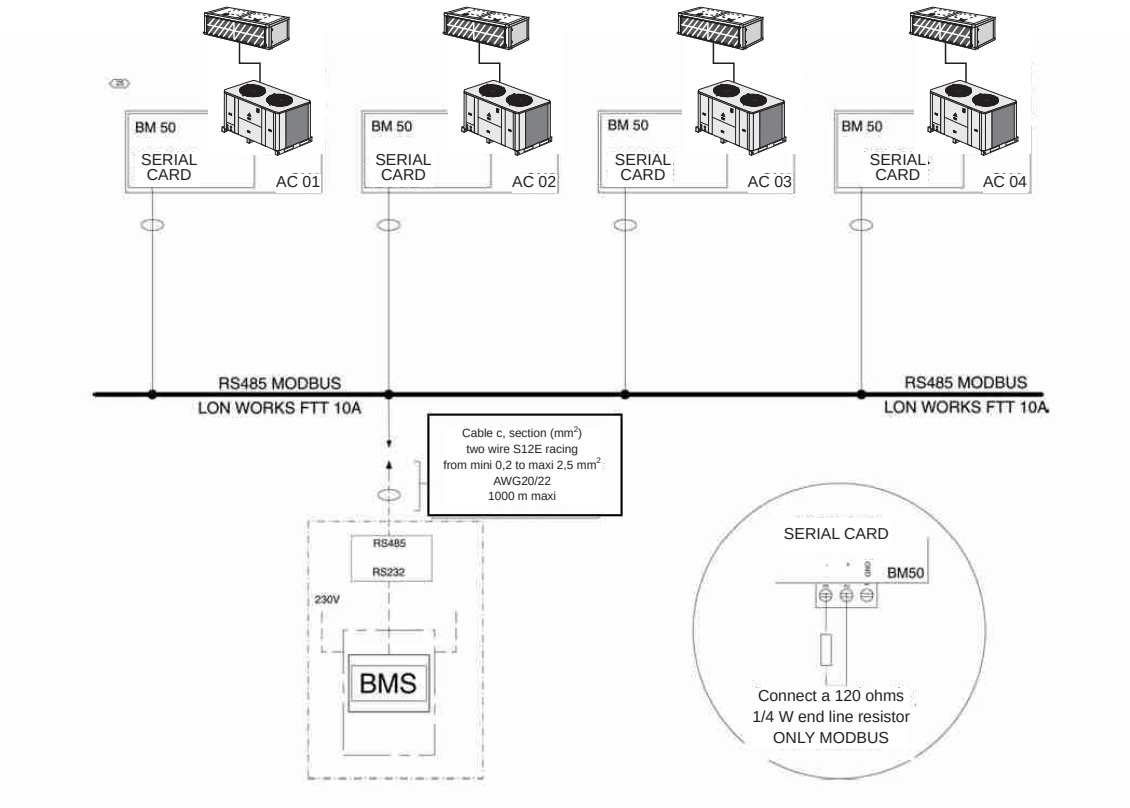
In the MODBUS net, it is possible to install different controllers or devices , providing the same configuration of communication is used (protocol RTU, same communication speed , same parity , etc…….) and connection RS485.

With this system, we can control the following functions of the unit:
– Selection of mode of functioning: OFF/AUTO/FAN/COOL/HEAT and fan mode between FAN ON/AUTO.
– Modify the setpoints: comfort, absence and nuit.
– Read alarm status and reset alarms.
– Read air ambient temperature, condensing temperature (in some programs) and outdoor ambient temperature (only if the optional free cooling is included).
– Read inlets /outlets status.
– Register of hours of functioning (for compressor and fans).
– Keypad blocking /unblocking.

CLIMATIC 50

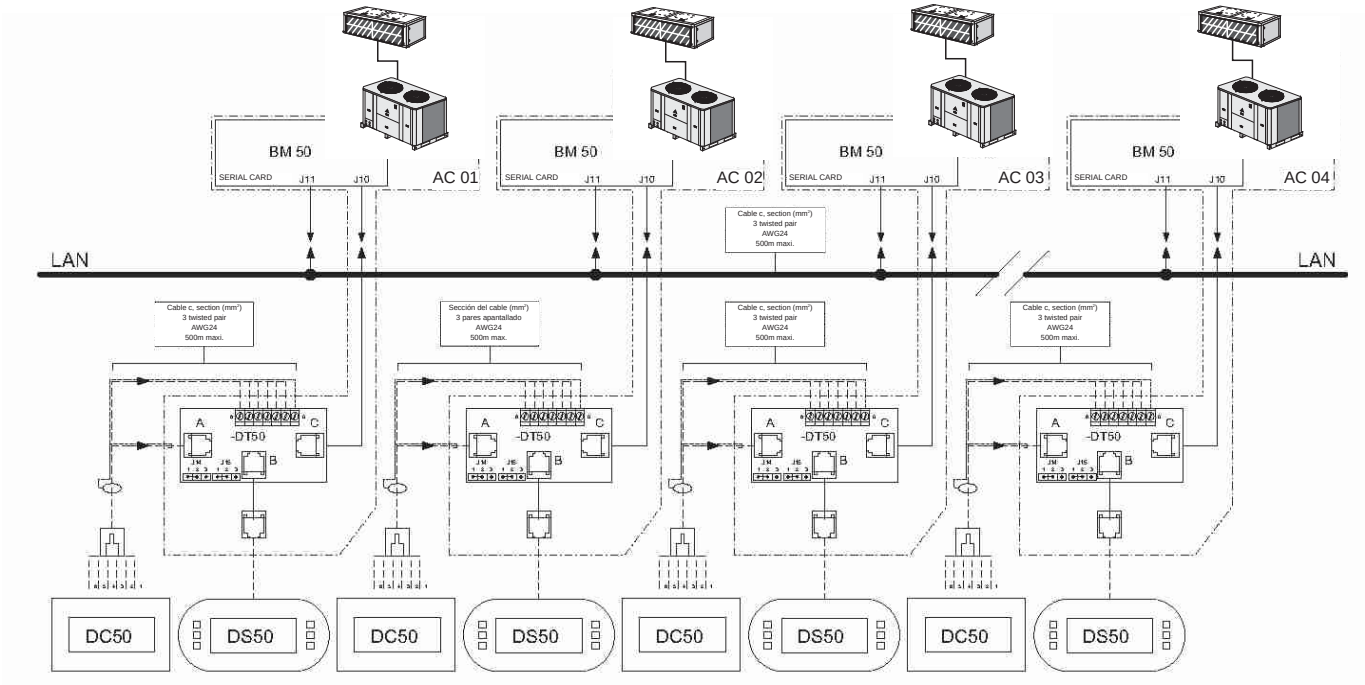
1. BMS: MODBUS_RS485 connection (Available for C10 and C50 version).
2. BMS: LONWORKS_Echelon connection (Only for C50 version).

Communications C50:



OPTIONS

With C50 units version is possible a master-slave connection:



TCB CONNECTION FOR "Voltage Free Contact" (Only C50 version)
For voltage free contact. All the signals, fan, compressor, electrical heater, cooling, heating, etc. are available as voltage free contacts.
BE50 expansion module is needed with this option.

SERVICE DISPLAY DS50 (Only C50 version)
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.

BE 50 Expansion Module (Only C50 version)
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.

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.
It is a saving energy system, that is why many countries regulations recommend and others put under an obligation to install a free cooling system with the unit.

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.

3.- COMPONENTS OF FREE COOLING

The main components are:
-Electronic control and 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.
- Adjustable dampers.
-Mixing section: Where outside and return air are mixed.
Also a return fan is available, which applies an additional static pressure on the suction and return air duct.

For more details about components and drawings see pages 44 to 48.

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.- THERMOSTAT TERMINAL

Depends on the type of free cooling selected, the thermostat and the electrical box supplied with the unit will be different.

With thermostatic free cooling the thermostat supplied has the same characteristics than the one supplied with the standard unit. With Climatic 10 control includes a programmable terminal.

With enthalpic free cooling the terminal is different than the one supplied with the unit VFC version, its principal characteristics are: OFF, COOL, HEAT, AUTOMATIC.

