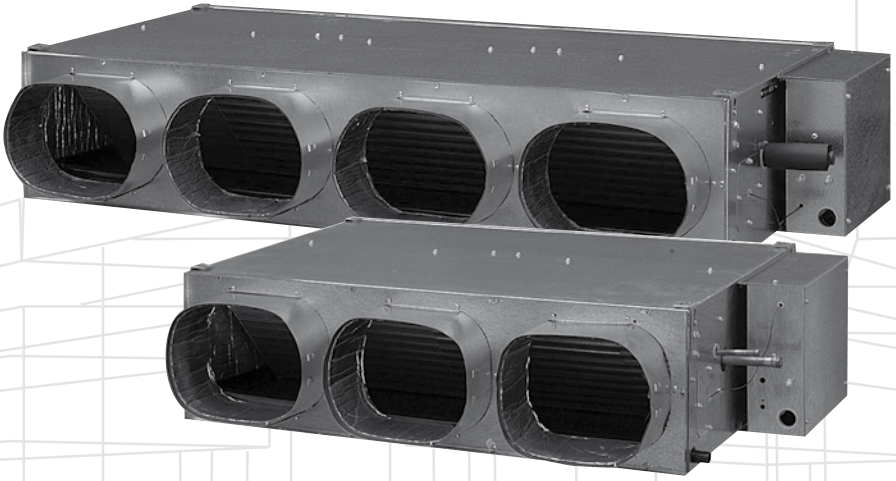
temperzone
QUALITY AIR CONDITIONING

Ducted Split System Air Conditioners

Technical Data
ISDL-KY Series



R410A

Optional
SAT Controller

High Efficiency EC Motor

Extra Long Life
Epoxy Coated Outdoor Coil

Nominal Cooling Capacity
6.5 kW – 11.3 kW

DECEMBER 2013

ISDL-KY SERIES – DUCTED SPLIT SYSTEM AIR CONDITIONERS

GENERAL

ISDL ✳KY - Indoor unit
OSA ✳RK- Outdoor unit, reverse cycle

The ISDL indoor units, together with their associated OSA outdoor units, provide a reverse cycle (heat pump) split system air conditioner designed and developed to comply with and exceed AS/NZS 3823 specified conditions (i.e. guaranteed cooling cycle performance at 43°C outdoor temperature).

APPLICATIONS

These units have been specifically developed for air conditioning of light commercial premises, e.g. offices, motels, and shops.

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 m/s or less (refer Air Flow graph; 2 m/s is clearly marked).

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.

Applications using full or high proportions of fresh air should be referred to your nearest **temperzone** sales office to establish the correct selection of units.

FEATURES

Refrigerant R410A. Each complete system uses refrigerant R410A which is deemed to have zero ozone depletion potential.

User Friendly. The air conditioning system is available with an optional SAT Controller. This thermostat has been designed to maintain a high level of comfort for room occupants. Emphasis has been placed on providing controls that are easy to use — despite the sophisticated microprocessor system that runs it. Use of the Auto and Timer function settings allows you to "set it and forget it".

Efficient. Indoor units include a high efficiency electronically commutated (EC) motor. Each outdoor unit incorporates a high efficiency rotary compressor. Heat exchange coils use inner grooved (rifled) tube for better heat transfer.

Performance. A dynamically balanced forward curved fan with a multi-speed EC motor enables fine tuning of the indoor unit to match the supply air requirements. These EC motor fans have a fully integrated speed control that enables soft starting. Fan speed can be stepped to your own requirements or continuously variable using a 0–10V DC control signal. The system includes a temperature sensing head pressure control which enables the system to compensate for outdoor ambient temperatures below 20°C on cooling cycle, and above 15°C on heating cycle.

Low Profile. The indoor units have a low 260 mm height making them ideal for small ceiling spaces.

