

# MMAE

Air cooled condensing units  
Reversible heat pumps  
from 20 kW to 45 kW



**SCROLL compressor R 407C**



according to  
97/23/CE  
n° 1131



ISO 9001  
FM 534490

Series:	MMAE	Leaflet:	DE 61
Issue:	04/09	Supersedes :	-

## MMAE air cooled condensing unit MMAE...H reversible heat pump

### General features

#### FRAME

Self-supporting galvanized steel frame protected with polyester powder painting. Panels are easily removable for maintenance and service activities.

#### COMPRESSORS

Hermetic “**scroll**” type with overload protection by a klixon and complete with oil sight glass. They are installed on vibrations absorbing rubber and placed within a closed compartment to reduce sound level and to allow service and maintenance activities while unit is in operation.

#### CONDENSER

Copper tube and aluminium finned coil. As option a protection grid/filter is available.

#### FANS

Axial fans with aerodynamic outline blade section made of Al/Mg, directly coupled to a single-phase electric motor with external rotor. A safety fan guard is fitted on air flow discharge.

#### REFRIGERANT CIRCUIT

Each unit is complete with 2 service valves (one on the suction line and one on the discharge line).

To protect the refrigerant circuit the following device are installed: man. reset high pressure switch, aut. reset low pressure switch.

The heat pump units version (MMAE...H) contain, in addition: safety thermostat on compressor discharge line, 4-ways valve, check valve, solenoid valve.

#### ELECTRICAL BOARD

Weather proof type with protection grade IP54 installed in the compressor box to enable service and maintenance activities while unit is in operation.

It includes:

- Main circuit automatic breaker with locking door device, main fuses, compressor contactor, fans fuses and contactors, auxiliary circuits trafo. Microprocessor to control automatically the unit with a visual system to display the function as well as failures.

### Versions

#### DS

Partial condensing heat recovery. It includes a desuperheater insulated and installed in series between the compressor and the condenser.

#### RCS - RCP

On request.

#### LN

Low noise version, it includes: pressostatic fan speed control, compressor insulated with a high sound absorbing layer.

#### VLN

On request.

### Options

- Liquid line kit (not mounted): dryer, sight glass, solenoid valve, shut off valve
- Suction/liquid line shut off valves
- Liquid receiver
- Solenoid valve
- T-connections for HGBP-valve.
- Thermostatic valves (not mounted).
- Power factor condensing capacitors.
- Fans speed regulator.
- Cu/Cu condensing coils.
- Coils protection grid.
- Gauges.
- Programmer clock.
- Remote control panel.
- Rubber antivibrators.
- High sensibility AV mounts
- Wooden crate packing.

## MMAE technical data

SIZE		21/1	25/1	30/1	40/1	45/1
<b>COOLING MODE MMAE</b>						
Cooling capacity	kW	21,5	25	30,5	36	44,5
Abs. Power (1)	kW	7,2	9	9,5	12,4	15
<b>HEATING MODE MMAE...H</b>						
Heating capacity	kW	22	26	31	37	45
Abs. Power (1)	kW	7,3	9,3	11	13,6	15,8
<b>Compressor (scroll type)</b>						
Quantity	n°	1				
Refrigerant circuit	n°	1				
Capacity step	n°	1				
Refrigerant		R407C				
<b>Condenser (STD/LN version) (2)</b>						
Refrigerant (5)	kg	5	5	7	8	9
Axial fans	n°	1	1	2	2	2
Nominal air flow (3)	m <sup>3</sup> /s	2,1	2,1	4,7	4,7	4,2
Max abs. power	kW	0,5	0,5	0,5	0,5	0,5
Max abs. current	A	2,5	2,5	2,5	2,5	2,5
<b>Condenser (VLN version)</b>						
Axial fans	n°	(9)				
Nominal air flow	m <sup>3</sup> /s					
Max abs. power	kW					
Max abs. current	A					
<b>Unit electrical data (5)</b>						
Max abs. current	A	18	21	23	28	33
LRC	A	100	124	128	168	199
Electrical supply	V/f/Hz	400/3+N/50				
<b>Sound pressure level at 1 m (4)</b>						
STD version	dB(A)	58	58	61	61	61
LN version	dB(A)	55	55	58	58	58
VLN version	dB(A)	(9)				

