



Ducted Split System Air Conditioners Technical Data

ISD 840, 950 KBX-P ECO



Cooling Capacity
16.9kW - 93.0kW

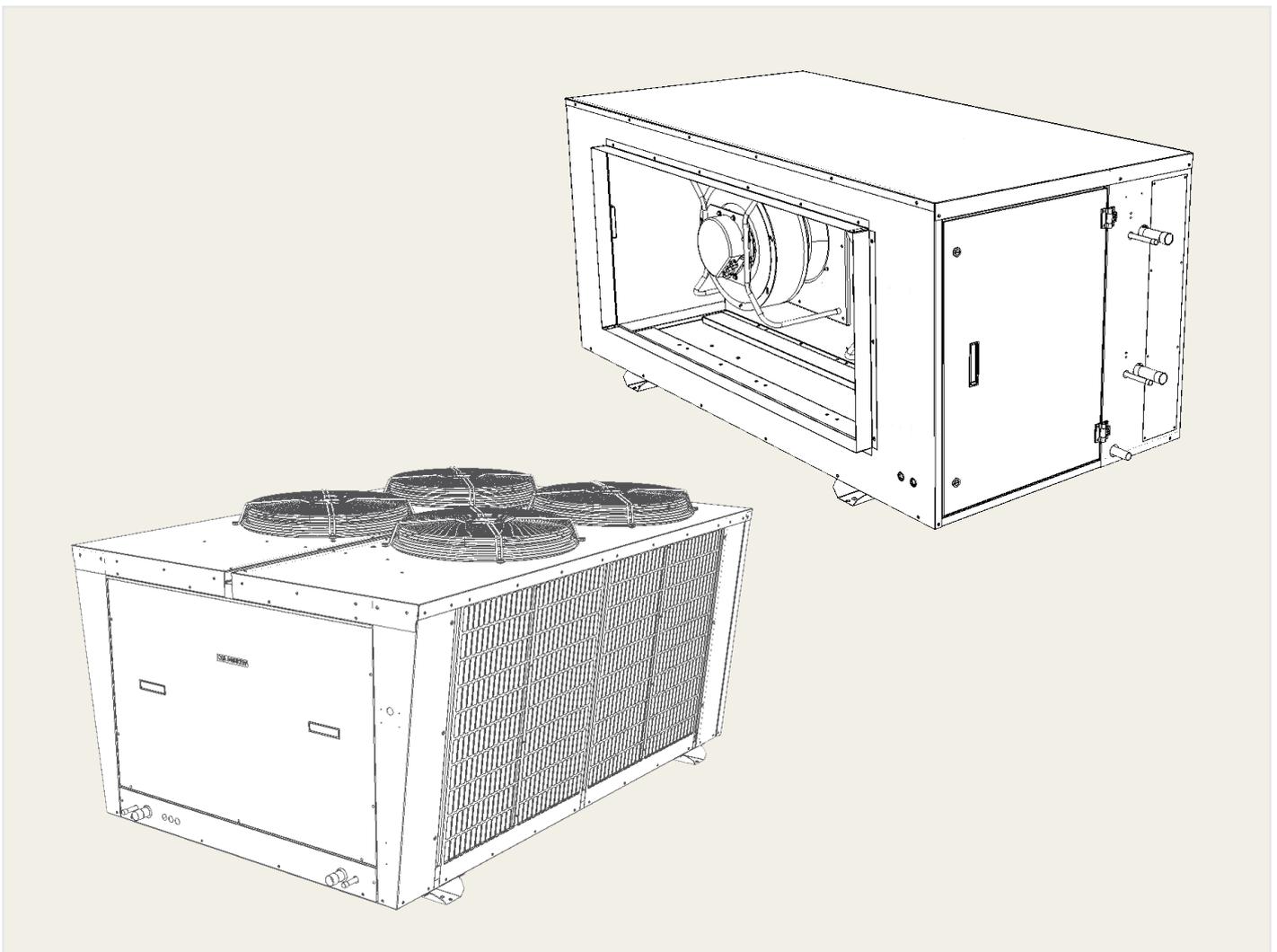
Heating Capacity
17.7kW - 89.2kW

Ducted Split System Air Conditioners

ISD 840/950 KBX-P Series ECO



The ISD indoor unit, together with its associated OSA outdoor unit, provides a reverse cycle (heat pump) ducted split system air conditioner designed and developed to comply with and exceed AS/NZS 3823 specified conditions.



