The Renewable Solutions Provider
Making a World of Difference

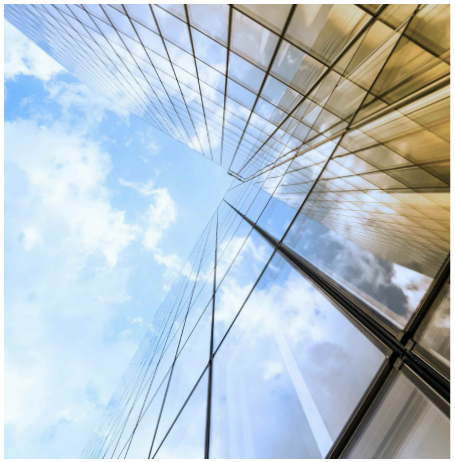
# City Multi VRF Seasonal Efficiency

## 2015 Product Catalogue Supplement

Widely accepted by the industry, COP's and EER's give a good indication of a systems performance, but in reality they do not give the full story of how a product will operate at different seasonal temperatures.

Seasonal Efficiency, or SCOP and SEER take into account the efficiency at varying temperatures and partial loads throughout the year highlighting the huge benefit VRF technology brings to all City Multi products.

City Multi will be covered by the Ecodesign Directive for Air Conditioners > 12kW from 2017, which will require rating and labelling of seasonal efficiency of systems; including indoor, standby and auxiliary power consumption. SCOP and SEER figures for City Multi VRF are therefore available for both typical system and outdoor unit alone.



CITY MULTI

MITSUBISHI ELECTRIC

Air Conditioning | Heating
Ventilation | Controls

## Y Series Heat Pump - Standard (PUMY)

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PUMY-P112VKM1 | 5.62 | 3.69 | 6.45 | 3.93 |
| PUMY-P112YKM1 | 5.62 | 3.69 | 6.45 | 3.93 |
| PUMY-P125VKM1 | 5.72 | 3.94 | 6.52 | 4.16 |
| PUMY-P125YKM1 | 5.72 | 3.94 | 6.52 | 4.16 |
| PUMY-P140VKM1 | 5.60 | 3.61 | 6.33 | 3.79 |
| PUMY-P140YKM1 | 5.60 | 3.61 | 6.33 | 3.79 |
| PUMY-P200YKM1 | 5.25 | 3.61 | 5.99 | 3.83 |

## Y Series Heat Pump - Standard

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PUHY-P200YKB-A1 | 8.12 | 5.08 | 9.65 | 5.57 |
| PUHY-P250YKB-A1 | 8.36 | 5.65 | 10.31 | 6.38 |
| PUHY-P300YKB-A1 | 7.15 | 5.63 | 8.42 | 6.32 |
| PUHY-P350YKB-A1 | 6.66 | 5.61 | 7.69 | 6.31 |
| PUHY-P400YKB-A1 | 6.04 | 4.65 | 6.94 | 5.04 |
| PUHY-P450YKB-A1 | 6.47 | 4.64 | 7.27 | 4.98 |
| PUHY-P500YKB-A1 | 6.83 | 4.77 | 7.82 | 5.14 |
| PUHY-P550YSKB-A1 | 8.39 | 5.69 | 9.77 | 6.23 |
| PUHY-P600YSKB-A1 | 6.69 | 5.69 | 7.47 | 6.23 |
| PUHY-P650YSKB-A1 | 6.94 | 4.83 | 7.81 | 5.19 |
| PUHY-P700YSKB-A1 | 6.47 | 5.05 | 7.23 | 5.45 |
| PUHY-P750YSKB-A1 | 7.61 | 5.48 | 8.91 | 5.98 |
| PUHY-P800YSKB-A1 | 5.93 | 5.44 | 6.56 | 5.96 |
| PUHY-P850YSKB-A1 | 6.01 | 4.95 | 6.67 | 5.41 |
| PUHY-P900YSKB-A1 | 6.08 | 4.89 | 6.76 | 5.35 |
| PUHY-P950YSKB-A1 | 6.71 | 5.39 | 7.50 | 5.92 |
| PUHY-P1000YSKB-A1 | 6.67 | 5.32 | 7.46 | 5.84 |
| PUHY-P1050YSKB-A1 | 6.65 | 5.66 | 7.45 | 6.28 |
| PUHY-P1100YSKB-A1 | 6.40 | 5.44 | 7.11 | 5.98 |
| PUHY-P1150YSKB-A1 | 6.44 | 5.33 | 7.16 | 5.85 |
| PUHY-P1200YSKB-A1 | 5.85 | 4.56 | 6.52 | 4.90 |
| PUHY-P1250YSKB-A1 | 6.44 | 4.54 | 7.22 | 4.88 |