Quiet. Each integral high efficiency EC motor can vary from zero to full speed. This allows slow ramp up with no sudden noise change. The motor can be controlled to have the best air flow for the ducting and requirements as well as used for de-humidifying the space. The outdoor units' coil design permits low fan speeds and hence low noise levels. The compressor is isolated in a built-in, insulated compartment to minimise noise. The indoor unit is also insulated for noise attenuation.

Slimline. The compact up-right design of the outdoor units requires only a 100 mm gap on the coil side where installation is against a wall. Their slimline cabinets are particularly practical where there is restricted space, e.g. side access pathways, balconies, narrow ledges, etc. The units are free standing, but can be fitted on a wall using the optional wall mounting brackets.

Durable. The outdoor coil fins are epoxy coated for extra protection in corrosive environments, e.g. salt laden sea air. Each outdoor unit's cabinet is constructed from high grade galvanised steel - polyester powder coated (grey) for all weather protection (IP 45). External fasteners are stainless steel. Heat exchange coils comprise aluminium corrugated plate fins on mechanically expanded rifled copper tube. Each indoor unit's cabinet is constructed from high grade galvanised steel and includes a plastic drain tray for complete corrosion resistance.

Serviceable. To enable a thorough cleanse, the indoor units' drain tray is removeable.

Insulation. Closed cell foam insulation has been used in the indoor units' cabinet to ensure no particles are introduced into the air stream. The insulation is foil faced and meets fire test standards AS 1530.3 (1989) and BS 476 parts 6 & 7.

Control Option. Commissioning is made easier when the EC motor to be controlled variably (within a restricted range) by a 0–10 volt DC signal that can be supplied either by a BMS system, a sophisticated controller or temperzone's optional TZT-701 Controller. The optional Signal Isolator will be required for continuously variable speed control applications.

Compatiblity. The supply air spigots on the indoor unit have been designed to fit standard flexible ducting. Alternatively they can easily be removed for attaching rigid ducting.

Self Diagnostics. The Outdoor Unit Controller (OUC) has a display of LEDs to indicate faults and running conditions. A non-specific fault indicator is included for interface to external systems via the optional relay board.

OPTIONAL EQUIPMENT

Outdoor Unit:

1. Fault indicating auxillary relay board.
2. Vertical discharge grille.
3. Wall mounting brackets.
4. Anti-vibration mounts (rubber)
5. Drain connection - right angle
6. Soft Starter for lowering starting current.

Indoor Unit:

1. SAT Controller.
2. Spring mounting kit.

SAFETY FEATURES

1. HP and loss of refrigerant protection.
2. Anti-rapid cycle timer and internal overload for compressor protection.
3. Circuit breaker control circuits.
4. Time-and-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. Compressor minimum run time to ensure oil return.
8. 24V control circuit.

COMPRESSOR

Each high efficiency rotary compressor is hermetically sealed, quiet running and supported on rubber mounts to minimise vibration.

REFRIGERATION PIPING

The standard unit contains allows for a line length up to 40 m for OSA 65/86 and up to 60m for OSA 114.

Max. height separations between units are:
Outdoor unit above indoor unit : 16 m
Outdoor unit below indoor unit : 16 m.

Each OSA unit is shipped from the factory with a charge of HFC-410A (R410A) refrigerant sufficient for a 10 m line length. Liquid and suction service valves are provided. The matched indoor unit is shipped with a holding charge of nitrogen. Both units have brazed pipe connections.

WIRING

The electrical supply required (including voltage fluctuation limits) is:

OSA 65/86 RKS :
1 phase 200–252 V a.c. 50 Hz
with neutral and earth.

OSA 114RKT :
3 phase 342–436 V a.c. 50 Hz
with neutral and earth.

A control panel, located in each outdoor unit, is fully wired ready to accept the main power supply.

DISTRIBUTING CAPACITY

Two half capacity indoor units can be coupled to one single compressor outdoor unit and controlled from one room thermostat. This tandem arrangement is often quieter than a larger single unit and permits air distribution closer to where it's needed most. A slave version of each indoor unit and a Tandem Kit is available to facilitate this arrangement.

