

Epsilon Echos + LE LN 20



Configured unit accessories

LN - Low noise
A43N - 400/3+N/50 power supply
SERI - RS485 serial card
CP - Clean operating contacts
RMMT - Maximum and minimum voltage relay
SMDX-Smartlink DX
AG - Rubber vibration dampers

General description

High efficiency air/water unit with plate heat exchangers and axial fans, having DC inverter-controlled hermetic scroll compressors that can change their rotation speed in accordance with the power demand of the system. This characteristic allows the limits of ON/OFF compressors to be exceeded and allows high COP and EER levels to be obtained, thanks to the generous heat exchange surfaces available to the compressor during operation of the unit at reduced power. To ensure the best efficiency of the compressor under nominal conditions, the nominal conditions are declared at 90rps for all models. Cooling fluid: R410A.

Version designed for operation with a remote air evaporator, and is therefore without a user-side heat exchanger.

Specifications

Structure

Made of galvanized sheet-iron coated with polyester powder at 180°C, which makes it highly resistant to weather conditions.

The panels can be removed easily to allow full access to internal components.

7035

Compressors

The compressors are “twin rotary” or “scroll” with inverter-controlled brushless DC motor, operating with power supply of 400-460V/3ph/50-60Hz. The compressors are provided with integrated thermal overload protection and acoustic hood. The compressor motor control driver is provided with integral electronic protection against overtemperature, overcurrent, over or under-voltage with absence of one or more phases. Compressor speed can vary between about 30rps and about 110rps, for rotary compressors, or about 120rps for scroll compressors. The electronic control of the inverter is provided with automatic soft-start system and continuous control of the compressor curve to prevent and correct its use beyond the maximum allowed limits.

Coils

Consists of a row coil with copper tubes and aluminium fins having a large exchange surface. A grille with metal filter is installed as standard to protect the finned pack.

Fans

Axial flow fans, directly coupled to a 6-pole electric motor with external rotor. The protection rating of the motor is IP 54. The fan houses shaped nozzles and includes a safety guard in conformity with standard UNI EN 294.

Refrigerant circuit

The circuit includes:

charging connections in the liquid and suction line

- liquid sight glass

dehydrator filter

- electronic expansion valve :

The solenoid valve function on the liquid line is performed by the electronic expansion valve, which shuts off the liquid by closing when the circuit stops. On request, the electronic valve can be fitted with a backup battery that will guarantee it closes even without mains power.

pressure transducer

- high and low pressure switches

In addition to the components of the basic version, the unit includes:

- liquid receiver
- delivery oil separator
- split type suction and liquid valves

The unit is supplied:

- without the user-side heat exchanger
- without the thermostatic valve
- without refrigerant charge and charged with nitrogen without refrigerant charge and charged with nitrogen

Electrical control panel

The circuit includes:

- Main disconnect switch

Automatic circuit breaker to protect the auxiliary and power circuits

Fan Fan speed regulator for saturation pressure control

Pump relay or overload cutout and contactor for units with user-side hydraulic module

- General alarm clean contacts

Contact for ON/OFF digital input

0-10V and 4-20mA input for external modulation control of the compressor

to control the following functions

- Water temperature control, with inlet control
- Freeze protection

- Compressor timings
- High pressure alert management to prevent the unit from stopping in many cases
- Alarm signalling
- Alarm reset
- Display of the following on the display:
 - > Outgoing water temperature
 - > Temperature and differential set points
 - > Description of alarms
 - > High pressure temperature
 - > Compressor operation hour meter

CONTROLS AND SAFETY DEVICES

All the units are fitted with the following control and safety components:

- high pressure switch with manual reset
 - high pressure safety device with automatic reset, for a limited number of occurrences, managed by the controller
 - low pressure safety device with automatic reset and limited tripping managed by the controller
 - high pressure safety valves
 - antifreeze probe at the outlet of the user-side heat exchangers
 - differential pressure switch already fitted on the user-side heat exchangers
 - overtemperature protection for compressors and fans
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- High pressure switch with manual reset for each compressor;
 - Low pressure switch with automatic reset and limited interventions managed by the control;
 - High pressure safety valve (with the exception of sizes 6, 8 and 10);
 - Protection against overtemperature for compressors;
 - Condensation/evaporation pressure control by means of Fan speed regulator for operation with low external temperatures;

Testing

All the units are factory-tested and supplied complete with oil and refrigerant.

