Dear Customer,
Thank you for having purchased a FERROLI product. It is the result of many years of experiences and of particular research studies and has been made with top quality materials and advanced technologies. The CE mark guarantees that the products satisfy all the applicable European Directives.
The qualitative level is kept under constant control and FERROLI products therefore offer SAFETY, QUALITY and RELIABILITY. Due to the continuous improvements in technologies and materials, the product specification as well as performances are subject to variations without prior notice.

Thank you once again for your preference
FERROLI S.p.A

The manufacturer declines all the responsibilities regarding inaccuracies contained in this manual, if due to printing or typing mistakes. The manufacturer reserves the right to apply changes and improvements to the products at any time without notice.
# TABLE OF CONTENTS

**GENERAL FEATURES** ................................................................. 4  
General instructions ............................................................... 4  
Declaration of conformity .......................................................... 4  
Unit dataplate .................................................................................. 4  
Unit description .............................................................................. 5  
Unit identification code ................................................................... 5  
Description of components ............................................................ 6  
Control system ............................................................................... 7  
Options ............................................................................................ 7  
Accessories ....................................................................................... 7  

**TECHNICAL DATA AND PERFORMANCES** .......................................... 8  
Technical data .................................................................................. 8  
NOMINAL performances - Base setting up (AB) ................................ 9  
NOMINAL performances - Low noise setting up (AS) ..................... 9  
COOLING performances .................................................................. 10  
HEATING performances .................................................................... 11  
Operating limits .............................................................................. 12  
Electrical data .................................................................................. 13  
Noise levels ...................................................................................... 13  
Weights ............................................................................................. 13  
Overall dimensions .......................................................................... 14  
Minimum operating area ................................................................... 14  
Refrigerant connections .................................................................... 15  
Electrical connections ...................................................................... 16  

**RECEIVING AND POSITIONING** .................................................... 17  
Receiving .......................................................................................... 17  
Positioning ....................................................................................... 17  

**START UP** .................................................................................... 18  
Start up ............................................................................................. 18  

**CONTROL SYSTEM** .................................................................... 19  
Control system ................................................................................ 19  
Menu structure ................................................................................ 21  
Inputs and outputs .......................................................................... 22  
Controller technical data .................................................................. 22  
Configurations for the remote heat exchange management. ............ 23  
Alarms .............................................................................................. 24  
Alarms table ..................................................................................... 25  
Functions available for the user ....................................................... 26  
Serial communication ...................................................................... 27  
Probes characteristics ...................................................................... 28  

**MAINTENANCE** ........................................................................... 29  
Maintenance ..................................................................................... 29  

**SAFETY AND POLLUTION** ............................................................ 30  
General considerations ..................................................................... 30  
Refrigerant safety card ...................................................................... 30  

**DECLARATION OF CONFORMITY** ................................................. 33
GENERAL FEATURES

General instructions

This manual and the wiring diagram supplied with the unit must be kept in a dry place for possible future consultation. The manual provides information on installation and correct use and maintenance of the unit. **Before carrying out installation, please carefully read all the information contained in this manual, which describes the procedures necessary for correct installation and use of the unit.**

Follow carefully the instructions contained in this manual and respect the safety regulations in force. The unit must be installed in conformity with the laws in force in the country of use. Unauthorized tampering with the electrical and mechanical equipment **INVALIDATES THE WARRANTY.**

Check the electrical specifications given on the dataplate before making the electrical connections. Read the instructions given in the specific section on electrical connections.

Deactivate the equipment in case of fault or poor operation.

If the unit requires fixing, contact only specialized service centers recognized by the manufacturer and use original spare parts.

The unit must be installed outdoor and connected to a properly sized remote heat exchanger suitable for cooling and/or heating air, water or other fluids. Any use different from that permitted or outside the operating limits indicated in this manual is prohibited (unless previously agreed with the firm).

The manufacturer declines any responsibility for damage or injury due to non-compliance with the information given in this manual.