NOTE

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

The manufacturer operates a quality management system that conforms to AS/NZS **ISO 9001**:2008.

SAT CONTROLLER (Optional)

Features Summary

- Cool / Dry / Fan modes.
- Heat / Auto modes
- Auto / High / Medium / Low fan speed selection.
- Temperature setting range from 16°C – 30°C.
- LED to indicate status of the unit [Power On/Off].
- Room temperature display.
- Real time clock.
- 7 day timer – two start and/or stops per day
- On demand countdown run timer, up to 9 hours.
- Auto-Restart or No Restart after power failure.
- Continuous or Intermittent selection of fan run-on in dead zone.
- Backlit screen for ease of reading; changes colour for each mode.
- Soft touch tab keys
- Battery backup (Lithium).
- Sleep function.
- Zone Control – up to four zones.
- Audible beep to acknowledge key entry or wireless remote control.
- Low voltage control cable.
- Colour: white and light grey (Keypad - gold and blue).
- Optional:

  Infra Red Remote controller
  Remote return air sensor,
  Extended interface lead,
  Zone Control board,
  Zone Control transformer 220/240V to 24V ac, 65VA.
  Extra Wall Control plaque.

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 (refer page 6).

MODELS Indoor Unit / Outdoor Unit	INDOOR FAN SPEED	INDOOR FAN AIR l/s	INDOOR COIL E.A.T. D.B. °C	INDOOR COIL E.A.T. W.B. °C	OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B. 23 Total	23 Sens.	27 Total	27 Sens.	31 Total	31 Sens.	35 Total	35 Sens.	39 Total	39 Sens.	43 Total	43 Sens.
ISDL 65KY / OSA 65	HIGH	420	21	15	6.4	5.0	6.3	5.0	6.1	4.9	5.8	4.8	5.4	4.5	5.0	4.2
			23	17	6.7	4.9	6.6	4.9	6.4	4.8	6.2	4.7	5.8	4.5	5.3	4.1
			27	19	7.0	5.6	7.0	5.6	6.8	5.6	(6.5)	5.4	6.1	5.1	5.6	4.8
			31	21	7.4	6.7	7.3	6.7	7.1	6.6	6.8	6.4	6.5	6.1	6.0	5.7
ISDL 86KY / OSA 86	HIGH	520	21	15	8.3	6.6	8.2	6.5	7.9	6.4	7.6	6.2	7.1	5.9	6.4	5.4
			23	17	8.7	6.4	8.6	6.4	8.4	6.3	8.0	6.1	7.5	5.8	6.9	5.4
			27	19	9.2	7.3	9.0	7.3	8.8	7.2	(8.4)	7.0	7.9	6.7	7.3	6.2
			31	21	9.6	8.7	9.5	8.7	9.2	8.6	8.9	8.3	8.4	8.0	7.8	7.5
ISDL 114KY / OSA 114	HIGH	650	21	15	11.1	8.8	11.0	8.8	10.6	8.6	10.2	8.3	9.5	7.9	8.6	7.3
			23	17	11.7	8.6	11.5	8.6	11.2	8.4	10.7	8.2	10.1	7.8	9.2	7.2
			27	19	12.3	9.8	12.1	9.8	11.8	9.7	(11.3)	9.4	10.7	9.0	9.8	8.3
			31	21	12.9	11.6	12.7	11.6	12.4	11.5	11.9	11.2	11.2	10.7	10.4	10.0

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

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)