## Y Series Heat Pump - High COP

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PUHY-EP200YLM-A | 9.02 | 5.53 | 10.99 | 6.08 |
| PUHY-EP250YLM-A | 9.02 | 6.00 | 11.39 | 6.79 |
| PUHY-EP300YLM-A | 7.75 | 6.00 | 9.27 | 6.77 |
| PUHY-EP350YLM-A | 7.16 | 5.90 | 8.36 | 6.64 |
| PUHY-EP400YLM-A | 6.97 | 4.79 | 8.19 | 5.25 |
| PUHY-EP450YLM-A | 7.03 | 4.85 | 7.96 | 5.23 |
| PUHY-EP500YLM-A | 7.28 | 4.90 | 8.30 | 5.30 |
| PUHY-EP550YSLM-A | 8.75 | 6.07 | 10.22 | 6.65 |
| PUHY-EP600YSLM-A | 7.45 | 6.08 | 8.43 | 6.68 |
| PUHY-EP650YSLM-A | 8.48 | 5.40 | 9.82 | 5.82 |
| PUHY-EP700YSLM-A | 8.29 | 5.61 | 9.57 | 6.07 |
| PUHY-EP750YSLM-A | 8.79 | 6.41 | 10.31 | 7.06 |
| PUHY-EP800YSLM-A | 7.53 | 6.40 | 8.59 | 7.08 |
| PUHY-EP850YSLM-A | 7.68 | 6.03 | 8.79 | 6.68 |
| PUHY-EP900YSLM-A | 7.58 | 6.02 | 8.68 | 6.68 |

ZUBADAN

## Y Series Heat Pump - Zubadan

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PUHY-HP200YHM-A | 3.35 | - | 3.54 | - |
| PUHY-HP250YHM-A | 3.03 | - | 3.21 | - |
| PUHY-HP400YHM-A | 3.49 | - | 3.69 | - |
| PUHY-HP500YHM-A | 3.21 | - | 3.35 | - |

**Complete System Efficiency (typical)** - this includes for power input of the outdoor unit, outdoor standby power, indoor units (100% connected PLFY-P-VBM) and BC controller.
**Outdoor Unit Only Efficiency** - this includes for power input of the outdoor unit, outdoor standby power ONLY

## Y Series Heat Pump - Replace Multi

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PUHY-RP200YJM-B | 5.68 | - | 6.25 | - |
| PUHY-RP250YJM-B | 5.90 | - | 6.66 | - |
| PUHY-RP300YJM-B | 5.04 | - | 5.52 | - |
| PUHY-RP350YJM-B | 4.80 | - | 5.23 | - |
| PUHY-RP400YSJM-B | 4.71 | - | 5.09 | - |
| PUHY-RP450YSJM-B | 5.06 | - | 5.42 | - |
| PUHY-RP500YSJM-B | 5.51 | - | 5.95 | - |
| PUHY-RP550YSJM-B | 5.31 | - | 5.70 | - |
| PUHY-RP600YSJM-B | 5.48 | - | 5.88 | - |
| PUHY-RP650YSJM-B | 5.02 | - | 5.37 | - |
| PUHY-RP700YSJM-B | 5.30 | - | 5.71 | - |
| PUHY-RP750YSJM-B | 5.26 | - | 5.68 | - |
| PUHY-RP800YSJM-B | 5.13 | - | 5.52 | - |
| PUHY-RP850YSJM-B | 5.28 | - | 5.69 | - |
| PUHY-RP900YSJM-B | 5.06 | - | 5.43 | - |