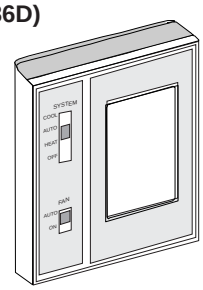
THERMOSTAT FOR THERMOSTATIC FREE COOLING

Thermostatic free cooling is supplied with sensor incorporated inside the thermostat.
Remote duct and ambient sensor are available as an option.
(For all models)

Climatic 10

THERMOSTAT FOR ENTHALPIC FREE COOLING

Enthalpic free cooling is supplied with duct sensor.
Remote ambient sensor and sensor incorporated inside the thermostat are available as an option.
(Oly for models 24E to 43E and 48D to 86D)



THERMOSTAT FOR THERMOSTATIC AND ENTHALPIC FREE COOLING

Free cooling supplied with ambient sensor.
With enthalpic free cooling (C50 units) BE50 expansion module is needed as option too.
(Only for models 56E-76E and 112D to 152D)

Climatic 50

FREE COOLING

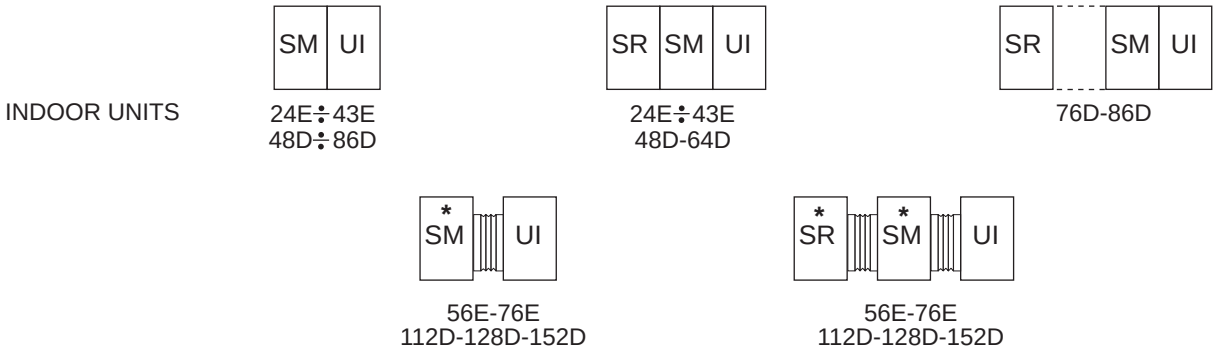
6.- SUPPLY AND INSTALLATION

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 24E to 43E and 48D to 86D and as split system for models 56E-76E-112D-128D-152D.

Return fan section will be delivered with the unit + mixing section for models 24E to 43E and 48D-64D and as split system for models 56E-76E and 76D to 152D.

Configuration of free cooling supply :



SM: Mixing section
SR: Return fan section
UI: Indoor unit.
- - - - Mechanical installation to be carried out by the installer.

Flexible duct to install by the customer.

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

The electrical box for the enthalpic free cooling is supplied apart, and has to be fixed by the installer.

7.-EXHAUST FAN (Only for models 56E-76E-112D-128D-152D)

Exhaust fan electrical consumption:

MODELS			**56E**	**76E**	**112D**	**128D**	**152D**
POWER (kW)			2,65	2,65	5,3	5,3	5,3
MAXIMUM CURRENT	**(A)**	**400 / III**	4,5	4,5	9	9	9
WEIGHTS Kg (*)			37	37	65	65	65

(*) Add to the unit's weight.

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

8.- FREE COOLING WITH RETURN FAN

If an extra static pressure is required on the return air duct, the free cooling should add a return fan section.

This return fan section includes a discharge damper.

The operation dampers for this free cooling with return fan is as follow:

As much as the air intake damper opens, that much the by-pass damper closes and the discharge air damper opens, for the air return suction (see drawing in page 50).

This means that at the same time reach a free cooled of the room, the discharge or return air and the air of the room gets removable.

Return fan electrical consumption:

MODELS		**24E**	**32E**	**38E**	**43E**	**56E**	**76E**	**48D**	**64D**	**76D**	**86D**	**112D**	**128D**	**152D**
POWER (kW)		1,4	1,8	2	2,5	3	3	2,8	3,6	4	5	5,5	5,5	5,5
MAXIMUM CURRENT (A)	**230 / III**	4,3	6,2	6,2	10,3	---	---	8,8	12,5	12,5	20,6	---	---	---
	400 / III	2,5	3,6	3,6	6	7,2	7,2	5,1	7,2	7,2	11,9	11,9	11,9	11,9

OPTIONS

FREE COOLING

Return fan performances for each models are:

24E

AIR FLOW	R.P.M. \ M^3/H	3900	4300	4700	5100
PULLEY POSITION	PULLEY CLOSED	1010	145*	115*	70*	35*
	1 TURN	955	105*	70*	35*	0*
	2 TURNS	900	85*	33*	0*	___
	3 TURNS	845	50*	5*	___	___

32E

R.P.M. \ M^3/H	4750	5250	5750	6000
1140	160*	80*	35*	0*
1070	110*	40*	0*	___
995	60*	0*	___	___
920	10*	___	___	___

38E

AIR FLOW	R.P.M. \ M^3/H	5800	6400	7000	7300
PULLEY POSITION	PULLEY CLOSED	890	210*	183*	145*	125*
	1 TURN	840	170*	140*	104*	85*
	2 TURNS	790	130*	95*	45*	35*
	3 TURNS	740	85*	60*	20*	0*

43E

R.P.M. \ M^3/H	6500	7250	8000	8750
1075	320*	275*	215*	165*
1010	265*	215*	155*	125*
995	210*	155*	90*	30*
920	170*	115*	50*	0*

56E

AIR FLOW	R.P.M. \ M^3/H	9000	10000	11000	11250
PULLEY POSITION	PULLEY CLOSED	800	425*	405*	380*	370*
	1 TURN	770	400*	380*	335*	325*
	2 TURNS	735	350*	335*	285*	275*
	3 TURNS	700	305*	285*	240*	230*

76E

R.P.M. \ M^3/H	10000	11000	12000	12500
800	405*	380*	335*	●
770	380*	335*	305*	●
735	335*	285*	255*	230*
700	285*	240*	210*	190*

48D

AIR FLOW	R.P.M. \ M^3/H	7800	8600	9400	10200
PULLEY POSITION	PULLEY CLOSED	1010	320*	300*	280*	●
	1 TURN	955	275*	250*	230*	185*
	2 TURNS	900	235*	210*	180*	130*
	3 TURNS	845	195*	150*	130*	85*

64D

R.P.M. \ M^3/H	9500	10500	11500	12000
1010	275*	245*	185*	155*
955	220*	175*	130*	105*
900	175*	130*	75*	55*
845	125*	85*	30*	20*

76D

AIR FLOW	R.P.M. \ M^3/H	11600	12800	14000	14600
PULLEY POSITION	PULLEY CLOSED	890	200*	175*	140*	120*
	1 TURN	840	160*	135*	100*	90*
	2 TURNS	790	120*	85*	50*	35*
	3 TURNS	740	75*	50*	10*	0*

86D

R.P.M. \ M^3/H	13000	14500	16000	17500
1055	330*	290*	240*	170*
1010	280*	245*	190*	120*
965	245*	210*	155*	90*
920	210*	170*	100*	45*

112D

AIR FLOW	R.P.M. \ M^3/H	18000	20000	22000	22500
PULLEY POSITION	2 TURNS	800	415*	395*	345*	335*
	4 TURNS	760	385*	365*	320*	310*
	6 TURNS	715	340*	320*	270*	260*
	7 TURNS	680	290*	270*	225*	215*

128D/152D

R.P.M. \ M^3/H	20000	22000	24000	24500
800	395*	345*	315*	●
760	365*	320*	285*	●
715	320*	270*	235*	215*
680	270*	225*	195*	175*

(*) AVAILABLE STATIC PRESSURE PA

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

NOTE: The unit leaves factory with pulley 2 turns opened for models 24E to 86D and with pulley 6 turns opened for models 112D to 152D.

NOTE: Additional pressure drop with EU4 air filter is 50Pa. (Only for models 56E-76E-112D-128D-152D).