Declaration of conformity

The firm declares that the present unit complies with the requirements of the following directives:

- Machinery directive (MD) 2006/42/EC
- Pressure equipment directive (PED) 97/23/EC
- Electromagnetic compatibility directive (EMC) 2004/108/EC
- Low voltage directive (LVD) 2006/95/EC

Unit dataplate

The figure shows the fields reported on the unit dataplate:

- A - Trademark
- B - Model
- B1 - Code
- C - Serial number
- D - Capacity in cooling
- E - Capacity in heating (heat pump)
- F - Power input in cooling
- G - Power input in heating (heat pump)
- H - Reference standard
- I - Power supply
- L - Maximum absorbed current
- M - Refrigerant type and charge weight
- N - Unit weight
- O - Sound pressure level at 1 metre
- P - IP protection level
- Q - Maximum pressure - high pressure side
- R - Maximum pressure - low pressure side
- S - PED certification body
GENERAL FEATURES

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of small and medium size. All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

It is possible for example to connect direct expansion coils placed inside air handling units or remote plate heat exchangers placed inside technical rooms. In both cases the lack of outdoor hydraulic pipes eliminates the freezing problems and avoids brine solutions to be used.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressor mounted on damper supports, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins and shut off valves on the liquid line and on the gas line. The reversible units are moreover supplied with reverse cycle valve, thermostatic expansion valve (working in heating mode) and liquid receiver.

The circuit is protected by high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Unit identification code

The codes that identify the units and the meaning of the letters used are described below.

<table>
<thead>
<tr>
<th>Codes</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMA</td>
<td>Unit model</td>
</tr>
<tr>
<td>SP</td>
<td>Operating range</td>
</tr>
<tr>
<td>26.1</td>
<td>Refrigerant type</td>
</tr>
<tr>
<td>VB</td>
<td>Acoustic setting up</td>
</tr>
<tr>
<td>AB</td>
<td>Power supply</td>
</tr>
<tr>
<td>0M5</td>
<td>N° compressors</td>
</tr>
</tbody>
</table>

**Unit type**

- SR - Unit suitable for splitted plant installation operating as chiller
- SP - Unit suitable for splitted plant installation operating as reversible heat pump

**Unit model**

- VB - Base version

**Operating range**

- M - Medium temperature. The unit is suitable to be installed in temperate climates.

**Refrigerant type**

- 0 - R410A

**Acoustic setting up**

- AB - Base setting up
- AS - Low noise setting up

**Power supply**

- 5 - 400 V - 3N - 50 Hz
Description of components

External structure. Basement, supporting structure and lateral panels are made of galvanized and painted sheet-steel (colour RAL 7035) to guarantee good resistance to atmospheric agents. Accessibility to internal parts is possible removing the frontal panel. For extraordinary maintenances also the rear panel can be removed.

Refrigerant circuit. It is contained inside a compartment separated from the air flow to simplify maintenance and control operations.

The hermetic scroll compressor (1) is mounted on damper supports and is protected against overtemperatures and overcurrents. It is equipped with an electrical heater, that is activated when the compressor turns off, to keep the compressor crankcase oil temperature high enough to prevent migration of the refrigerant during winter stops and to evaporate any liquid present in the crankcase, in order to prevent possible liquid rushes on starting (only heat pump models).

The source side heat exchanger (2) is a finned coil realized with grooved copper pipes and aluminium fins with notched profile to increase the heat exchange coefficient. A tray is obtained in the basement to collect the condensate generated in heating mode.

The refrigerant circuit of the heat pump models contains moreover a 4 way reverse cycle valve (3) to allow operating mode change reversing the refrigerant flow, an expansion device (4) for heating mode, a thermostatic expansion valve with external equalizer, that allows the unit to adjust itself to the different operating conditions keeping steady the set superheating, a solid core hermetic filter dryer (5) to restrain impurity and moisture residuals that could be present in the circuit and a liquid receiver (6) to compensate the different refrigerant charge required in heating and in cooling mode.

The refrigerant circuit of each unit contains moreover high and low pressure switches in order to assure the compressor to operate inside the permitted limits, shut off ball valves on the liquid line and on the gas line to allow maintenance operations on the unit and pressure connections SAE 5/16” - UNF 1/2” - 20 equipped with pin, gasket and blind nut, as required for the use of R410A refrigerant (they allow the complete check of the refrigerant circuit: compressor inlet pressure, compressor outlet pressure and thermostatic expansion valve upstream pressure).

The axial fans (7) are contained in a sheet nozzle and are equipped with a safety grille. The fans rotational speed can be modulated continuously by an inverter (option) to control the condensation pressure (in cooling) and the evaporation pressure (in heating) in order to extend the operating limits of the unit and to reduce noise emissions.