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Applications

Specifically developed for air conditioning of commercial premises, e.g. offices, motels, shops and restaurants

AIR FLOW SELECTION

If the air returning to the indoor coil is regularly expected to be above 50%RH, then the coil face velocity should be limited to be 2.5 m/s or less.

High humidity levels can occur in tropical or subtropical conditions, and/or when heavily moisture laden fresh air is introduced. Consideration must always be given to selecting an air flow and face velocity that avoids water carry-over problems.

FEATURES

General

Each ECO unit includes EC plug fans and variable capacity compressor technology (digital).

Refrigerant R410A

R410A used which has zero ozone depletion potential.

Economy

The system has 2 independent refrigeration circuits to provide the flexibility & economy of 2 stage operation i.e. utilizing 1 or 2 circuits as conditions vary, plus staggered starting.

Efficiency

Heat exchange coils incorporate inner grooved (rifled) tube for superior heat transfer.

The indoor coil is interlaced for efficient part load performance.

Performance

These Digital systems include a digital scroll compressor and a conventional scroll compressor. ECO units provide a variable capacity ability that enables close control of room temperature.

ECO units include highly efficient EC plug fans and provide high static capability for a wide range of indoor air flows. Continuous range fan speeds are achieved via a 0–10V DC signal (by others). They also make commissioning and air balancing easy.

Digital compressor technology is particularly suitable for applications requiring high proportions of fresh air, VAV, close control and supply air temperature control.

The use of Electronic Expansion Valves (EEV's) and variable speed control of indoor and outdoor fans help optimise the performance of the refrigeration system under varying load conditions.

Head pressure control technology ensures appropriate condenser pressures are maintained, through the control of air flow.

Quiet

Extensive use of insulation ensures quiet units.

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Insulation

Closed cell foam insulation is used in the indoor unit's cabinet to ensure no particles in the air stream. The insulation is foil faced & meets fire test standards AS1530.3 (1999) & BS 476 parts 6 & 7.

Durable

The outdoor unit cabinet and drain tray are constructed from high grade galvanized steel-polyester powdered coated (Grey) for all weather protection. External fasteners are marine grade.

Heat exchange coils comprise aluminium plate fins on mechanically expanded rifled copper tube. Outdoor and indoor coil fins are epoxy coated for extra protection in corrosive environments i.e. salt laden sea air. The indoor unit's cabinet is constructed from high grade galvanised steel and also includes a polyester powder coated drain tray.

Fan motor bearings are sealed for life so as not to incur regular maintenance.

Soft Starting

EC motors used in the indoor unit are soft starting therefore have none of the problems associated with high inrush current.

Self Diagnosis

The Outdoor unit controller (UC8) has a LED display to indicate faults & running conditions. A common fault indicator is included for interface to external systems.

Control Options

Commissioning is made easier when the EC motor is controlled variably by a 0-10 volt DC signal that can be supplied either by a BMS system, a sophisticated controller or temperzone's optional TZT-100 Controller. The systems' UC8 controller is BMS compatible with multi-unit control possible – either via digital and analogue signals or via Modbus/485. A BACnet/IP option is available.

OPTIONAL EQUIPMENT

1. TZT-100 Room Temperature Controller.
2. Filters rated to AS1324.1.2001 - G4 disposable.
3. High static condenser fans for situations where there is external resistance from ducting the outside air, eg plant rooms.
4. Interface to BACnet/IP networks.
5. Vertical supply air configuration (refer page 10).
6. Opposite handed indoor unit.
7. WIFI Service Utility.

SAFETY FEATURES

1. HP & loss of refrigerant protection
2. Anti rapid cycle timer internal overload for compressor protection
3. Circuit breaker protection of control circuits
4. Time & temperature controlled electronic de-ice switch prevents icing up of the outdoor coil during heating cycle
5. Frost protection on cooling cycle
6. Sensor fault indication
7. Crankcase heater prevents liquid refrigerant condensing in the compressors during the "off" cycle
8. Compressor minimum run time to ensure oil return
9. 24V control circuit
10. Phase rotation protection device

COMPRESSORS

Each outdoor unit has one digital and one conventional compressor. Digital compressors have a greater variable capacity ability. This is achieved by avoiding on/off cycling of the compressor. Digital compressors have proven very reliable because of their design simplicity.