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

56E-76E

AIR FLOW	M^3/H	6600	7150	7700	8250
AVAILABLE STATIC PRESSURE Pa.		230	200	150	50

112D-128D/152D

M^3/H	13200	14300	15400	16500
	230	200	150	50

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: _____
TEL.: _____ Fax _____ e-mail _____

ATTENTION TO : Lennox Refac S.A. CONTACT PERSON NAME: _____
TEL.: _____ Fax _____ e-mail _____
ORDER NUMBER: _____

A- Select the unit needed: split or multi-split:
(See supply and installation in page 41).

Split ☐ Multi-split ☐

C.-Select the type of thermostatic or enthalpic free cooling and the sensor for free cooling management.
Thermostatic free cooling supplied with sensor incorporated inside the thermostat; Enthalpic free cooling supplied with duct sensor.
(If the humidity conditions where the unit is going to be install have relevance, is convenient to install an enthalpic free cooling)

Thermostatic ☐ Remote ambient sensor ☐ Remote duct sensor ☐

Enthalpic ☐ Remote ambient sensor ☐ Sensor incorporated at the thermostat ☐

D.- Select if you need return fan with the free cooling

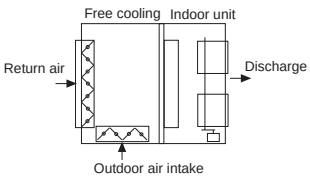
With return fan ☐ Without return fan ☐

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

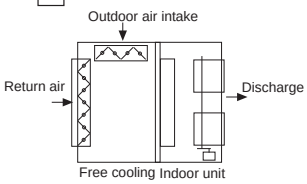
INDOOR UNITS 24E to 43E and 48D to 86D

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

POSITION 1 ☐

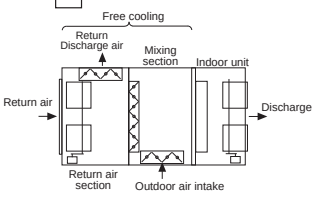


POSITION 2 ☐

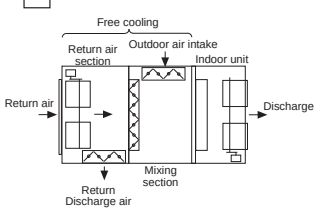


E.2- Free cooling dampers position WITH return fan:
The drawings are an upper view of the indoor unit and free cooling.

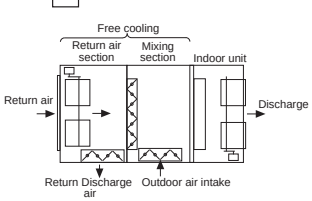
POSITION 1 ☐



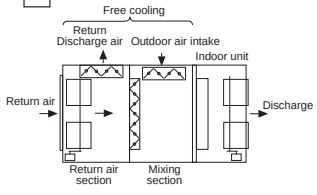
POSITION 2 ☐



POSITION 3 ☐



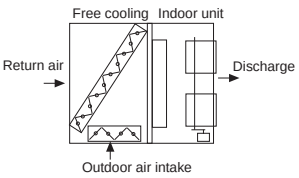
POSITION 4 ☐



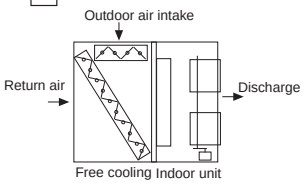
INDOOR UNITS 56E-76E-112D-128D-152D

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

POSITION 1 ☐

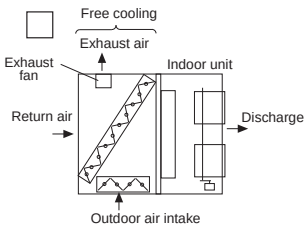


POSITION 2 ☐

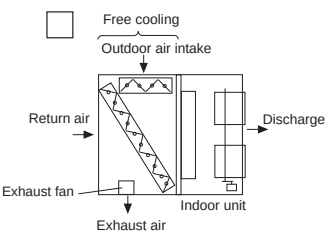


E.2- Free cooling dampers position WITHOUT return fan and with exhaust fan optional:
The drawings are an upper view of the indoor unit and free cooling.

POSITION 1 ☐

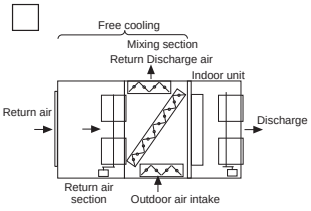


POSITION 2 ☐

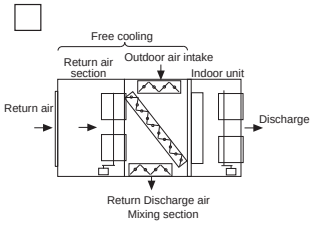


E.3.- Free cooling dampers position WITH return fan:
The drawings are an upper view of the indoor unit and free cooling.