Electrical panel. It contains all the power, control and security components necessary to guarantee the unit to work properly. The unit is managed by a microprocessor controller to which all the electrical loads and the control devices are connected. The user interface, placed on the frontal panel, allows to view and to modify, if necessary, all the parameters of the unit.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.
### GENERAL FEATURES

#### Control system

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

The main functions available are:

- water or air temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic
- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output

#### Options

<table>
<thead>
<tr>
<th>Soft starter</th>
<th>Reduces the compressor start current.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor power factor correction</td>
<td>Allows to reduce the phase shift between the absorbed current and the power supply voltage keeping it above the value of 0.9.</td>
</tr>
<tr>
<td>Fans control</td>
<td>Modulating control (condensation/evaporation control)</td>
</tr>
<tr>
<td>Fuses</td>
<td>Allows to protect the electrical loads with fuses.</td>
</tr>
<tr>
<td>Thermal magnetic circuit breakers</td>
<td>Allows to protect the electrical loads with thermal magnetic circuit breakers simplifying the maintenance operations.</td>
</tr>
</tbody>
</table>

#### Electrical loads protection

| Rubbers vibration dampers | Allow to reduce the transmission to the unit support plane of the mechanical vibrations generated by the compressor and by the fans in its normal operating mode. |
| Cord protection grille     | Protects the external surface of the finned coil. |
| Remote control             | It is suitable for wall mounting and reports all the control and visualization functions available on the user interface placed on the unit. It therefore allows the complete remote control of the unit. |
| Modbus serial interface on RS485 | It allows to communicate with the unit controller and to view the operating conditions of the unit through Modbus communication protocol. The RS485 serial line ensures the signal quality up to distances of about 1200 meters (that can be extended by means of proper repeaters). |
| Programmer clock           | It allows the unit to be turned on and off according to a set program, through the digital input available on the unit wiring board (remote stand by). |
| Phase sequence and voltage controller | It checks not only the presence and correct order of the power supply phases but also the voltage level on each phase and avoid the unit to operate with voltage levels outside the permitted limits. |
| Remote plate heat exchanger | Stainless steel brazed plate heat exchanger properly sized for cooling and heating operating mode supplied with thermal insulation, differential pressure switch on the water side, temperature probes (water inlet and outlet) and antifreeze electrical heater. |
| Liquid line (for SR units)   | It contains a thermostatic expansion valve sized for cooling operating mode, filter dryer, liquid indicator and solenoid valve. |
| Liquid line (for SP units)    | It contains a thermostatic expansion valve sized for cooling operating mode, filter dryer, liquid indicator, solenoid valve and check valve (to be installed in parallel to the expansion valve). |
| High and low pressure gauges | Allow to visualize the evaporation and the condensation pressures. |
# Technical Data and Performances

## Technical Data

<table>
<thead>
<tr>
<th>Frame</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
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<tr>
<td>U.M.</td>
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<td></td>
</tr>
<tr>
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<td>400 - 3N - 50</td>
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<td>V-ph-Hz</td>
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### Refrigerant

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<th>R410A</th>
<th>R410A</th>
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### Compressor

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<td>%</td>
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### Source side heat exchanger

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<th>finned coil</th>
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<td>m²</td>
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### Fans

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<td>Diameter</td>
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<tr>
<td>mm</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Maximum rotational speed</td>
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<td>900</td>
<td>900</td>
<td>900</td>
<td>900</td>
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<tr>
<td>kW</td>
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</table>
## TECHNICAL DATA AND PERFORMANCES

### NOMINAL performances - Base setting up (AB)

<table>
<thead>
<tr>
<th>Frame</th>
<th>1</th>
<th>2</th>
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<th>5</th>
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<tr>
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<td>30.1</td>
<td>35.1</td>
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<tr>
<td>Power supply</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
</tr>
</tbody>
</table>

#### Cooling A35E5 (source: air in 35°C d.b. / plant: evaporation temperature 5°C)

- **SR**
  - Cooling capacity: 21.6, 24.0, 28.0, 33.5, 38.7, 43.6 kW
  - Power input: 6.79, 7.45, 8.72, 10.7, 12.2, 13.8 kW
  - EER: 3.18, 3.21, 3.20, 3.13, 3.17, 3.16

- **SP**
  - Cooling capacity: 21.2, 23.5, 27.4, 32.8, 37.9, 42.8 kW
  - Power input: 6.72, 7.38, 8.63, 10.6, 12.1, 13.7 kW
  - EER: 3.15, 3.19, 3.18, 3.11, 3.14, 3.12