Performances in cooling mode:

- evaporating temp. 7 °C (dew point)
- ambient air temp. 35 °C
- subcooling 5K

Performances in heating mode:

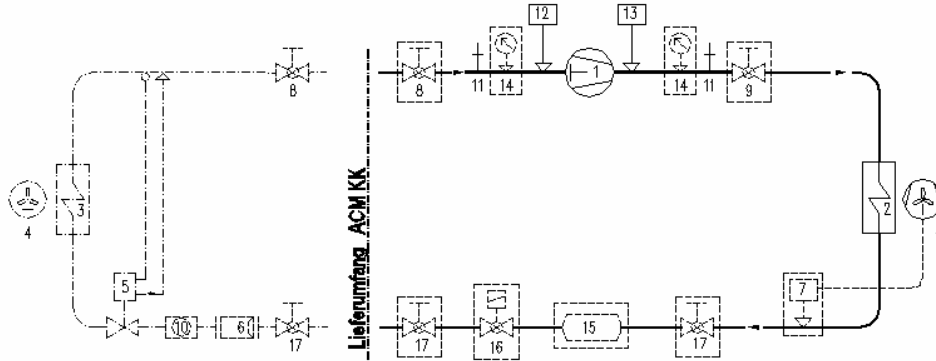
- condensing temp. 45 °C (dew point)
- ambient air temp. 7 °C db / 6 wb
- subcooling 5K

The performances don't consider the outside pipes pressure drop.

Note:

- 1) Compressors + fans;
- 2) As version MMAE...H (heat pump) it works as evaporating unit.
- 3) Max air flow in case of LN version.
- 4) Compressor site and according to ISO 3744.
- 5) This data has only to be considered to charge the system as the unit leaves the factory changed with nitrogen.

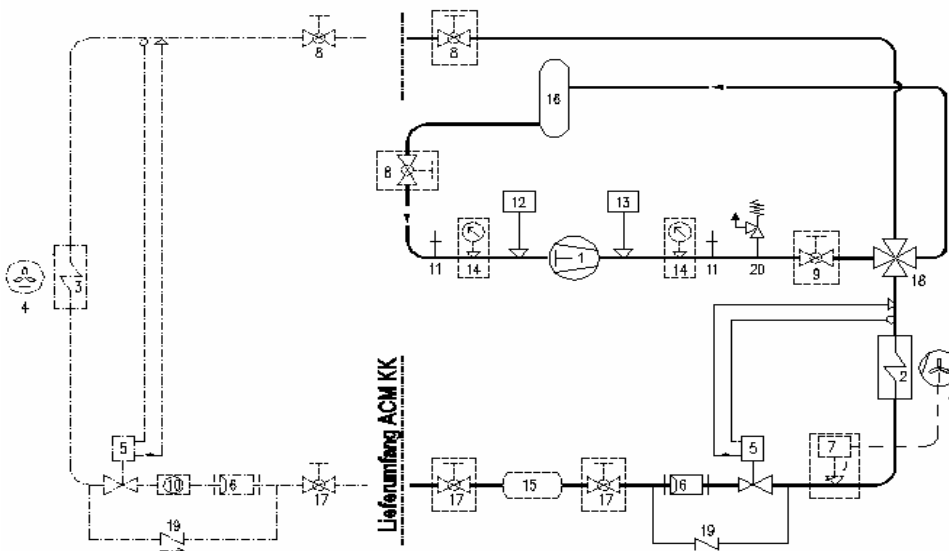
## Refrigerant Circuit MMAE



\*\* The outlined components are optional

- 1 = Compressor
- 2 = Condenser
- 3 = Evaporator
- 4 = Fan
- 5 = Thermal expansion valve
- 6 = Refrigerant filter
- 7 = Fan speed regulator
- 8 = Suction line valve\*\*
- 9 = Supply cock \*\*
- 10 = Humidity indicator
- 11 = Schrader service valve
- 12 = Low pressure switch
- 13 = High pressure switch
- 14 = Gauge\*\*
- 15 = Liquid receiver \*\*
- 16 = Solenoid valve \*\*
- 17 = Liquid line cock\*\*
- 18 = Relief valve

