

ECOV Series

Refrigeration Condensing Units - R744 Natural Refrigerant

Refrigeration is a necessary part of our modern way of life and is essential to the way we store and display food for convenience purchase.

Given today's concerns about global warming and environmental protection, energy conservation policies are becoming increasingly stringent. It is becoming progressively more important for cold chain retailers to shift towards greener natural refrigerants and energy efficient equipment.

With our technical expertise, long experience and innovative product range, Mitsubishi Electric is able to offer customers the ability to reduce their carbon emissions and assist them in achieving the UK governments Net Zero targets.

The **ECOV Series Refrigeration Condensing Units** utilise non-flammable CO₂ refrigerant (R744), with a GWP of only 1 - meaning that CO₂ emissions are significantly reduced when compared to systems using HFC refrigerants.



The **ECOV Series Refrigeration Condensing units** use natural CO₂ refrigerant (R744) and inverter technology to deliver reliable, energy efficient cooling and freezing.

With duties ranging from 4.89kW to 16.7kW at an ambient temperature of 35°C, the units can be connected to multiple refrigerated display cabinets or cold rooms evaporators - making them an ideal choice for smaller retail shops, convenience stores and cold storage rooms, including cold chain distribution centres.

Key Features & Benefits:

- Utilises natural CO₂ refrigerant to help meet key CSR & Net Zero targets
- Wide evaporating temperature range between -35°C and -5°C, meaning units can be used for chilling or freezing
- Equipped with an inverter driven scroll compressor, multi-flow condenser and DC inverter fan to improve energy saving performance and deliver an SEPR (Seasonal Efficiency Performance Ratio) of 2.6
- Small footprint of 0.74m² and horizontal air flow structure, facilitating installation in small spaces
- Low noise levels for minimal disturbance
- Anti-corrosion coating applied as standard to the heat exchanger, protecting against salt damage in harsher coastal environments
- A 50m pipe run allows for increased installation flexibility
- Direct Modbus connectivity allows the units to easily communicate with various monitoring systems
- Heat recovery port enables rejected heat to be used for minimal space heating and sanitary hot water demand in other areas of the building (requires field sourced plate heat exchanger)



ECOV Series - Key Technologies



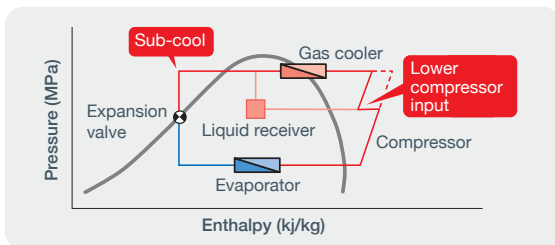
A. Compressor

Inverter-driven

The compressor is an inverter-driven single-stage scroll compressor developed by Mitsubishi Electric. The energy efficiency of the system is higher than that of a standard fixed speed, non-inverter system.

Refrigerant circuit

The ECOV Series adopts a single-stage compressor with a liquid receiver located in the middle pressure injection circuit. This enables the gas cooler to achieve greater sub-cooling with maximum efficiency.



B. Heat Exchanger (Rear side)

Flat aluminium tube

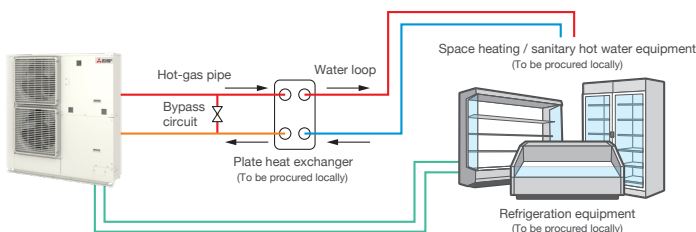
The use of the Multi Flow Condensor, aluminium flat tube heat exchanger and corrugated fins increases the contact area with air and refrigerant, resulting in greater heat-exchange efficiency.



Anti-corrosion coating against salt damage is applied to the heat exchanger as a standard feature.