#### Heating A7C45 (source: air in 7°C d.b. 6°C w.b. / plant: condensation temperature 45°C)

- **SR**
  - Heating capacity: 22.2, 24.6, 28.6, 34.2, 39.6, 44.6 kW
  - Power input: 5.92, 6.49, 7.59, 9.34, 10.6, 12.1 kW
  - COP: 3.75, 3.79, 3.77, 3.66, 3.74, 3.69

- **SP**
  - Heating capacity: 20.1, 22.3, 25.9, 31.0, 35.9, 40.4 kW
  - Power input: 6.72, 7.37, 8.62, 10.6, 12.1, 13.8 kW
  - COP: 2.99, 3.03, 3.00, 2.92, 2.97, 2.93

### NOMINAL performances - Low noise setting up (AS)

<table>
<thead>
<tr>
<th>Frame</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>U.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>19.1</td>
<td>22.1</td>
<td>26.1</td>
<td>30.1</td>
<td>35.1</td>
<td>40.1</td>
</tr>
<tr>
<td>Power supply</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
<td>400 - 3N - 50</td>
</tr>
</tbody>
</table>

#### Cooling A35E5 (source: air in 35°C d.b. / plant: evaporation temperature 5°C)

- **SR**
  - Cooling capacity: 20.7, 23.0, 26.9, 32.2, 37.2, 41.9 kW
  - Power input: 7.33, 8.05, 9.40, 11.5, 13.2, 14.9 kW
  - EER: 2.83, 2.86, 2.86, 2.80, 2.82, 2.81

- **SP**
  - Cooling capacity: 20.3, 22.6, 26.4, 31.5, 36.4, 41.0 kW
  - Power input: 7.26, 7.97, 9.31, 11.4, 13.1, 14.8 kW
  - EER: 2.80, 2.83, 2.83, 2.76, 2.78, 2.78

#### Heating A7C45 (source: air in 7°C d.b. 6°C w.b. / plant: condensation temperature 45°C)

- **SR**
  - Heating capacity: 21.0, 23.4, 27.2, 32.6, 37.7, 42.5 kW
  - Power input: 5.68, 6.23, 7.29, 8.98, 10.3, 11.7 kW
  - COP: 3.69, 3.76, 3.74, 3.63, 3.68, 3.64

- **SP**
  - Heating capacity: 19.0, 21.2, 24.7, 29.6, 34.2, 38.5 kW
  - Power input: 6.45, 7.08, 8.27, 10.20, 11.7, 13.2 kW
  - COP: 2.94, 3.00, 2.98, 2.90, 2.93, 2.91

Data declared with superheating and subcooling equal to 5°C. The values are referred to units without options and accessories.
TECHNICAL DATA AND PERFORMANCES

COOLING performances

The graphs allow to get the corrective factors to be applied to the nominal performances in order to obtain the real performances in the selected operating conditions.

The reference nominal condition is:
A35E5
source: air in 35°C d.b.
plant: evaporation temperature 5°C

Evaporation temperature
plant side:
A = 22°C
B = 16°C
C = 10°C
D = 5°C
The graphs allow to get the corrective factors to be applied to the nominal performances in order to obtain the real performances in the selected operating conditions.

The reference nominal condition is:
**A7W50**
- source: air in 7°C d.b. 6°C w.b.
- plant: condensation temperature 50°C

Outlet temperature
- plant side:
  - A = 60°C
  - B = 50°C
  - C = 40°C
  - D = 30°C
The graphs reported below show the operating area inside which the correct working of the unit is guaranteed.

### Cooling

- **Inlet air temperature d.b. [°C]**
  - -15 to 50

- **Evaporation temperature - plant side [°C]**
  - -15 to 50

- **Modulating fans control (condensation control)**

### Heating

- **Inlet air temperature d.b. [°C]**
  - -15 to 50

- **Condensation temperature - plant side [°C]**
  - -15 to 50

### Technical Data and Performances

#### Operating limits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Superheating</th>
<th>Subcooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum value</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Minimum value</td>
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<td>2</td>
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</table>
## TECHNICAL DATA AND PERFORMANCES

### Electrical data

<table>
<thead>
<tr>
<th>Frame</th>
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<th>26.1</th>
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<th>40.1</th>
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<tr>
<td>Model</td>
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<td></td>
</tr>
<tr>
<td>Power supply</td>
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<td>V-ph-Hz</td>
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<td>F.L.A.</td>
<td>Maximum total current input</td>
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<td>22.9</td>
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<td>F.L.I.</td>
<td>Maximum total power input</td>
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<tr>
<td>M.I.C.</td>
<td>Maximum total start current</td>
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<tr>
<td></td>
<td>Maximum total start current</td>
<td>55</td>
<td>64</td>
<td>68</td>
<td>73</td>
<td>82</td>
<td>102</td>
</tr>
</tbody>
</table>