Each high efficiency scroll type compressor is hermetically sealed quiet running and supported on rubber mounts to minimize vibration

WIRING

The electrical supply required is 3 phase 400V ac 50Hz.

The compressor crankcase heater requires a 24 hour power supply. A control panel, located in each outdoor unit, is fully wired ready to accept the main power supply. Each system complies with the requirements of the Regulatory Compliance Mark (RCM) for electrical safety (AS/NZS 60335.2.40) and EMC (AS/NZS CISPR.14).

Ducted Split System Air Conditioners Performance Data



COOLING CAPACITY (KW)

Total = Total Capacity (kW).
 Sens. = Sensible Capacity (kW).
 E.A.T. = Entering Air Temperature.
 ○ = Nominal Capacity (kW).

Note: Capacities are **gross** and do not include allowance for fan motor heat loss. Capacities are for close coupled systems. Interconnecting pipework will reduce capacity.

[See over for Indoor Air Flow Correction factors >](#)

Models	Indoor Fan	Indoor coil E.A.T.		Outdoor coil entering air temperature °C D.B.											
		W.B. °C	D.B. °C	23		27		31		35		39		43	
Indoor Unit	Air l/s			Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.
ISD 840KBX-P OSA 840G	4500	15	21	83.5	65.2	82.4	65.3	79.9	63.8	76.2	61.7	71.2	58.4	65.0	53.8
		17	23	87.9	63.8	86.8	63.8	84.6	62.7	80.6	60.6	75.9	57.7	69.4	53.4
		19	27	92.2	73.3	91.1	73.1	89.0	72.1	84.6	69.9	80.2	66.3	73.7	62.0
		21	31	97.0	86.4	95.9	86.4	93.3	85.3	89.7	82.8	84.6	79.2	78.4	74.2
ISD 950KBX-P OSA 950G	5000	15	21	91.8	67.1	90.6	67.1	87.8	65.6	83.8	63.4	78.2	60.1	71.4	55.3
		17	23	96.6	65.6	95.4	65.6	93.0	64.5	88.6	62.3	83.4	59.3	76.2	54.9
		19	27	101.4	75.4	100.2	75.2	97.8	74.1	93.0	71.8	88.2	68.2	81.0	63.7
		21	31	106.6	88.8	105.4	88.8	102.6	87.7	98.6	85.1	93.0	81.4	86.2	76.3

INDOOR AIR FLOW CORRECTION FACTORS @ NOMINAL CONDITIONS

	Indoor Air Flow (%)			
	-20	-10.	Rated	+10
Total Capacity	0.95	0.975	1.0	1.025
Sensible Capacity	0.89	0.950	1.0	1.050

PIPE LENGTH CAPACITY LOSS

On Cooling Cycle due to Pressure Drop

Note: Loss percentage is approximate only. No allowance made for vertical piping.

System	Performance Loss per additional 10m beyond first 5m.	Suction Pipe Size OD	Additional Pipe Length to allow per Bend Long 90° Radius (2 x pipe dia.)
ISD 840 / OSA 840	1.0 %	35	0.76 m
	0.8 %	41	0.80 m
ISD950 / OSA 950	1.0 %	35	0.76 m
	0.8 %	41	0.80 m

Ducted Split System Air Conditioners

Performance Data



HEATING CAPACITY (KW)

G = Gross Heating Capacity kW, based on nominal air flow.

N = Net Heating Capacity kW allowing for average defrost.

○ = Nominal Capacity (kW).

Models	Indoor Entering Air Temp. °C	Outdoor coil entering air temperature °C D.B.															
		-5		-3		-1		1		3		5		7		9	
Indoor Unit	D.B.	G	N.	G	N.	G	N.	G	N.	G	N.	G	N.	G	N.	G	N.
ISD 840KBX-P OSA 840G	15	59.0	51.7	62.4	51.1	65.8	51.9	69.2	55.3	72.5	62.3	75.9	75.9	79.3	79.3	82.6	82.6
	20	58.2	51.0	61.5	50.4	64.9	51.2	68.3	54.6	71.7	61.6	75.0	75.0	78.4	78.4	81.8	81.8
	25	56.3	49.6	59.7	48.9	63.1	49.7	66.4	53.1	69.8	60.2	73.2	73.2	76.5	76.5	79.9	79.9
ISD 950KBX-P OSA 950G	15	67.2	58.9	71.1	58.2	74.9	59.1	78.7	62.9	82.6	71.0	86.4	84.5	90.2	90.2	94.1	94.1
	20	66.2	58.1	70.1	57.4	73.9	58.3	77.7	62.1	81.6	70.2	85.4	83.7	89.2	89.2	93.1	93.1
	25	64.1	56.4	67.9	55.7	71.8	56.6	75.6	60.5	79.5	68.5	83.3	82.0	87.1	87.1	91.0	91.0