Reverse Cycle Systems

MODELS Indoor Unit / Outdoor Unit	INDOOR ENTERING AIR TEMP. °C D.B.	OUTDOOR COIL ENTERING AIR TEMPERATURE (E.A.T.) °C D.B.															
		-5		-3		-1		1		3		5		7		9	
		G	N	G	N	G	N	G	N	G	N	G	N	G	N	G	N
ISDL 65KY / OSA 65	15	4.3	3.8	4.6	4.2	4.9	4.4	5.3	4.5	5.6	4.8	6.0	5.7	6.4	6.4	6.7	6.7
	20	4.2	3.7	4.5	4.1	4.8	4.3	5.2	4.4	5.5	4.7	5.9	5.6	(6.3)	6.3	6.6	6.6
	25	4.0	3.6	4.4	3.9	4.7	4.2	5.0	4.3	5.3	4.5	5.7	5.3	6.0	6.0	6.3	6.3
ISDL 86KY / OSA 86	15	5.5	4.9	5.9	5.3	6.3	5.6	6.7	5.8	7.2	6.1	7.7	7.3	8.2	8.2	8.6	8.6
	20	5.4	4.8	5.8	5.2	6.2	5.5	6.6	5.7	7.0	6.0	7.5	7.2	(8.0)	8.0	8.4	8.4
	25	5.2	4.7	5.6	5.0	6.0	5.3	6.4	5.5	6.8	5.8	7.3	6.8	7.7	7.7	8.1	8.1
ISDL 114KY / OSA 114	15	7.5	6.8	8.1	7.3	8.7	7.7	9.3	8.0	9.8	8.4	10.5	10.0	11.2	11.2	11.8	11.8
	20	7.4	6.6	7.9	7.2	8.5	7.6	9.1	7.8	9.6	8.2	10.3	9.8	(11.0)	11.0	11.5	11.5
	25	7.1	6.4	7.7	6.9	8.2	7.3	8.7	7.5	9.3	7.9	10.0	9.4	10.6	10.6	11.1	11.1

PIPE LENGTH CAPACITY LOSS

ON COOLING CYCLE DUE TO PRESSURE DROP

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

Performance Loss per additional 10m beyond 5m	
OSA 65	**1.5%**
OSA 86	**2.0%**
OSA 114	**2.5%**

Suction Pipe Size OD	Additional Pipe Length to allow per Bend Long 90° Radius (2 x pipe dia.)
16 mm	0.30 m

PERFORMANCE DATA

AIR HANDLING

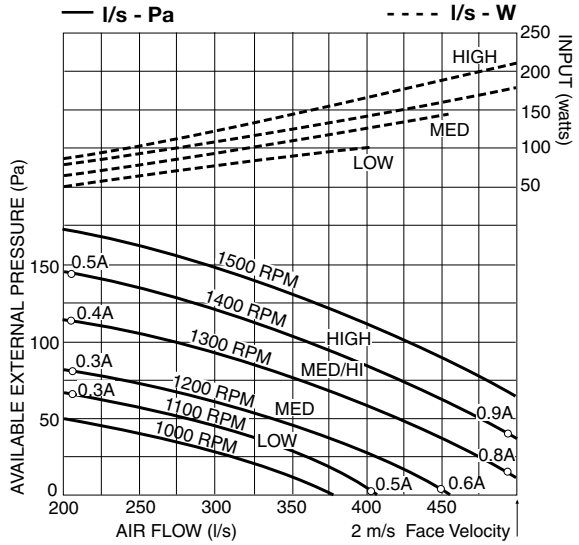
Note: Airflows are for a dry coil. Reduce airflow by 10% in high moisture removal conditions.

In a free blow application, beware of exceeding indoor fan motor's full load amp limit.

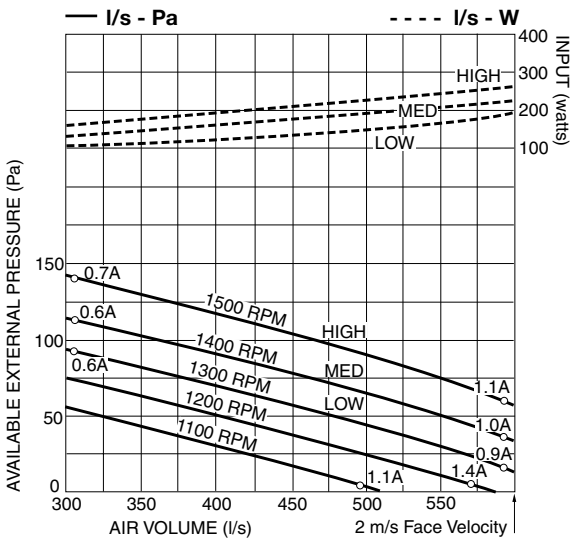
Air flows given are for ISDL units without filter installed.