### Noise levels

#### Base setting up (AB)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sound power levels [dB] by octave bands [Hz]</th>
<th>Sound power level</th>
<th>Sound pressure level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63</td>
<td>125</td>
<td>250</td>
</tr>
<tr>
<td>19.1</td>
<td>82.4</td>
<td>83.6</td>
<td>80.2</td>
</tr>
<tr>
<td>22.1</td>
<td>82.6</td>
<td>83.8</td>
<td>80.4</td>
</tr>
<tr>
<td>26.1</td>
<td>83.5</td>
<td>84.7</td>
<td>81.3</td>
</tr>
<tr>
<td>30.1</td>
<td>88.2</td>
<td>83.4</td>
<td>80.0</td>
</tr>
<tr>
<td>35.1</td>
<td>88.6</td>
<td>83.8</td>
<td>80.4</td>
</tr>
<tr>
<td>40.1</td>
<td>88.9</td>
<td>84.1</td>
<td>80.7</td>
</tr>
</tbody>
</table>

#### Low noise setting up (AS)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sound power levels [dB] by octave bands [Hz]</th>
<th>Sound power level</th>
<th>Sound pressure level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63</td>
<td>125</td>
<td>250</td>
</tr>
<tr>
<td>19.1</td>
<td>80.3</td>
<td>81.5</td>
<td>78.1</td>
</tr>
<tr>
<td>22.1</td>
<td>80.5</td>
<td>81.7</td>
<td>78.3</td>
</tr>
<tr>
<td>26.1</td>
<td>81.4</td>
<td>82.6</td>
<td>79.2</td>
</tr>
<tr>
<td>30.1</td>
<td>86.9</td>
<td>82.1</td>
<td>78.7</td>
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<td>35.1</td>
<td>87.5</td>
<td>82.7</td>
<td>79.3</td>
</tr>
<tr>
<td>40.1</td>
<td>87.9</td>
<td>83.1</td>
<td>79.7</td>
</tr>
</tbody>
</table>

### Reference conditions

Performances referred to units operating in cooling mode at nominal conditions A35E5. Unit placed in free field on reflecting surface (directional factor equal to 2). The sound power level is measured according to ISO 3744 standard. The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

### Weights

<table>
<thead>
<tr>
<th>Frame</th>
<th>19.1</th>
<th>22.1</th>
<th>26.1</th>
<th>30.1</th>
<th>35.1</th>
<th>40.1</th>
<th>U.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Weight</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Components weights</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit without options</td>
<td>205</td>
<td>208</td>
<td>223</td>
<td>237</td>
<td>257</td>
<td>259</td>
<td>kg</td>
</tr>
<tr>
<td>Transport weights</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit without options</td>
<td>221</td>
<td>224</td>
<td>239</td>
<td>257</td>
<td>277</td>
<td>279</td>
<td>kg</td>
</tr>
</tbody>
</table>
TECHNICAL DATA AND PERFORMANCES

Overall dimensions

Respect the free area around the unit as shown in the figure in order to guarantee a good accessibility and facilitate maintenance and control operations.

Minimum operating area

A 400 mm
B 600 mm
C 200 mm
**Refrigerant connections**

To design properly the system respect the local safety regulations in force.

The refrigerant lines must be properly designed in order to:

- guarantee the remote plant heat exchanger to be properly fed
- guarantee the oil return to the compressor
- avoid liquid return on the compressor inlet
- avoid too high pressure losses

**Suggestions for the realization of the refrigerant lines**

Place the unit as near as possible to the remote plant heat exchanger in order to minimize the pressure losses and maximize the efficiency of the system.

Design the liquid line with a maximum total pressure loss corresponding to a saturated temperature variation of 0.5 °C.

Design the gas line with a maximum total pressure loss corresponding to a saturated temperature variation of 1.0 °C.

Install a filter dryer, a liquid indicator and a solenoid valve before the expansion device used (in cooling mode) to feed the remote heat exchanger.

---

**Refrigerant charge**

The unit is supplied with a refrigerant charge suitable for operating with a plate remote heat exchanger properly sized.

The charge in any case must be integrated according to the type of remote heat exchanger and to the selected refrigerant lines length.