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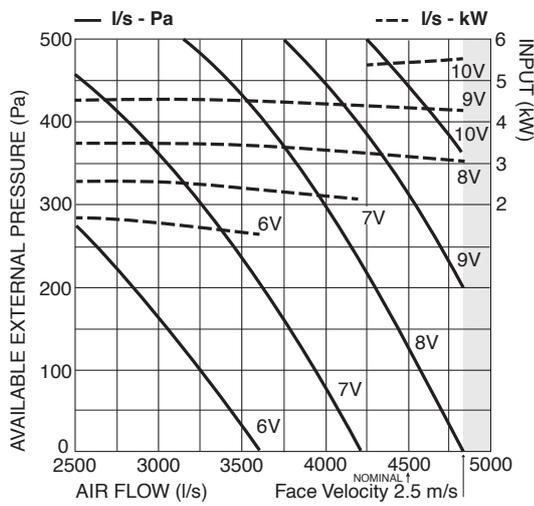


AIR HANDLING

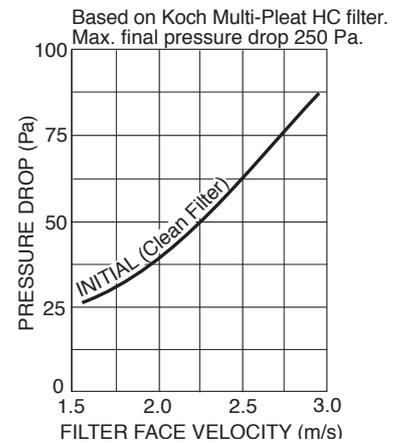
Airflows are for a dry coil. Reduce airflow by 10% in high moisture removal conditions.

Air flows given are for ISD units without filter installed.

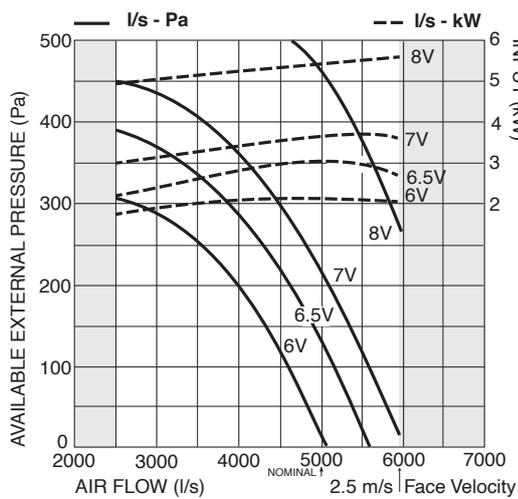
ISD 840KBX-P



Optional Filters - Pressure Drop



ISD 950KBX-P



Ducted Split System Air Conditioners

Performance Data



SOUND LEVELS

Sound Power Levels (SWL)

Test Conditions: EN 12102-1:2017

Installation Type A (free inlet and outlet).

Direct method of measurement (reverberant room).

Measured in decibels re 1 picowatt, at nominal airflow 4,500 l/s.

INDOOR UNIT - SUPPLY AIR OUTLET

Models	FAN SPEED @NOMINAL AIR FLOW	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
ISD 840KBX-P	4V	79	82	78	76	75	70	62
	8V	83	86	82	81	79	74	66
	10V	88	91	86	85	84	80	72
ISD 950KBX-P	5V	82	62	74	80	82	77	72
	6V	86	67	77	84	86	81	75
	7V	90	76	87	90	88	85	80
	8V	93	82	90	93	91	89	85

SOUND PRESSURE LEVELS (SPL) WITHIN A ROOM

Deduct the room absorption effect below from the Sound Power Levels (SWL) above to obtain Sound Pressure Levels within a room.

Note: Occupant at least 1.5 m from sound source.