## R2 Series Heat Recovery - Standard

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PURY-P200YLM-A1 | 7.54 | 4.96 | 9.79 | 5.58 |
| PURY-P250YLM-A1 | 7.02 | 5.32 | 9.36 | 6.21 |
| PURY-P300YLM-A1 | 6.09 | 5.18 | 7.60 | 6.11 |
| PURY-P350YLM-A1 | 5.76 | 5.29 | 7.04 | 6.26 |
| PURY-P400YLM-A1 | 6.64 | 4.35 | 8.36 | 4.91 |
| PURY-P450YLM-A1 | 6.25 | 4.80 | 7.45 | 5.26 |
| PURY-P500YLM-A1 | 6.15 | 4.82 | 7.23 | 5.33 |
| PURY-P550YSLM-A1 | 6.67 | 5.43 | 8.03 | 6.13 |
| PURY-P600YSLM-A1 | 6.30 | 5.36 | 7.45 | 6.06 |
| PURY-P650YSLM-A1 | 6.13 | 5.30 | 7.21 | 5.98 |
| PURY-P700YSLM-A1 | 5.83 | 5.67 | 6.84 | 6.48 |
| PURY-P750YSLM-A1 | 6.28 | 4.77 | 7.48 | 5.26 |
| PURY-P800YSLM-A1 | 6.33 | 4.54 | 7.55 | 5.00 |
| PURY-P850YSLM-A1 | 6.74 | 4.65 | 8.11 | 5.11 |
| PURY-P900YSLM-A1 | 6.35 | 4.80 | 7.51 | 5.27 |

## R2 Series Heat Recovery - High COP

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PURY-EP200YLM-A | 8.21 | 5.06 | 11.17 | 5.73 |
| PURY-EP250YLM-A | 8.20 | 5.36 | 11.88 | 6.33 |
| PURY-EP300YLM-A | 6.79 | 5.41 | 8.91 | 6.39 |
| PURY-EP350YLM-A | 6.56 | 5.38 | 8.42 | 6.30 |
| PURY-EP400YLM-A | 6.85 | 4.59 | 8.79 | 5.14 |
| PURY-EP450YLM-A | 7.05 | 4.93 | 8.72 | 5.41 |
| PURY-EP500YLM-A | 6.79 | 4.97 | 8.23 | 5.45 |
| PURY-EP550YSLM-A | 7.88 | 5.60 | 10.12 | 6.33 |
| PURY-EP600YSLM-A | 7.06 | 5.63 | 8.66 | 6.33 |
| PURY-EP650YSLM-A | 6.87 | 5.47 | 8.34 | 6.12 |
| PURY-EP700YSLM-A | 6.70 | 5.75 | 8.18 | 6.52 |
| PURY-EP750YSLM-A | 6.80 | 4.91 | 8.35 | 5.40 |
| PURY-EP800YSLM-A | 6.88 | 4.78 | 8.40 | 5.23 |
| PURY-EP850YSLM-A | 7.14 | 4.83 | 8.75 | 5.30 |
| PURY-EP900YSLM-A | 7.19 | 4.93 | 8.82 | 5.43 |

## R2 Series Heat Recovery - Replace Multi

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PURY-RP200YJM-B | 5.00 | - | 5.65 | - |
| PURY-RP250YJM-B | 4.50 | - | 5.10 | - |
| PURY-RP300YJM-B | 4.48 | - | 5.02 | - |

**Complete System Efficiency (typical)** - this includes for power input of the outdoor unit, outdoor standby power, indoor units (100% connected PLFY-P-VBM) and BC controller.
**Outdoor Unit Only Efficiency** - this includes for power input of the outdoor unit, outdoor standby power ONLY