POSITION 1 ☐



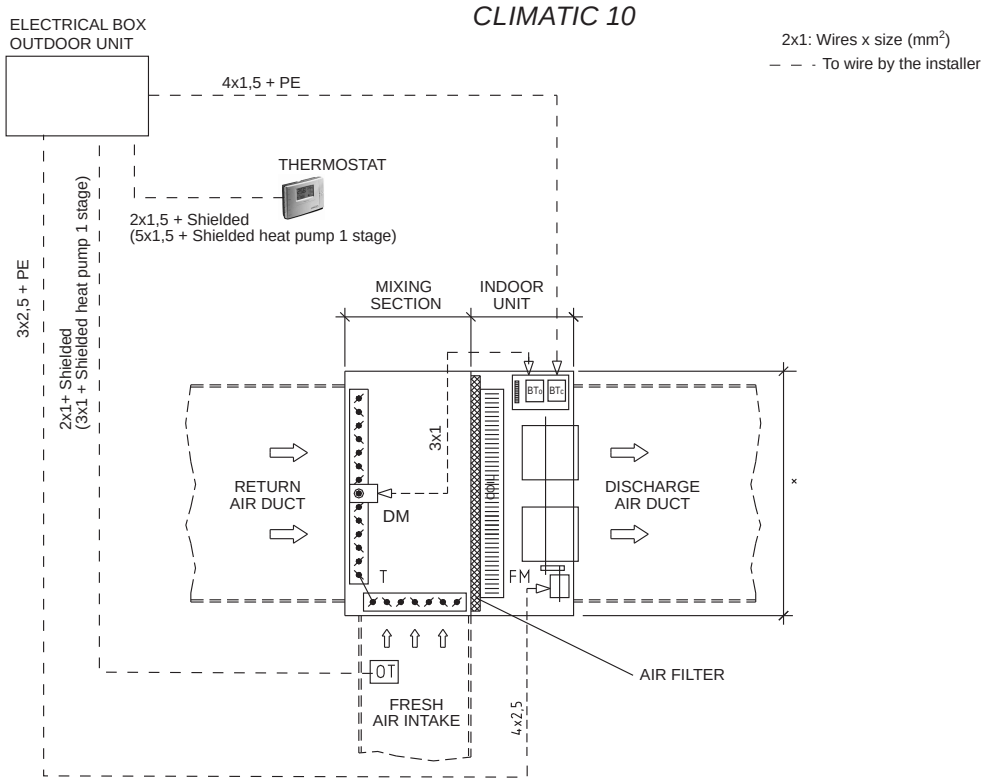
POSITION 2 ☐



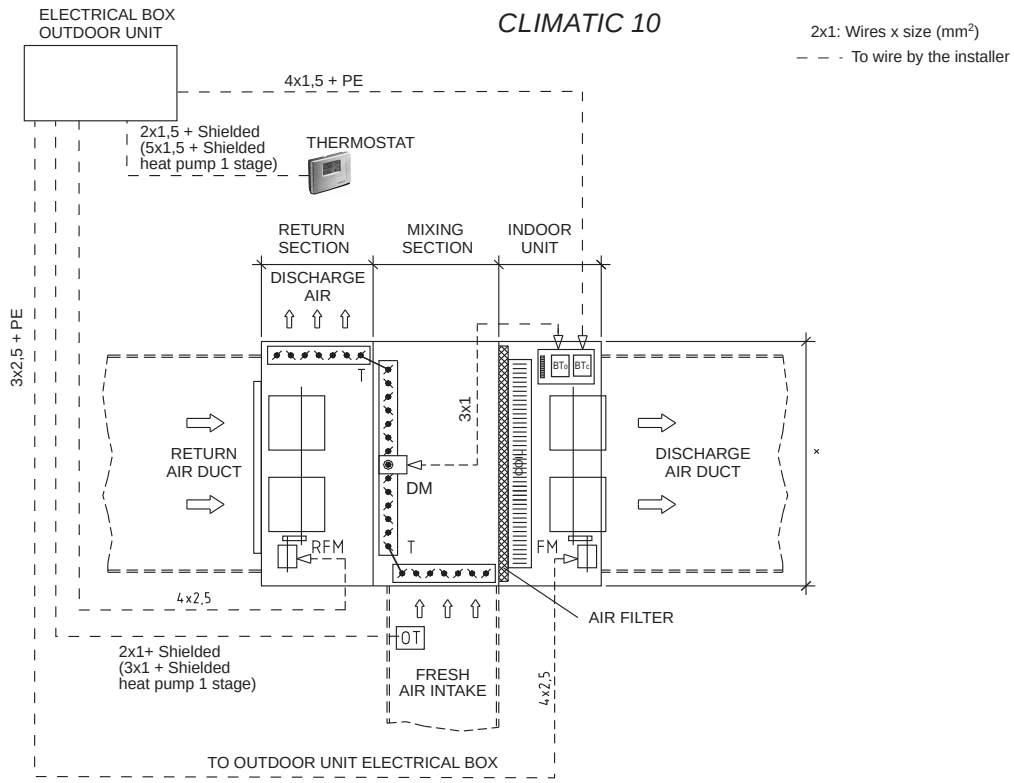
NOTE: Drawings only show dampers and fans situation, but they are not according to the delivery of the different sections (unit, mixing and return fan).

FREE COOLING

OUTLINE FOR THERMOSTATIC FREE COOLING WITHOUT RETURN FAN LECK/LEHK 24E to 43E and 48D to 76D



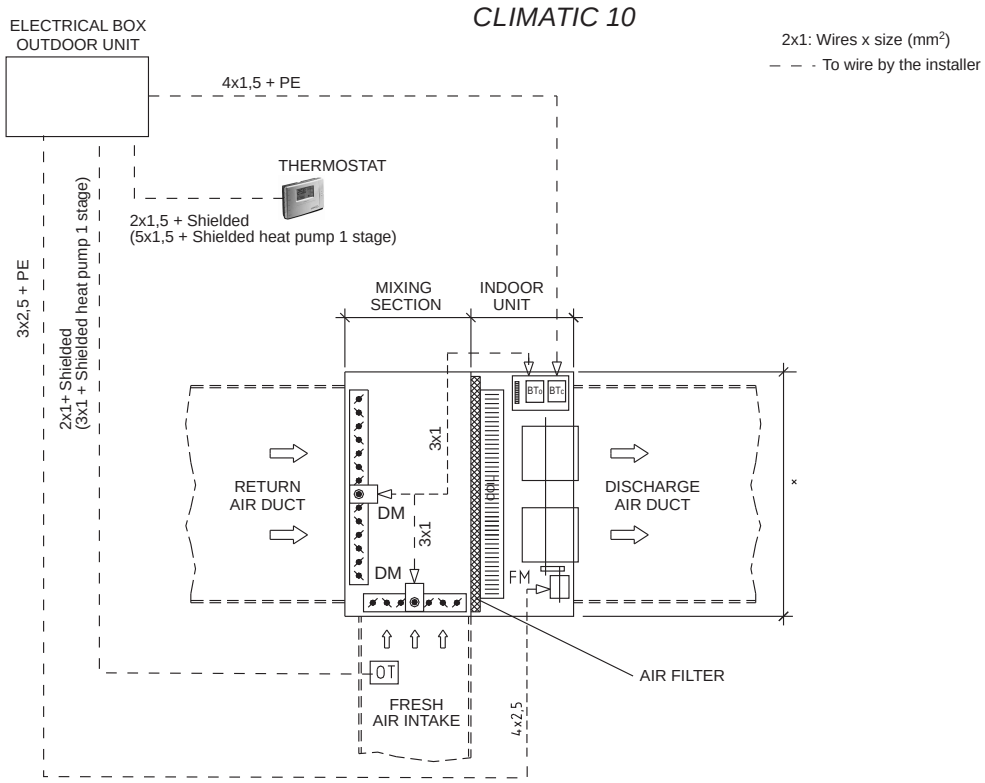
OUTLINE FOR THERMOSTATIC FREE COOLING WITH RETURN FAN LECK/LEHK 24E to 43E and 48D to 76D



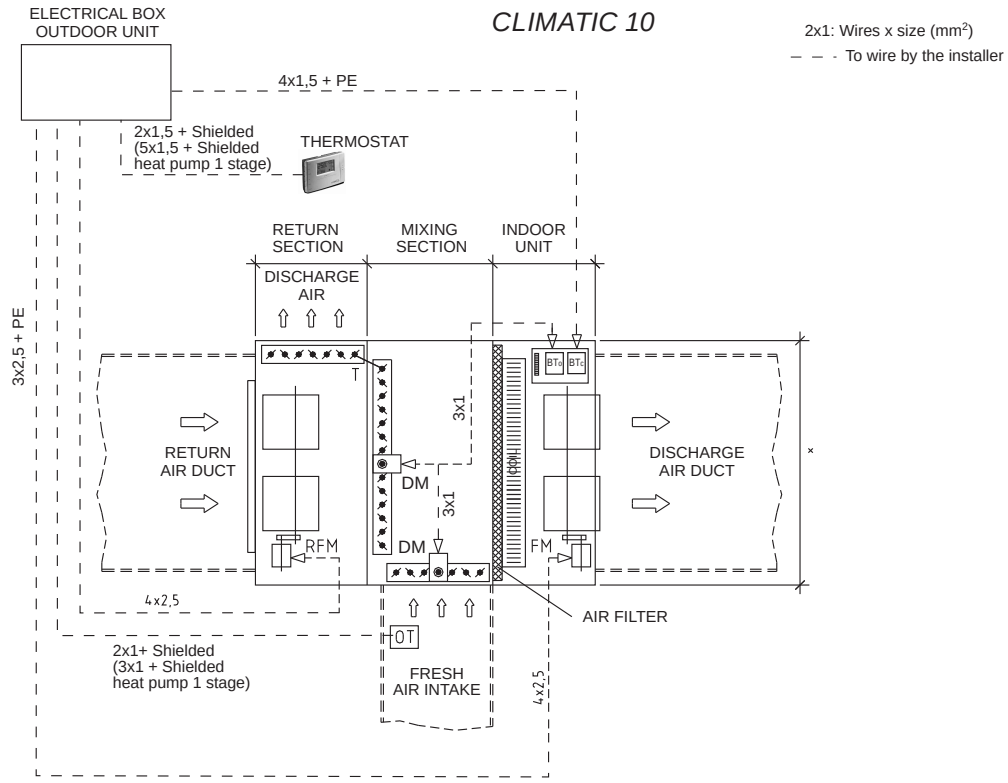
BTo/BTc - Free cooling Thermostat
DM - Damper Actuator
RFM - Return fan motor
FM - Indoor fan motor
OT - Outdoor temperature sensor
T - Transmission