Room type	OCTAVE BAND FREQUENCY Hz					
	125	250	500	1K	2K	4K
	ROOM ABSORPTION EFFECT					
Soft	4	8	11	11	11	11
Medium	3	7	8	9	9	9
Hard	0	1	3	4	4	5

OUTDOOR UNIT

Models	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OSA 840G	HIGH	82	85	80	79	78	73	66
OSA 950G	HIGH	82	85	80	79	78	73	66

Sound Pressure Level (SPL) in decibels re 20 µPa.

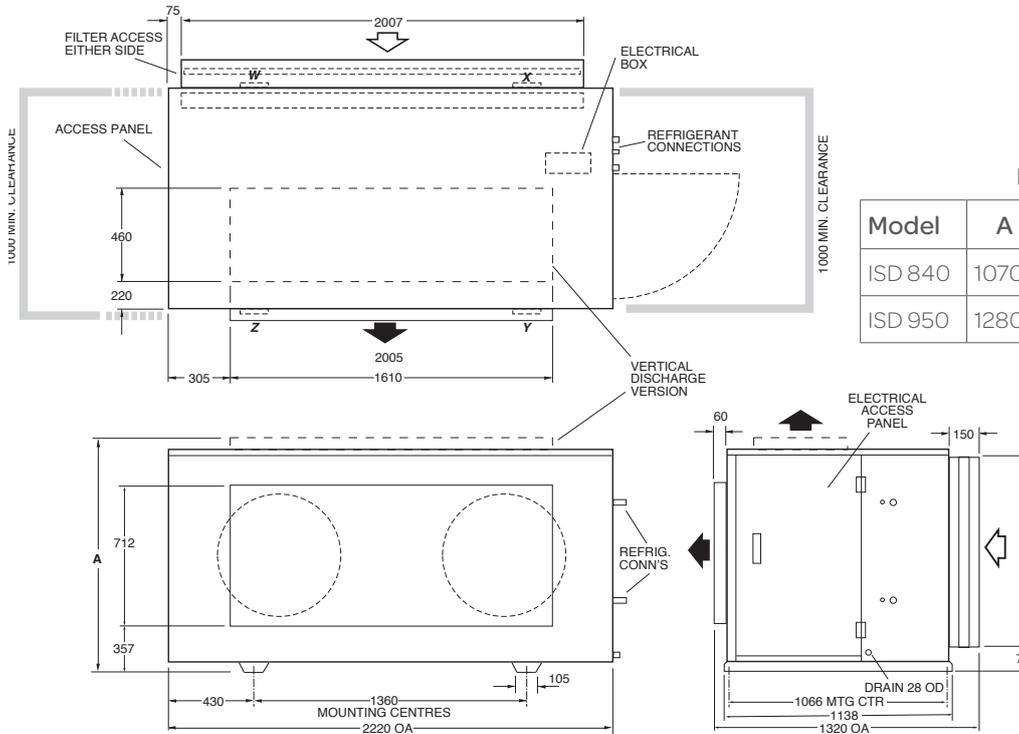
Models	FAN SPEED	SPL @ 3 m dB(A)	SOUND PRESSURE LEVELS dB					
			125	250	500	1K	2K	4K
OSA 840G	HIGH	66	69	64	63	62	57	50
OSA 950G	HIGH	66	69	64	63	62	57	50

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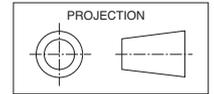
Dimensions (mm)