C. Heat Recovery Port

With use of a field supplied plate heat exchanger, heat recovered from the refrigeration equipment can be utilised to provide space heating and/or sanitary hot water elsewhere in the building.



D. Fan

DC Inverter fan

Two DC-driven inverter fans are equipped in each unit for precise control, to optimise system efficiency and minimise noise levels.



E. Control Board

IGBT Module

Power modules manufactured by Mitsubishi Electric are used on the ECOV's inverter board.

This greatly reduces the power loss of the voltage boosting circuit and improves the units efficiency levels.



Easy Servicing

F. LED Display

During operation, a digital LED display shows the refrigerant's low pressure value, operation mode, and compressor frequency.

In case of malfunction, an error code is displayed.

G. Pressure Gauges

Gauges displaying the low and high pressure values.



Refrigeration Product Information

ECOV Series Refrigeration Condensing Units R744 Natural Refrigerant

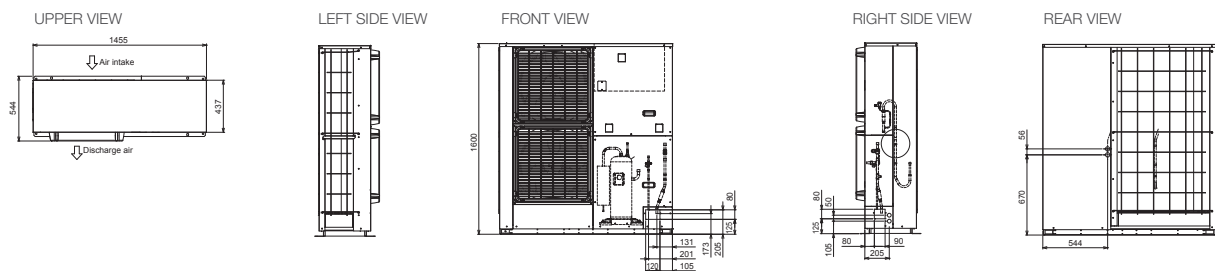


| MODEL | | ECOV-X37VA | | ECOV-X55VA | |
|---|--|---------------------|---|------------|---|
| REFRIGERATING CAPACITY | ET = -10°C ¹ | kW | 10.0 | | 16.0 |
| | ET = -30°C ² | kW | 5.07 | | 7.95 |
| SUCTION PRESSURE SATURATION TEMPERATURE RANGE | | °C | -35~-5 | | -35~-5 |
| REFRIGERANT TYPE | | | R744 | | R744 |
| OPERATING CONDITIONS | | °C | Ambient temperature -25-43 | | Ambient temperature -25-43 |
| POWER SOURCE | | | 3-phase 4-wire 380-400-415v, 50Hz | | 3-phase 4-wire 380-400-415v, 50Hz |
| ELECTRICAL CHARACTERISTICS | Power consumption ¹ | kW | 6.25 | | 10.0 |
| | Operating current | A | 10.8-10.3-9.9 | | 17.3-16.5-15.9 |
| | Power factor ⁷ | % | 87.6 | | 87.6 |
| | Starting current | A | 8.0 | | 8.0 |
| OPERATING FREQUENCY | | Hz | 35-66 | | 35-95 |
| SEPR (Seasonal Efficiency Performance Ratio) | | | 2.53 | | 2.60 |
| COMPRESSOR | Model | | HXK17FA-Y (Scroll) | | HXK17FA-Y (Scroll) |
| | Displacement volume | m ³ /h | 4.1 | | 5.9 |
| | Crank case heater | W | 45 | | 45 |
| CONDENSER | Heat exchanger type | | Salt-resistant corrugated fin & aluminium micro channel | | Salt-resistant corrugated fin & aluminium micro channel |
| | Fan | Motor output | W | 74 × 2 | 74 × 2 |
| | | Fan diameter | mm | φ550 × 2 | φ550 × 2 |
| | Air flow rate | m ³ /min | 154.8 | | 154.8 |
| Saturation pressure adjustment device | | | Electronic fan controller | | Electronic fan controller |
| LIQUID RECEIVER | | Capacity | 11 | | 11 |
| CAPACITY CONTROL | | | Inverter type | | Inverter type |
| STARTUP METHOD | | | Inverter startup | | Inverter startup |
| HIGH-PRESSURE-CUT PREVENTION FUNCTION | | | Standard | | Standard |
| PROTECTION DEVICE | Pressure switch <high pressure / low pressure> | | High pressure: Standard (Mechanical) / Low pressure: Standard (Digital) | | High pressure: Standard (Mechanical) / Low pressure: Standard (Digital) |
