

SPECIFICATION GUIDE

MWC



**Water-cooled Liquid Chiller for indoor installation (MWC)
Water to water Heat Pump for indoor installation (MWC)
Condenserless liquid chiller (MRC)**

**Nominal cooling capacity: 180 to 720 kW
Nominal heating capacity: 200 to 800 kW**



SPECIFICATIONS

1. Water-cooled chiller (or water to water heat-pump)

- The contractor shall furnish and install a MWC water-cooled scroll liquid chiller (or Heat-pump) from Lennox or an equivalent unit.
- The water-cooled scroll liquid chiller (or Heat-pump) shall be operating with R410A HFC-based refrigerant.
- The unit shall be designed and installed in strict accordance with this specification.
- The unit shall be certified and rated in accordance with Eurovent standard.

2. Performances and dimensions

- The water-cooled scroll liquid chiller (or Heat-pump) shall have following characteristics:

Cooling mode

- Cooling capacity: kW
- Minimum EER:
- Minimum ESEER:.....
- In/outlet water temperature on evaporator side: °C
- Glycol rate: %
- In/outlet water temperature on condenser side:..... °C
- Glycol rate: %
- Maximum sound power/pressure level: dB(A)

Heating mode (heat-pump only)

- Heating capacity: kW
- Minimum COP:.....
- In/outlet water temperature on condenser side:..... °C
- In/outlet water temperature on evaporator side: °C
- Glycol rate: %

Unit dimensions:

Length*width*height: * * mm

Unit type or equivalent:

Cooling only : MWC - - - DNM1M

Heat-pump : MWC - - - DNM1M



3. General characteristics of the unit

The MWC or equivalent unit shall be designed for industrial and commercial applications where customers require reduced total cost of ownership for new air conditioning equipment.

As main characteristics the MWC or equivalent unit shall offer multi scroll R410A compressors with two circuits for safety operation and oversized heat exchangers for high full and part load energy performances (Class B efficiency / ESEER > 6.0).

Thanks to very compact dimensions and limited footprint MWC or equivalent unit will be able to be installed easily into any technical room.

4. Refrigerant circuit

MWC or equivalent unit shall be using R410A refrigerant in 2 independent circuits that allows operation at 50% of the capacity in case of issue on one circuit.

Each circuit shall include:

- A refrigerant charge reduced by 30% thanks to the use of R410A combined with plate heat exchanger
- Suction piping with thermal insulation.
- Moisture sight glass on the MRC version
- Filter drier with removable cartridge filter.
- Thermostatic valve or electronic expansion valve (optional from size 180 to 570, standard on size 650 & 720).
- Temperature sensors and pressure transducers.
- Leak-tight refrigerant circuit with brazing carried out under nitrogen by certified technicians.
- Each refrigerant circuit shall be pressure and leak tested with a Hydrogen/Nitrogen mixture, and vacuumed before being charged with refrigerant. All units will be then subjected to a complete functional and operational run test to guarantee perfect sealing before leaving the factory.

5. Compressor

MWC or equivalent unit shall be using R410A vibration-free compliant® scroll compressors to guarantee a low operating sound level, a high durability and reliability and no maintenance.

- Exclusive Compliant® Scroll design with both axial and radial compliance to increase compressor operation tolerance to liquid refrigerant, substantially improving durability and reliability.
- Motor cooled by suction gas.
- Electronic control of the compressor discharge temperature.
- Motor protection device against high temperature or over current situations.
- Discharge non-return valve.
- Compressors assembly installed on an independent chassis supported by anti-vibration mountings.
- Optional sound-proofed panel enclosures to reduce noise emissions.

6. Water heat exchanger (evaporator and condenser)

MWC or equivalent unit shall be using stainless steel brazed plate heat exchangers with true dual circuit.

- Copper brazed stainless steel plate heat exchanger.
- 13 mm closed cell thermal foam insulation.
- Evaporator protected against freezing risks thanks to an electronic water flow switch
- Condenser protected against low condensing temperature thanks to a 0-10 V output signal available from the controller to control a condenser water inlet valve (Not from Lennox supply).

7. Casing/chassis

- Chassis made of galvanised steel sheet metal painted with a RAL 7016 (grey) powdered polyester paint.
- Optional casing with removable panels made of galvanised steel sheet metal painted with a RAL 7016 (grey) powdered polyester paint.

8. Electrical box

The MWC or equivalent unit shall be designed for 400V/3/50Hz supply.

- Unit electrical cabinet, components and wiring in compliance with EN 60204-1 electrical directive.
- 400V/3/50Hz power supply (without neutral) with a single point of power connection.
- IP24 protection class.
- Recognized brand electrical components for ease of maintenance.
- Main on/off switch mounted on the front panel.
- DC50 user interface mounted on the front panel.
- 400/24 V transformer to supply the control circuit.
- Labelled electrical wires to facilitate maintenance and diagnostic.
- Optional power and control circuit for the pumps.

9. Control

CLIMATIC™ microprocessor based control shall be providing the following functions:

- 4 scheduling time zones per day over 7 days to allow energy consumption management according to the building use and environmental constraints.
- PI control of the water temperature with operating time equalisation of the compressors.
- Intelligent advanced control algorithm to protect the compressors against excessive short-cycling and to allow operation of the unit without buffer tank in most comfort air conditioning applications (e.g. unit with fan-coils). Refer to minimum installation water loop volume recommendations.
- Water pump control with operating time equalization and automatic change-over in case of a pump fault (Twin pump only).
- Master/slave or cascade control of two chillers operating in parallel with operating time equalization and automatic change-over in case of a unit fault.

CLIMATIC™ shall be pre-factory configured with default settings allowing a fast commissioning on site. The DC50™ user interface with graphical display shall be easy to use, intuitive. Main customer parameters will be able to be read or modified without main power shut-off (Entering/leaving water temperatures, alarms, water set-points, high and low pressure readings).

The DS50™ service display (optional) shall be a "plug and play" controller that allows service people to read and modify all unit parameters (Unit settings, operating time and number of compressor starts, low and high pressure reading, read the history of last 32 faults...).

10. Communication

The control board shall be equipped with a RS485 serial communication port to allow remote management through communication bus.

According to the wished communication protocol, control board will be able to be fitted with ModBUS®, LonWorks® or BacNET® communication interface (options).

The main control board has free dry contacts that allow remote control of the unit by wired cable:

- Remote on/off of the unit.
- Remote alarm reset to re-start the unit.
- Alarm or alert indications.
- Free customer contact.

With the optional extension board BE50, it shall be possible to get additional customized digital or analog inputs/outputs for remote control of the unit:

- Fault pumps (dry contact).
- Operation indication at 100% on circuit 1 or 2 (dry contact).
- Dual water set-point management (dry contact).
- Force heating or cooling mode (24V AC input).
- Power limitation by disabling circuit 1 or 2 (24V AC input).
- Force unoccupied mode (24V AC input).
- Water set-point offset based on a 4-20mA signal.

11. Directives

The unit shall be built to meet European norms and standards & Eurovent certification performance standards.

- . DI 97/23/CE Pressure Equipment Directive.
- . DI 98/37/CE Machinery Directive.
- . DI 73/23/CE Low Voltage Directive.
- . DI 89/336/CE Electro Magnetic Compatibility Directive
- . EN 378-2 Safety and Environmental Directive.
- . The European Restriction of the Use of Certain Hazardous-Substances (RoHS).