For the heat pump models it is necessary to check if the volume of the liquid receiver, installed inside the unit, is correct for the final refrigerant charge of the system and to replace it or integrate it with an adding receiver, if necessary.

**Connections**

The connections of the liquid line and of the gas line consist of a shut off ball valve and a short copper stub closed and filled with nitrogen.

- Discharge the nitrogen using the pressure connection
- Braze the refrigerant lines to the copper stubs
- Get the vacuum on the refrigerant lines
- Open the shut off valves
- Integrate the refrigerant charge in order to guarantee the system to work properly

---

**Legend**

1. Dryer filter
2. Solenoid valve
3. Liquid indicator
4. Thermostatic valve
5. Remote heat exchanger
6. Check valve (only for heat pumps)

---

<table>
<thead>
<tr>
<th>External diameter</th>
<th>Thickness</th>
<th>Refrigerant charge integration [g/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>[inch]</td>
<td>[mm]</td>
<td>[mm]</td>
</tr>
<tr>
<td>3/8 &quot;</td>
<td>9,52</td>
<td>0,70</td>
</tr>
<tr>
<td>1/2 &quot;</td>
<td>12,7</td>
<td>0,75</td>
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<tr>
<td>5/8 &quot;</td>
<td>15,88</td>
<td>0,9</td>
</tr>
<tr>
<td>7/8 &quot;</td>
<td>22</td>
<td>1,0</td>
</tr>
<tr>
<td>1 &quot; 1/8</td>
<td>28</td>
<td>1,0</td>
</tr>
<tr>
<td>1 &quot; 3/8</td>
<td>35</td>
<td>1,5</td>
</tr>
<tr>
<td>1 &quot; 5/8</td>
<td>42</td>
<td>1,5</td>
</tr>
<tr>
<td>2 &quot; 1/8</td>
<td>54</td>
<td>2,0</td>
</tr>
</tbody>
</table>
Electrical connections

The electrical wirings must be carried out by qualified personnel according to the regulations in force at the installation time in the country of installation. Before starting any work on the electrical circuit make sure that the unit power supply line is disconnected at the start.

**N.B.** Refer to the electrical diagram enclosed in the unit.

Power supply system

The power cables of the heat pump power supply line must be connected to:

- for single phase power supply: from a single phase voltage system provided with neutral conductor and separated earth wire:
  
  \[
  V = 230 \text{ V } \pm 10 \% \\
  f = 50 \text{ Hz}
  \]

- for three phase power supply: from a symmetrical three phase voltage system provided with neutral conductor and separated earth wire:
  
  \[
  V = 400 \text{ V } \pm 10 \% \\
  f = 50 \text{ Hz}
  \]

The units are shipped completely factory wired and arranged for the connection to the power supply.

The power cables must enter the unit through the holes on the lateral panel and must be connected to the power supply terminals of the unit.

Unit power supply

The power supply cables must have an adequate section for the power absorbed by the unit and must be chosen in conformity with the regulations in force. Design the power supply line, always referring to the total FLI and FLA values of the unit, taking into account the selected options (except the integrative electrical heaters) and the installed accessories.

Upstream protection

An automatic switch suitable for ensuring protection against overcurrents and indirect contacts must be installed upstream each power supply line.

Coordination between line switch must be carried out observing the regulations in force on electrical safety, regarding the type of installation and the installation ambient conditions.

Connections available for the user

The wiring board inside the electrical panel contains dedicated terminals for the following connections.

**General alarm**

Voltage output (230V - max 2A) to be used to notify the presence of an active alarm.
Output active: active alarms
Output not active: no active alarms

**Remote stand by**

To turn on and off the unit, a remote device (selector, programmer clock, centralised supervision device ...) with a voltage free contact suitable for switching loads of very low power, can be connected.

This function must be enabled by parameter (see the section "Adjustment and control") and prevails the settings made on the user interface.

**Remote Cooling-Heating**

It is possible to switch between cooling mode and heating mode from remote by connecting a device equipped with a voltage free contact suitable for switching loads of very low power.

This function must be enabled by parameter (see the section "Adjustment and control") and prevails the settings made on the user interface.

**Remote control**

It is possible to connect a remote control that has all the control and display functions available on the user interface on the unit and therefore enables the complete remote control of the unit.

**Pump / return fan control**

The controller of the unit can directly activate the circulating pump or the return fan by means of a voltage free contact (maximum absorbed current 4A).

**ATTENTION**

Carry out all the connections outside the unit avoiding the power cables and the probe cables to be coupled.