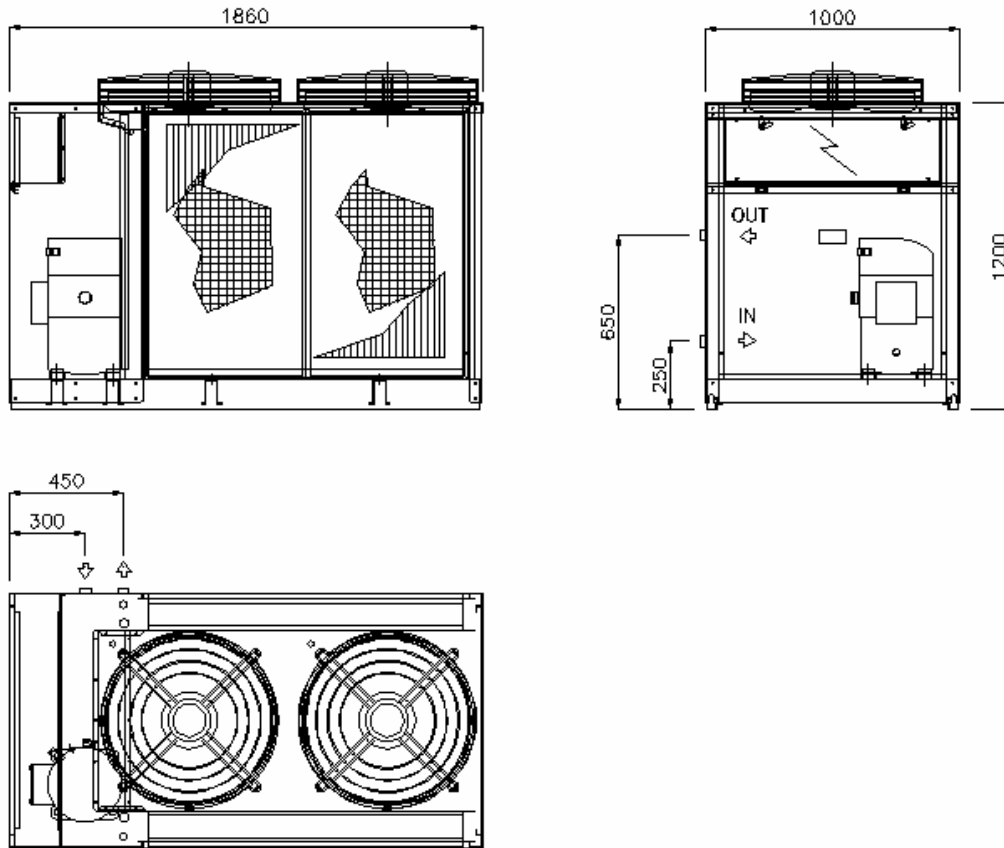
## Refrigerant Circuit MMAE....H



\*\* The outlined components are optional

- 1 = Compressor
- 2 = Outdoor exchanger
- 3 = Indoor exchanger
- 4 = Fan
- 5 = Thermal expansion valve
- 6 = Refrigerant filter
- 7 = Fan speed regulator
- 8 = Suction line valve\*\*
- 9 = Supply cock \*\*
- 10 = Humidity indicator\*\*
- 11 = Schrader service valve
- 12 = Low pressure switch
- 13 = High pressure switch
- 14 = Gauge\*\*
- 15 = Liquid receiver \*\*
- 16 = Suction separator
- 17 = Liquid line cock\*\*
- 18 = 4way solenoid valve
- 19 = Check valve
- 20 = Relief valve

**DIMENSIONS (mm)**



**WEIGHTS (kg)**

The data are referred to MMAE cooling only; for MMAE....H increase the value of 5%.

VERSIONS	STD					LN				
	21/1	25/1	30/1	40/1	45/1	21/1	25/1	30/1	40/1	45/1
Transport	395	410	435	450	505	405	420	455	465	520

(1) **OPERATING WEIGHT** : add to the transport weight the refrigerant charge and the accessories.

**FREON CONNECTIONS (mm)**

MMAE	VERSIONS				
Size	21/1	25/1	30/1	40/1	45/1
Ø IN - OUT	28 - 22	28 - 22	35 - 28	35 - 28	42 - 35





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