If using EU-2 filter media, provide 0.08 m^2 face area per 100 l/s of airflow to maximise efficiency.

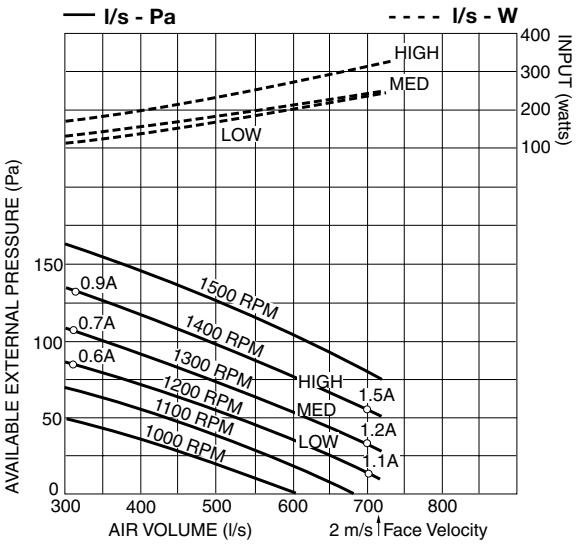
ISDL 65KY



ISDL 86KY



ISDL 114KY



PERFORMANCE DATA

SOUND LEVELS

Test Conditions: JIS 8616. 0.6 m uninsulated flexible ducting.
Sound Pressure Levels (SPL) are at 1 m from source.
Sound Power Levels (SWL) are measured in decibels re 1 picowatt.

Indoor Unit:

Supply Air Outlet

Return Air Inlet + Case Breakout

MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQ. Hz						SWL dB(A)	OCTAVE BAND FREQ. Hz					
			125	250	500	1 k	2 k	4 k		125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS dB							SOUND PRESSURE LEVELS dB					
ISDL 65KY	LOW	53	56	52	48	50	43	38	53	58	56	51	47	42	33
	MED	56	59	55	51	53	47	43	56	57	57	55	51	45	38
	HIGH	60	60	59	54	57	50	46	59	59	62	56	54	48	41
ISDL 86KY	LOW	54	54	53	48	52	44	40	54	56	57	51	49	43	35
	MED	57	57	56	51	55	48	43	57	55	58	55	53	46	38
	HIGH	60	58	59	54	58	51	47	59	57	62	56	55	49	42
ISDL 114KY	LOW	57	56	54	53	55	47	43	57	58	58	56	52	46	38
	MED	61	61	58	56	58	51	47	60	59	60	60	56	49	42
	HIGH	64	63	61	60	61	54	50	63	62	64	62	58	52	45

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 FREQ. 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

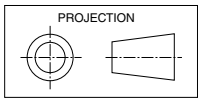
Outdoor Unit

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

MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQ. Hz						SPL @ 3 m dB(A)	OCTAVE BAND FREQ. Hz					
			125	250	500	1 k	2 k	4 k		125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS dB							SOUND PRESSURE LEVELS dB					
OSA 65	LOW	59	62	62	58	52	47	42	43	46	46	42	36	31	26
	MED	62	63	64	61	56	51	44	46	47	48	45	40	35	28
	HIGH	64	66	67	62	59	53	47	48	50	51	46	43	37	31
OSA 86	LOW	60	58	62	57	54	49	44	44	42	46	41	38	33	28
	MED	62	63	65	59	57	51	45	46	47	49	43	41	35	29
	HIGH	64	67	66	61	59	52	52	48	51	50	45	43	36	36
OSA 114	LOW	70	82	71	66	63	59	52	54	66	55	50	47	43	36
	MED	73	87	71	70	64	59	53	57	71	55	54	48	43	37
	HIGH	77	92	75	69	66	62	55	61	76	59	53	50	46	39