FREE COOLING

OUTLINE FOR THERMOSTATIC FREE COOLING WITHOUT RETURN FAN LECK/LEHK 86D



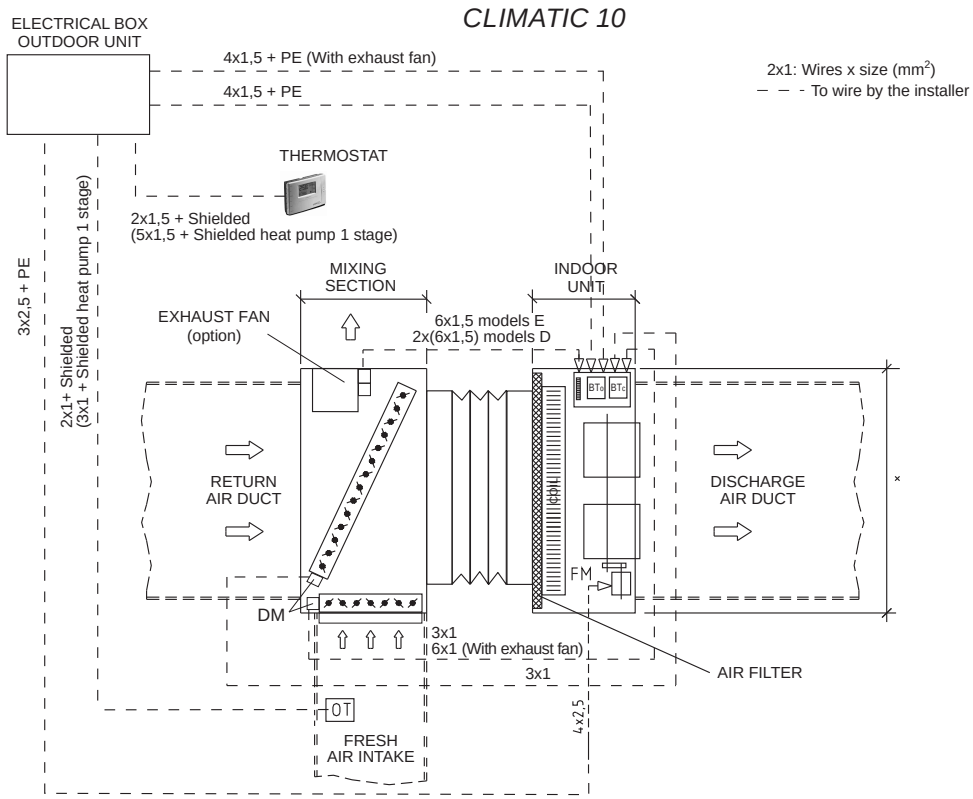
OUTLINE FOR THERMOSTATIC FREE COOLING WITH RETURN FAN LECK/LEHK 86D



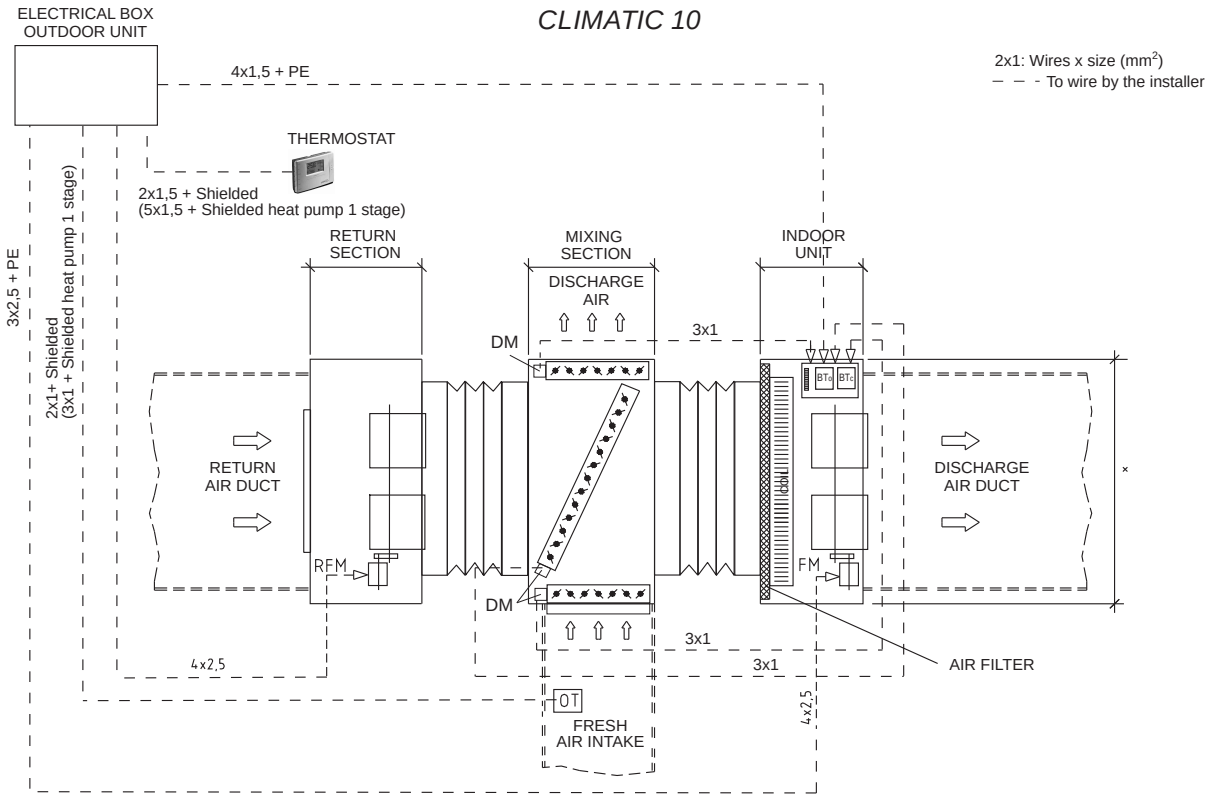
BTo/BTc - Free cooling Thermostat
DM - Damper Actuator
RFM - Return fan motor
FM - Indoor fan motor
OT - Outdoor temperature sensor
T - Transmission

FREE COOLING

OUTLINE FOR THERMOSTATIC FREE COOLING WITHOUT RETURN FAN
LECK/LEHK 56E-76E-112D-128D-152D



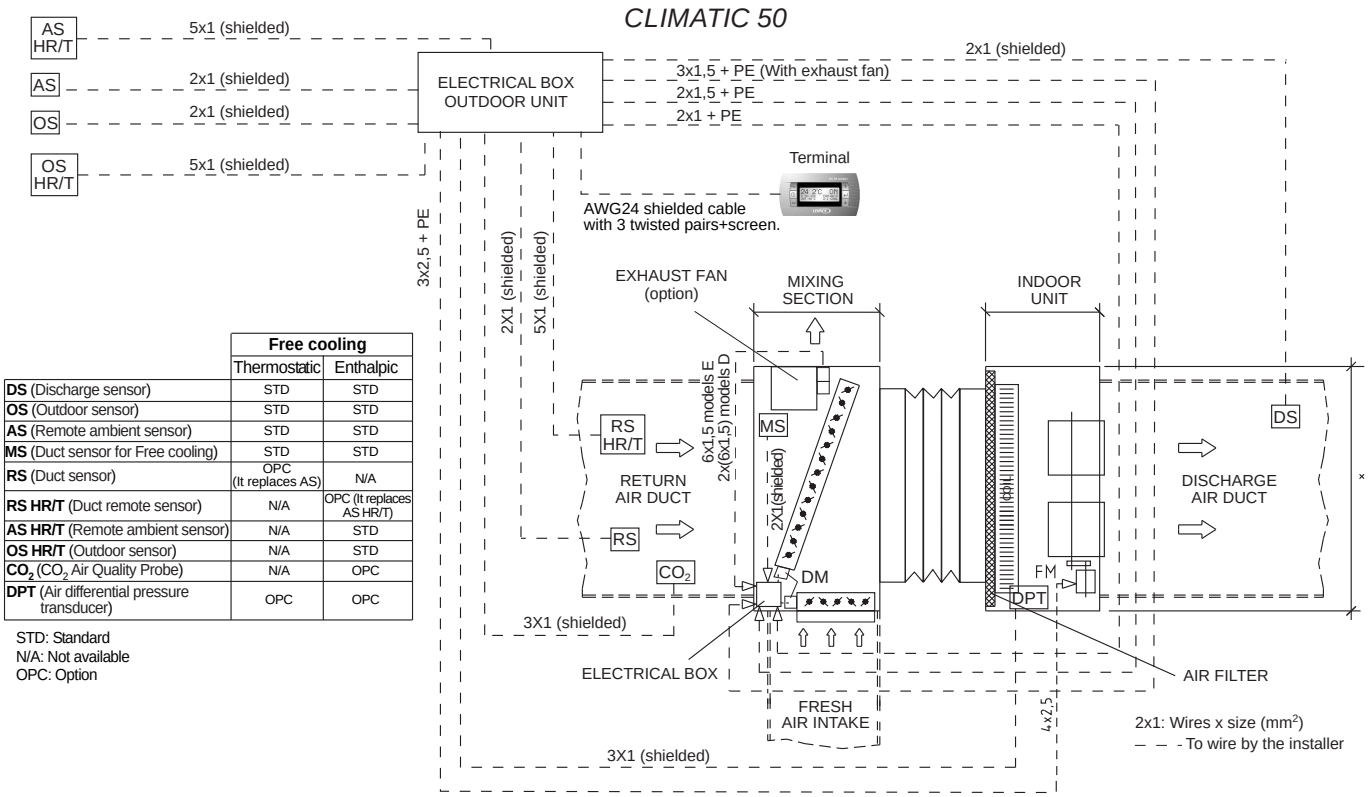
OUTLINE FOR THERMOSTATIC FREE COOLING WITH RETURN FAN
LECK/LEHK 56E-76E-112D-128D-152D