The units are electrically tested. For on-site installation, in addition to the electrical and hydraulic connections for the user part, it will be necessary to make the refrigerant connection to the remote heat exchanger and charge with the correct refrigerant and oil charge.

Other standard features

CONFIGURED UNIT ACCESSORIES DESCRIPTION

RS485 serial card

Single clean operating contacts

For units fitted with this accessory, clean contacts from which the customer can acquire a signal that indicates when the compressor is operating are shown in the terminal board of the electrical control panel.

Maximum and minimum voltage relay

This device carries out continuous control of the supply voltage of the unit and checks that it is always within an allowable range. If the voltage value stabilizes above or below this range, the device will stop the unit to prevent damage to the electric motors. This device will carry out phase sequence control.

Rubber anti-vibration mounts

These are supplied as a separate package from the unit and must be installed on site following the assembly diagram supplied. They allow you to reduce the vibrations transmitted from the unit to the surface it is standing on.

ACCORDING TO EN14511

Unit Epsilon Echos + LE LN

| | | |
|------------------------------------|---|-------|
| Model | | 20 |
| Refrigerant fluid | | R410A |
| Minimum partialization of the unit | % | 34 |
| Requested partialization | % | 100 |

Cooling conditions

| | | |
|--------------------------|----|------|
| Evaporating temperature | °C | 9.0 |
| External air temperature | °C | 35.0 |
| Height asl | m | 0 |

Cooling performances

| | | |
|----------------------------|------|-------|
| Cooling capacity | kW | 19.0 |
| Compressors absorbed power | kW | 5.2 |
| Total absorbed power (A1) | kW | 6.0 |
| EER | | 3.18 |
| Air flow rate | m3/h | 13200 |
| Available pressure | | 0 |
| Fans absorbed power | kW | 0.41 |
| Fans absorbed current | A | 1.70 |

Sound levels

| | | |
|--------------------|-------|---|
| Lw_tot COOLING (4) | dB(A) | 0 |
| Lp_tot COOLING (5) | dB(A) | 0 |

(A1) Compressors + Fans + Pumps (if present) (according to EN14511)

(5) Lp_tot COOLING- values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(4) Lw_tot COOLING- unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and evaporating temperature 7.5°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(S1) Sound power values at 90 Hz

Compressors

| | | |
|---|----|----------|
| Type | | Inverter |
| Number | | 1 |
| Refrigerant circuits | | 1 |
| Total oil charge | | 2.4 |
| Total refrigerant charge (estimated) (NRef) | kg | 0.0 |

Fans

| | | |
|------------------------|----|-----------|
| Type | | Axial-STD |
| Number | | 2 |
| Rated absorbed power | kW | 0.41 |
| Rated absorbed current | A | 1.70 |

Dimensions

| | | |
|--------|----|------|
| Length | mm | 1105 |
| Width | mm | 695 |

| | | |
|--------|----|------|
| Height | mm | 1385 |
|--------|----|------|

Weight

| | | |
|------------|----|-----|
| Net weight | kg | 210 |
|------------|----|-----|

(NRef) The indicated refrigerant charge is theoretical and refers to the standard machine without accessories.

ELECTRICAL DATA (Theoretical calculations)

| | | |
|--------------|---------|-----------------|
| Power supply | V/ph/Hz | 400/3N~/50 ±10% |
|--------------|---------|-----------------|

| | | |
|----------------------|---------|-----------|
| Control power supply | V/ph/Hz | 230/1~/50 |
|----------------------|---------|-----------|

Electrical performances

| | | |
|-----------------------------|----|------|
| Maximum absorbed power (E1) | kW | 8.44 |
|-----------------------------|----|------|

| | | |
|--------------------------------|---|------|
| Maximum starting current - LRA | A | 16.5 |
|--------------------------------|---|------|

| | | |
|-------------------------|---|------|
| Full load current - FLA | A | 16.5 |
|-------------------------|---|------|

(E1) Mains power supply to allow unit operation

Technical calculations may change according to calculation methods. Technical data may be revised.