DIMENSIONS (mm)

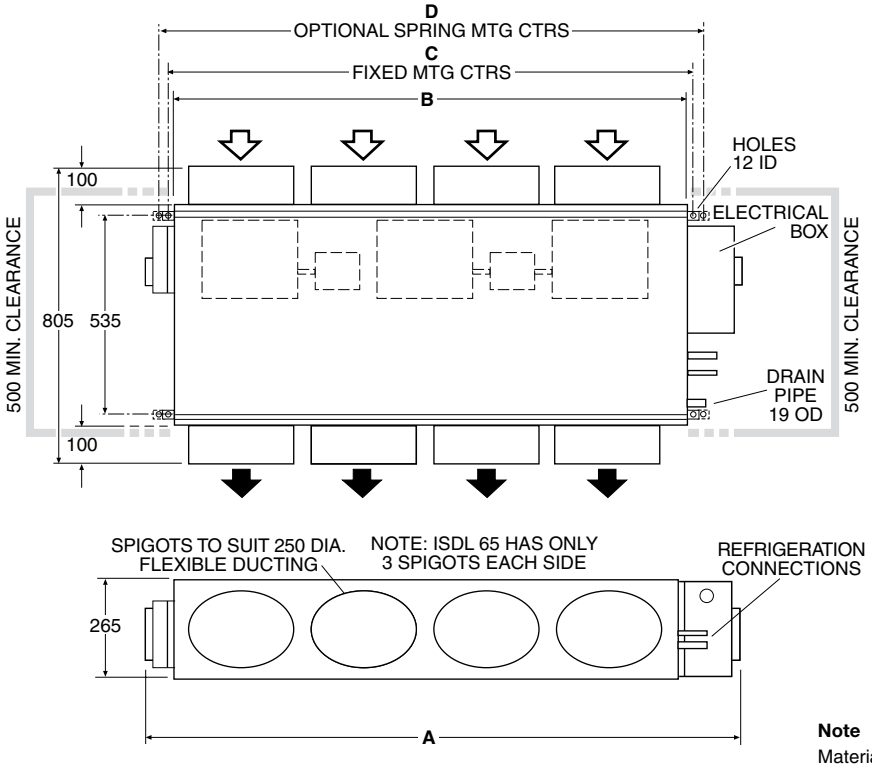
Not to Scale



ISDL Indoor Unit

MODEL	A	B	C	D	Spigots
ISDL 65KY	1260	1115	1148	1206	250 dia. (x6)
ISDL 86KY	1565	1319	1350	1408	250 dia. (x8)
ISDL 114KY	1785	1539	1570	1628	250 dia. (x8)