BTo/BTc - Free cooling Thermostat
DM - Damper Actuator
RFM - Return fan motor
FM - Indoor fan motor
OT - Outdoor temperature sensor

FREE COOLING

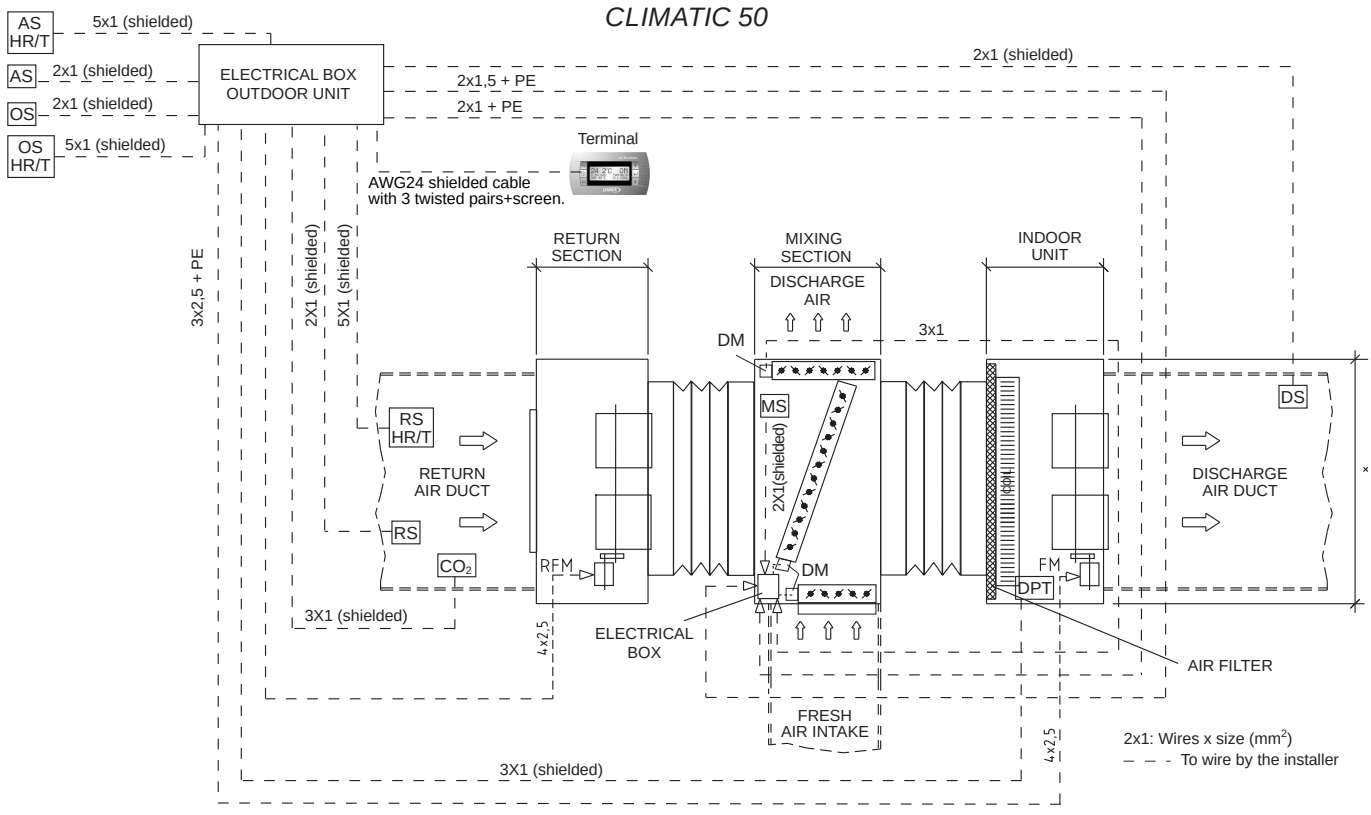
OUTLINE FOR THERMOSTATIC AND ENTHALPIC FREE COOLING LECK/LEHK 56E-76E-112D-128D-152D



	Free cooling	
	Thermostatic	Enthalpic
DS (Discharge sensor)	STD	STD
OS (Outdoor sensor)	STD	STD
AS (Remote ambient sensor)	STD	STD
MS (Duct sensor for Free cooling)	STD	STD
RS (Duct sensor)	OPC (It replaces AS)	N/A
RS HR/T (Duct remote sensor)	N/A	OPC (It replaces AS HR/T)
AS HR/T (Remote ambient sensor)	N/A	STD
OS HR/T (Outdoor sensor)	N/A	STD
CO_2 (CO_2 Air Quality Probe)	N/A	OPC
DPT (Air differential pressure transducer)	OPC	OPC

STD: Standard
N/A: Not available
OPC: Option

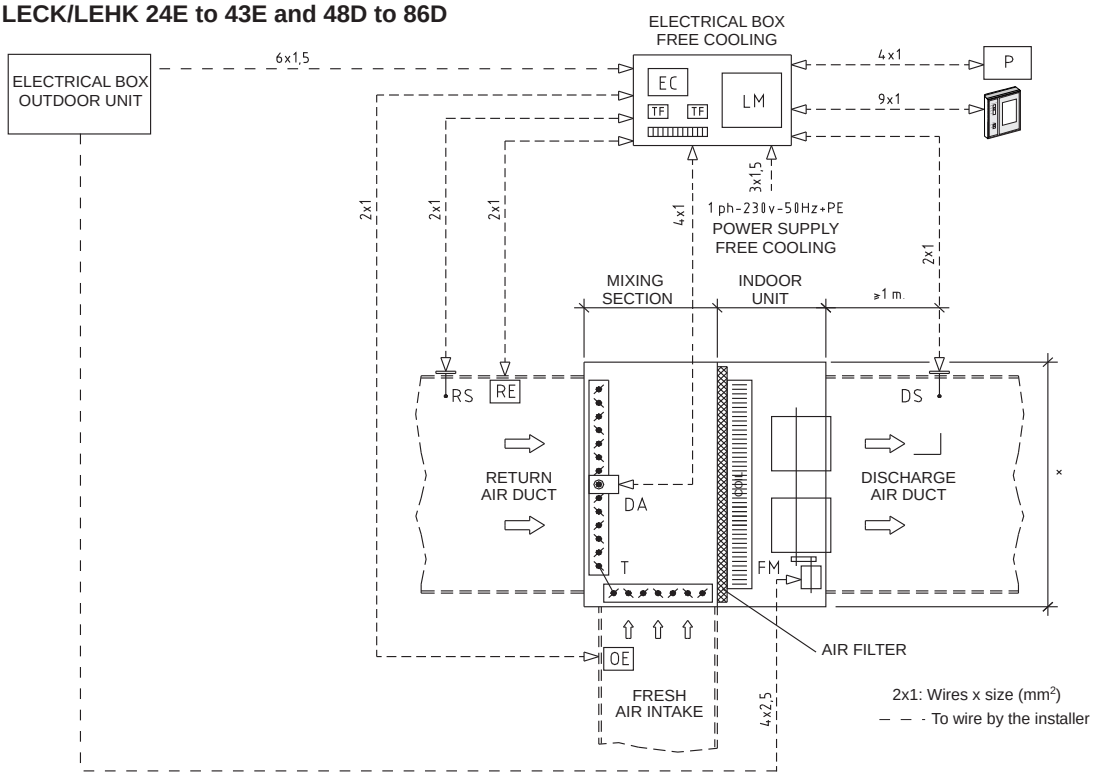
OUTLINE FOR THERMOSTATIC AND ENTHALPIC FREE COOLING WITH RETURN FAN LECK/LEHK 56E-76E-112D-128D-152D