ISD 840/950 KBX-P INDOOR UNIT



Not to Scale

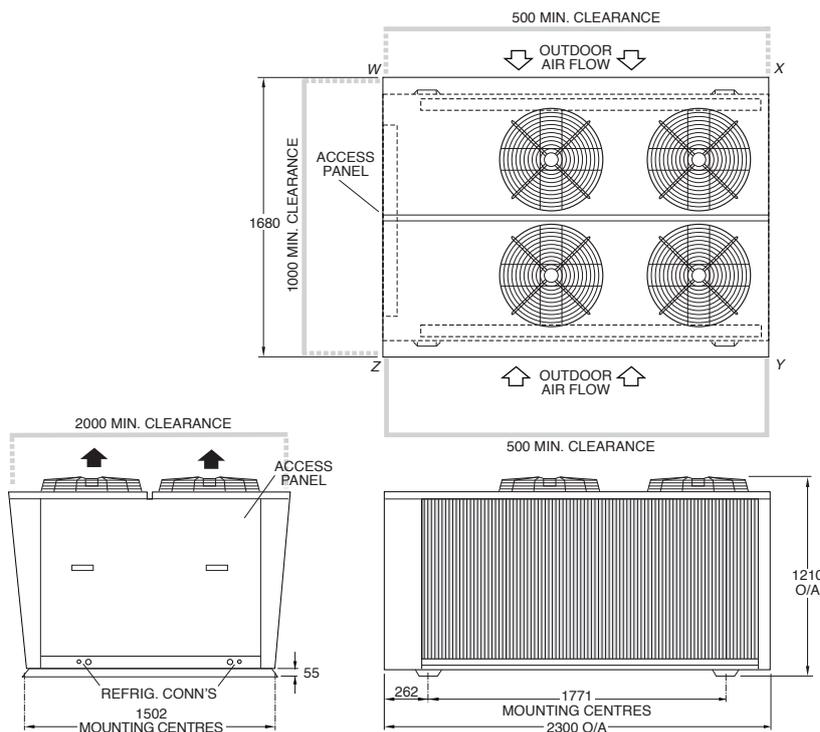


DIM. CORNER LOADS (kg)

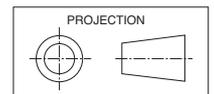
Model	A	B	W	X	Y	Z
ISD 840	1070	960	105	116	66	64
ISD 950	1280	1165	116	134	76	75

Refer matched Outdoor Unit for recommended pipe sizes

OSA 840/950 RKTBG OUTDOOR UNIT



Not to Scale



CORNER LOADS (kg)

Model	W	X	Y	Z
OSA 840	193	92	92	194
OSA 950	185	109	109	186

Recommended Pipe Sizes

Suction: 35 mm OD (x2)

Liquid: 16 mm OD (x2)

Ducted Split System Air Conditioners Specifications



System			
Indoor Unit		ISD 840KBX-P	ISD 950KBX-P
Outdoor Unit		OSA 840RKTBG	OSA 950RKTBG
Nominal Cooling Capacity range ¹	kW	16.9- 84.6	18.6- 93.0
Net Cooling Capacity ¹	kW	81.3	89.8
Heating Capacity range ²		17.7-78.4	17.8-89.2
EER / AEER (Cooling)		3.20 / 3.19	3.11 / 3.10
COP / ACOP (Heating)		3.68 / 3.66	3.51 / 3.50
Unit Controller		UC8 (x2) / IUC	
Indoor air fan type		backward curved	
Indoor air fan motor		EC plug	
Air Flow ³	l/s	4500	5000
Power Source ⁴		3 phase 400 V a.c. 50 Hz	
Indoor Fan Full Load Amps	A/ph.	4.6 (x2)	9.2 (x2)
Running Amps (Total System)	A/ph.	55 / 46 / 46	65 / 55 / 55
Max. Running Amps (Total Sys.)	A/ph.	74 / 64 / 64	84 / 74 / 74
Refrigerant		R410A	
Maximum Vertical Separation	m	20	20
Maximum Standard Line Length	m	50 / 90	50 / 90
Pipe Sizes (Suction/Liquid)	mm OD	35 / 16	35 / 16
Operating Range (outdoor ambient)			
Cooling		-10°C to 46°C	
Heating		-15°C to 25°C	
Finish			
Indoor Unit		zinc galvanised steel	
Outdoor Unit		grey polyester powder coat	
Weight			
Net Weight (indoor/outdoor)	kg	351 / 575	401 / 579
Shipping Weight (ind/out) (approx.)	kg	404 / 663	455 / 680

Notes:

¹ Nominal Cooling Capacity at AS/NZS 3823 conditions:
 - Indoor Entering Air Temperature 27°C D.B., 19°C W.B.;
 - Outdoor Entering Air Temperature 35°C D.B.

Net Cooling Capacity at AS/NZS 3823 includes an allowance for indoor fan motor heat loss.

² Heating Capacity (reverse cycle units only) at AS/NZS 3823 conditions:
 - Indoor Entering Air Temperature 21°C D.B.;
 - Outdoor Entering Air Temperature 7°C D.B., 6°C W.B.

³ Supply air flow at Nominal Cooling Capacity conditions stated above.

⁴ Power source includes voltage limits.

⁵ Longer line length require greater size suction line; refer Split System Installation Guide.

Materials and specifications are subject to change without notice due to the manufacturer's ongoing research and development programme.

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