ISDL 86K shown here



Note
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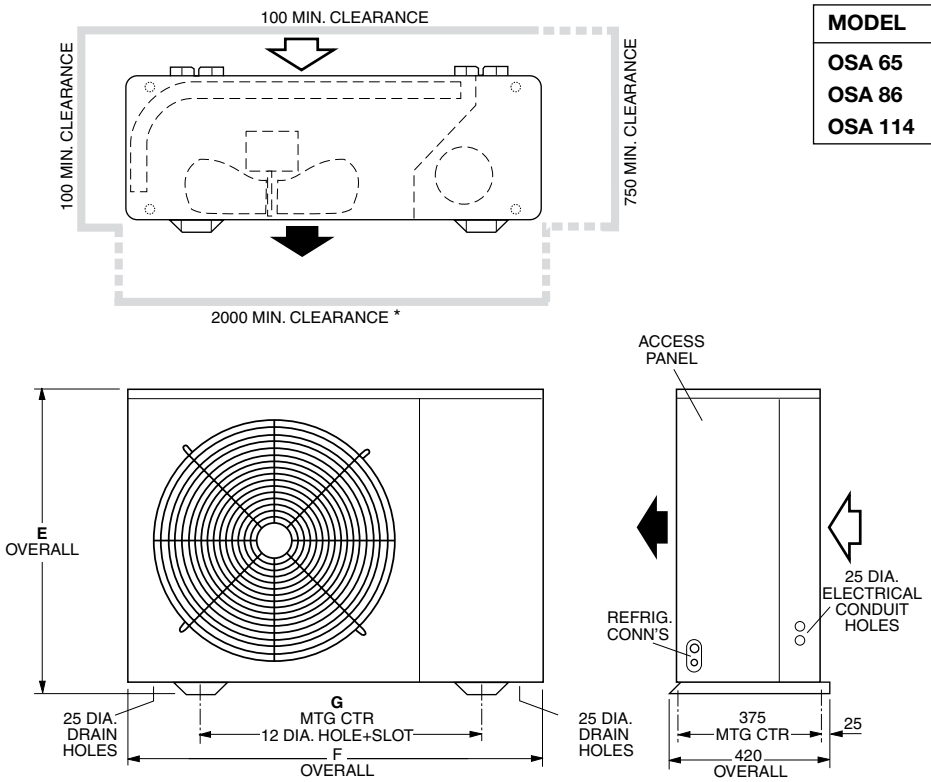
OSA Outdoor Unit

MODEL	E	F	G
OSA 65	660	1085	714
OSA 86	765	1085	714
OSA 114	970	1125	750



SPECIFICATIONS

SYSTEM	Indoor Unit : Outdoor Unit :	ISDL 65KY OSA 65RKS	ISDL 86KY OSA 86RKS	ISDL 114KY OSA 114RKS	ISDL 114KY OSA 114RKT
Nominal Cooling Capacity *1	kW	6.5	8.4	11.3	11.3
Net Cooling Capacity *1	kW	6.45	8.22	11.03	11.03
EER / AEER (cooling)		3.25 / 3.22	3.22 / 3.20	3.14 / 3.12	3.14 / 3.12
Heating Capacity *2	kW	6.3	8.0	11.0	11.0
COP / ACOP (heating)		3.42 / 3.39	3.54 / 3.51	3.21 / 3.19	3.22 / 3.21
Air Flow *3	l/s	420	520	650	650
Sound Levels *4	Indoor Unit (SWL)	56	57	70	70
	Outdoor Unit (SPL)	46	46	57	57
Power Source *5		1 phase 230 V a.c. 50 Hz			3 ph. 415 V
Indoor Fan Maximum Amps	A	1.5	1.5	1.5 (x2)	1.5 (x2)
Running Amps (Total System)	A	8.5	11.1	17.2	7.4 / 4.3 / 4.3
Refrigerant		HFC - 410A (R410A)			
Maximum Vertical Separation	m	12	16	16	16
Maximum Standard Line Length	m	30	30	60	60
Maximum Extended Line Length	m	–	40	–	–
Pipe Sizes (Suction/Liquid)	mm OD	16 / 10	16 / 10	16 / 10	16 / 10
Finish	Indoor Unit	zinc galvanised steel			
	Outdoor Unit	grey polyester powder coat			
Weight (net/shipping) kg	Indoor Unit	47 / 50	63 / 81	67 / 86	67 / 86
	Outdoor Unit	94 / 96	100 / 103	124 / 130	124 / 130

Notes:

*1 Nominal Cooling Capacity (gross) 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.

*2 Heating Capacity 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 Sound Levels are measured at nominal cooling capacity conditions stated above. SPL measured at 3m from unit.

*5 Voltage fluctuation limits: Single phase systems 200–252 V; Three phase systems 342–436 V.

Note
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temperzone

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