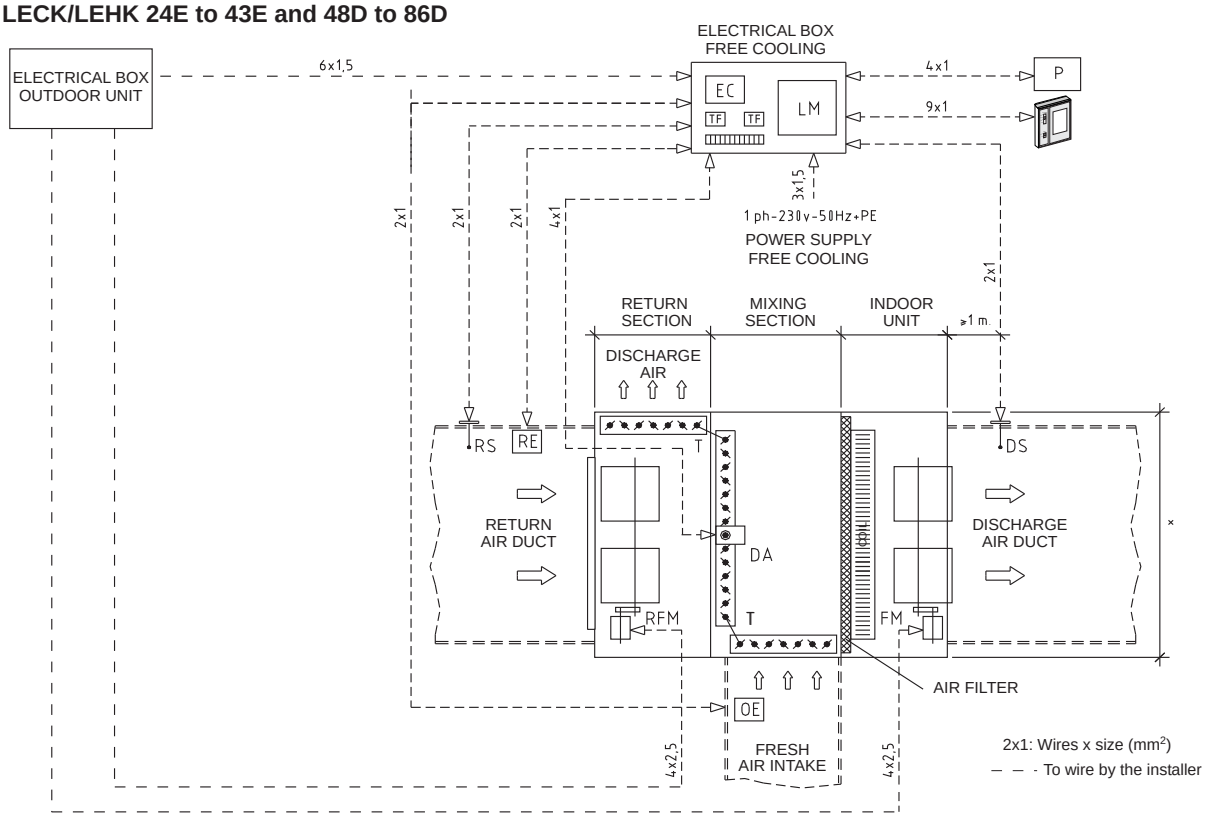
DM - Damper Actuator RFM - Return fan motor FM - Indoor fan motor

FREE COOLING

OUTLINE FOR ENTHALPIC FREE COOLING WITHOUT RETURN FAN
LECK/LEHK 24E to 43E and 48D to 86D



OUTLINE FOR ENTHALPIC FREE COOLING WITH RETURN FAN
LECK/LEHK 24E to 43E and 48D to 86D



P - Potentiometer
EC - Enthalpy measure
LM - Logic module

TF - Transformer
RC - Remote Controller
RE - Return Enthalpy sensor

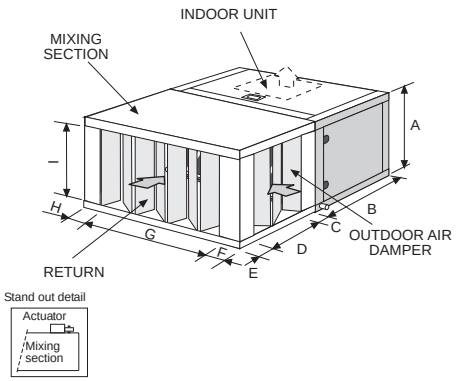
RS - Return Temperature sensor
DS - Discharge Temperature sensor
DA - Damper actuator

RFM - Return fan motor
FM - Indoor fan motor
OE - Outdoor enthalpy sensor
T - Transmission

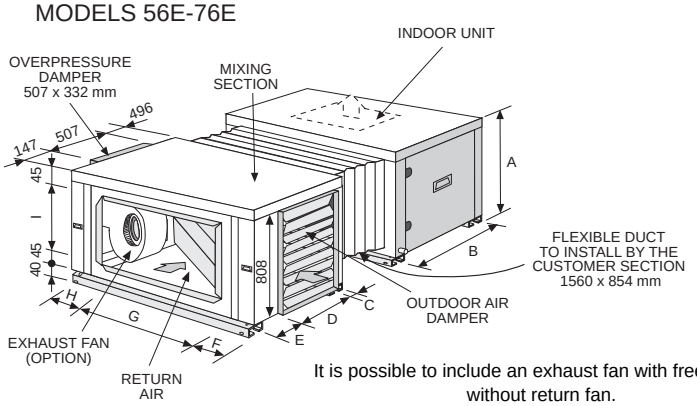
FREECOOLING

DIMENSIONS FREECOOLING WITHOUT RETURN FAN

MODELS 24E-32E-38E-43E

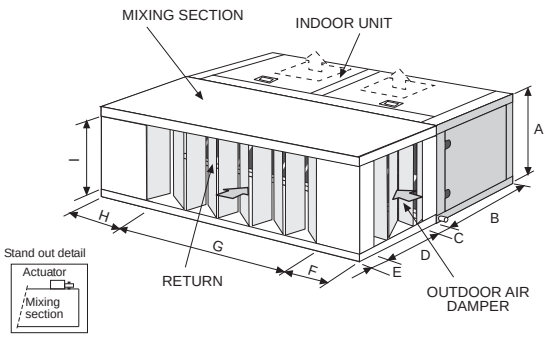


MODELS 56E-76E

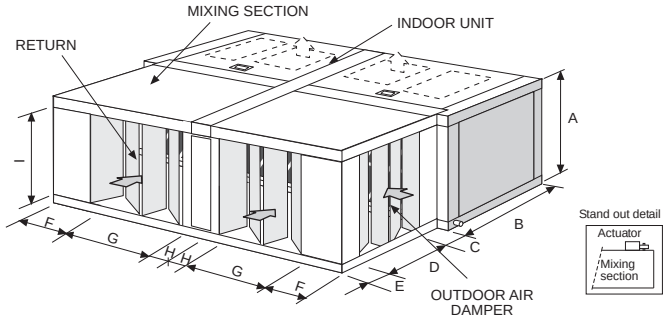


It is possible to include an exhaust fan with free cooling without return fan.