## WY Series Heat Pump - Water Cooled

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PQHY-P200YHM-A | 5.24 | 5.06 | 5.68 | 5.38 |
| PQHY-P250YHM-A | 5.78 | 5.14 | 6.40 | 5.47 |
| PQHY-P300YHM-A | 5.44 | 4.96 | 5.95 | 5.26 |
| PQHY-P400YSHM-A | 5.69 | 5.55 | 6.18 | 5.90 |
| PQHY-P450YSHM-A | 5.71 | 5.28 | 6.12 | 5.52 |
| PQHY-P500YSHM-A | 5.70 | 5.11 | 6.12 | 5.33 |
| PQHY-P550YSHM-A | 5.60 | 4.70 | 5.99 | 4.89 |
| PQHY-P600YSHM-A | 5.53 | 5.00 | 5.92 | 5.23 |
| PQHY-P650YSHM-A | 5.77 | 4.95 | 6.18 | 5.16 |
| PQHY-P700YSHM-A | 5.95 | 4.99 | 6.39 | 5.21 |
| PQHY-P750YSHM-A | 5.77 | 5.02 | 6.19 | 5.24 |
| PQHY-P800YSHM-A | 5.49 | 4.75 | 5.88 | 4.96 |
| PQHY-P850YSHM-A | 5.30 | 4.73 | 5.68 | 4.96 |
| PQHY-P900YSHM-A | 4.98 | 4.46 | 5.32 | 4.68 |

## WR2 Series Heat Recovery - Water Cooled

| MODEL | Complete System Efficiency (typical) | | Outdoor Unit Only Efficiency | |
|---|---|---|---|---|
| RANGE | SEER | SCOP | SEER | SCOP |
| PQRY-P200YHM-A | 5.82 | 5.63 | 6.33 | 6.12 |
| PQRY-P250YHM-A | 5.81 | 5.14 | 6.45 | 5.60 |
| PQRY-P300YHM-A | 5.33 | 4.83 | 5.81 | 5.22 |
| PQRY-P400YSHM-A | 5.57 | 5.45 | 6.03 | 5.90 |
| PQRY-P450YSHM-A | 5.58 | 5.16 | 5.98 | 5.48 |
| PQRY-P500YSHM-A | 5.76 | 5.02 | 6.18 | 5.31 |
| PQRY-P550YSHM-A | 5.65 | 4.61 | 6.07 | 4.87 |
| PQRY-P600YSHM-A | 5.42 | 4.84 | 5.78 | 5.13 |

## Seasonal Efficiency Calculation Methodology

**SEER** (Cooling seasonal efficiency)

| | | | | | |
|---|---|---|---|---|---|
| Air Source | Capacity | 100% | 75% | 50% | 25% |
| | Outdoor Temperature | 35ºC | 30ºC | 25ºC | 20ºC |
| | Weighting Ratio | 3% | 33% | 41% | 23% |
| Water Source | Capacity | 100% | 75% | 50% | 25% |
| | Water Temperature | 30ºC | 26ºC | 22ºC | 18ºC |
| | Weighting Ratio | 3% | 33% | 41% | 23% |

The calculation base for SEER is from the Non Domestic Building Services Compliance Guide which accompanies Part L 2013.

**SCOP** (Heating seasonal efficiency)

| | | | | | |
|---|---|---|---|---|---|
| Air Source | Capacity | 100% | 75% | 50% | 25% |
| | Outdoor Temperature | -5ºC | 3ºC | 9ºC | 15ºC |
| | Weighting Ratio | 5% | 40% | 45% | 10% |
| Water Source | Capacity | 100% | 75% | 50% | 25% |
| | Water Temperature | 10ºC | 14ºC | 18ºC | 22ºC |
| | Weighting Ratio | 5% | 40% | 45% | 10% |

The calculation base for SCOP is using a simplified methodology derived from the Ecodesign Directive for AC < 12kW, using EN14825 Average Profile.

### Notes:

SEER is calculated in the cooling season.
SCOP is calculated in the heating season and includes for defrost.
The calculation assumes the unit operates in a single mode with no account for heat recovery.
The system is assumed to be running with all indoor units on as per a realistic system running.
The system is assumed to be running in a steady state condition and the data is based on measured data from test chambers.
Indoor conditions are UK Conditions: 21/15ºC Cooling, 20ºC DB Heating. 7.5m refrigerant pipe run assumed.

**Complete System Efficiency (typical)** - this includes for power input of the outdoor unit, outdoor standby power, indoor units (100% connected PLFY-P-VBM) and BC controller.
**Outdoor Unit Only Efficiency** - this includes for power input of the outdoor unit, outdoor standby power ONLY

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