| | Over current protection | | Standard | | Standard |
| | Thermal switch (discharge pipe) | | Standard (Mechanical) | | Standard (Mechanical) |
| | Oil temperature detection protection | | Standard | | Standard |
| BUILT-IN DEVICE ⁵ | Pressure gauge | | Standard <Discharge, Liquid> | | Standard <Discharge, Liquid> |
| | Suction accumulator | | Standard | | Standard |
| | Oil Separator | | Standard | | Standard |
| | | | MODBUS ⁶ | | MODBUS ⁶ |
| COMMUNICATION ⁶ | | | MODBUS ⁶ | | MODBUS ⁶ |
| DIMENSIONS (Width x Depth x Height) | | mm | 1455 x 506 (+38) x 1600 | | 1455 x 506 (+38) x 1600 |
| WEIGHT | | kg | 290 | | 290 |
| PIPE SIZE | Gas | mm (in) | 15.88 (5/8") | | 15.88 (5/8") |
| | Liquid ³ | mm (in) | 9.52 (3/8") | | 9.52 (3/8") |
| MAX PIPE LENGTH | | m | 50 | | 50 |
| SOUND PRESSURE LEVEL @1m ⁴ | | dB(A) | 54.5 (51) | | 57 (54) |
| SOUND PRESSURE LEVEL @10m ⁴ | | dB(A) | 34.5 | | 37 |

Notes: *1 Measurement conditions: Ambient temperature: 32°C, Evaporation temperature: -10°C, Compressor operating frequency: 61Hz for ECOV-X37VA / 95Hz for ECOV-X55VA, Fan control: Target condensation temperature = Ambient temperature + 5°C.
*2 Measurement conditions: Ambient temperature: 32°C, Evaporation temperature: -30°C, Compressor operating frequency: 61Hz for ECOV-X37VA / 95Hz for ECOV-X55VA, Fan control: Target condensation temperature = Ambient temperature + 5°C.
*3 If the liquid pipe length exceeds 30m, set the pipe diameter to 12.7mm (1/2"). *4 Measurement conditions of sound pressure levels: Ambient temperature: 32°C, Evaporation temperature: -10°C, Measurement location: 1m or 10m from front of unit (refer to spec table row) / height 1m, Compressor operating frequency: 66Hz for ECOV-X37VA / 95Hz for ECOV-X55VA, Fan control: Target condensation temperature = Ambient temperature + 5°C. Measurement conditions of sound pressure levels in brackets are altered as follows: Compressor operating frequency: 61Hz for ECOV-X37VA / 95Hz for ECOV-X55VA, Fan control: Target condensation temperature = Ambient temperature + 10°C. *5 A pressure relief device, a sight glass and a dryer must be installed on the liquid pipe. Please procure these parts locally. *6 MODBUS® is a registered trademark of SCHNEIDER ELECTRIC USA, INC. in the United States. *7 Power condenser cannot be installed.

| ACCESSORIES | MODEL REF. |
|---|------------|
| AIR PROTECTION GUIDE FOR ECOV-X37VA & ECOV-X55VA (2 required per ECOV unit) | AG-X37A |

DIMENSIONS



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Note: Refer to 'Installation Manual' and 'Instruction Book' for further 'Technical Information'. The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows: R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of April 2023