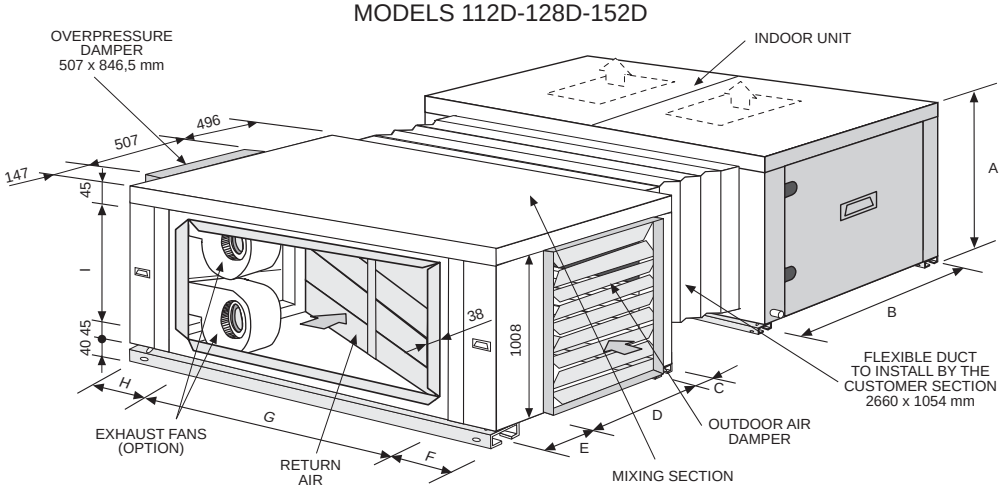
MODELS 48D-64D-76D



MODEL 86D



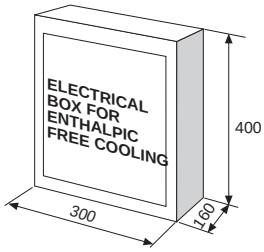
MODELS 112D-128D-152D



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

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

MODELS		24E-32E	38E	43E	56E-76E	48D-64D	76D	86D	112D-128D-152D
A		640	640	640	940	640	640	640	1100
B		750	750	750	1050	750	750	750	1050
C		98	73,5	92,5	114	100,5	100,5	50	114
D		750	750	1015	803	749	749	1000	803
E		52	76,5	92,5	233	50,5	50,5	150	233
F		222	222	241	312,5	250	312,5	233	312,5
G		750	876	1140	1175	1750	1875	1125	2275
H		222	222	241	312,5	250	312,5	93	312,5
I		499	500	530	810	499	499	550	1010
WEIGHTS Kg	Indoor unit	22-24=105 28-32=110	145	43=280 50=305	56=275 76=295	44-48=220 56-64=240	265	86=270 100=295	112=510/ 128=520 152=530
	Mixing section	100	100	130	130	130	135	250	190

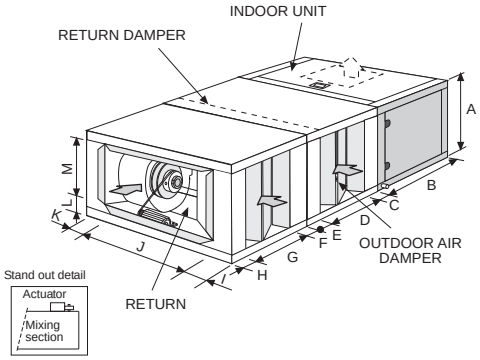


Electrical box for free cooling is supplied loose inside the mixing section. Fix by the installer (Only for enthalpic free cooling models 24E to 43E and 48D to 86D).

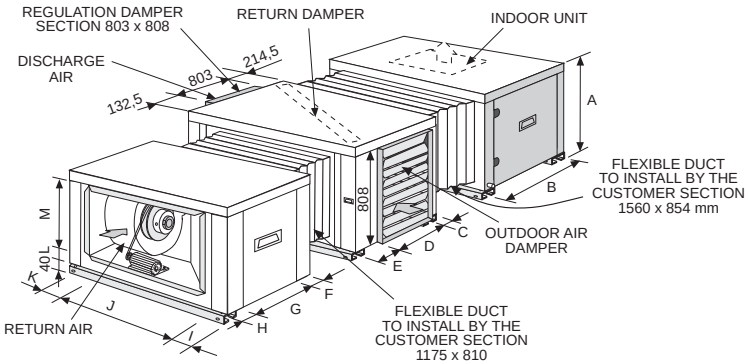
FREECOOLING

DIMENSIONS FREECOOLING WITH RETURN FAN

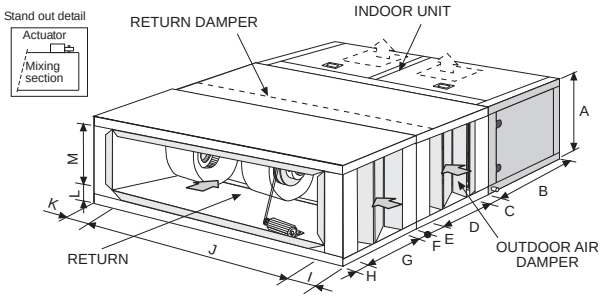
MODELS 24E-32E-38E-43E



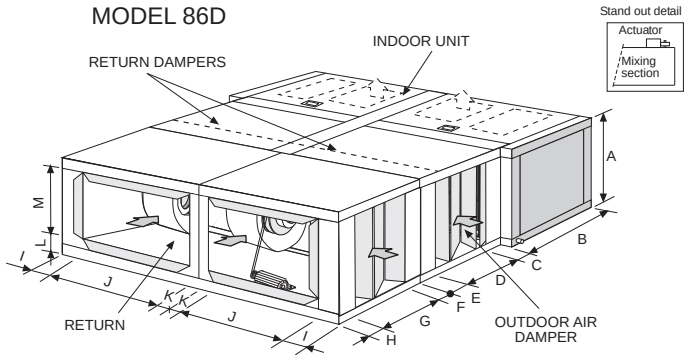
MODELS 56E-76E



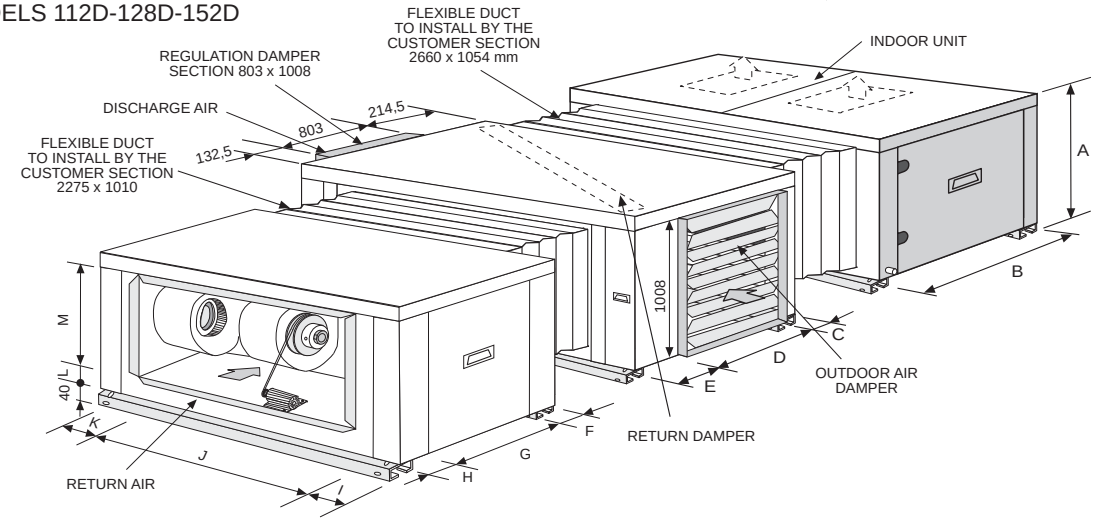
MODELS 48D-64D-76D



MODEL 86D

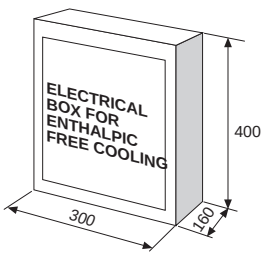


MODELS 112D-128D-152D



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

MODELS		24E-32E	38E	43E	56E-76E	48D-64D	76D	86D	112D-128D-152D
A		640	640	640	940	640	640	640	1100
B		750	750	750	1050	750	750	750	1050
C		98	73,5	92,5	114	100,5	100,5	50	114
D		750	750	1015	803	749	749	1000	803
E		52	76,5	92,5	233	50,5	50,5	150	233
F		48	48	92,5	112	48	48	45	112
G		750	750	1015	476	750	750	1010	476
H		102	102	92,5	112	102	102	145	112
I		186	186	231	148	186	311	191,5	148
J		822	948	1160	1175	1878	1878	1204,5	2275
K		186	186	231	148	186	311	15	148
L		96,5	96,5	96,5	45	96,5	96,5	88	45
M		500	500	500	810	500	500	500	1010
WEIGHTS Kg	Indoor unit	22-24=105 28-32=110	145	43=280 50=305	56=275 76=295	44-48=220 56-64=240	265	86=270 100=295	112=510/128=520 152=530
	Mixing section	100	100	130	130	130	135	250	190
	Return section	22-24=120 28-32=125	125	210	140	195	200	320	230



Electrical box for free cooling is supplied loose inside the mixing section. Fix by the installer (Only for enthalpic free cooling models 24E to 43E and 48D to 86D).

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OTHER COUNTRIES
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Due to Lennox's ongoing commitment to quality, the Specifications, Ratings and Dimensions are subject to change without notice and without incurring liability.
Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.
Installation and service must be performed by a qualified installer and servicing agency.

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