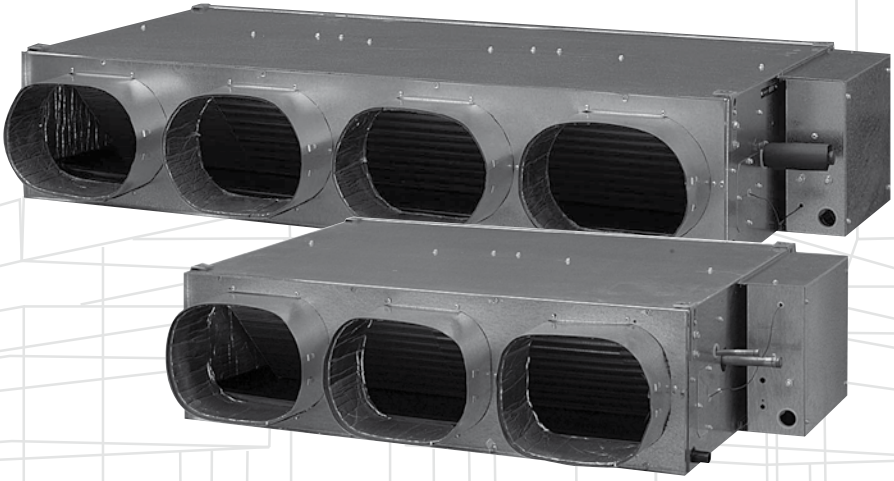
DRAFT

temperzone
QUALITY AIR CONDITIONING

Ducted Split System Air Conditioners

Technical Data
ISDL-K Series



R410A

Optional SAT Controller

Extra Long Life
Epoxy Coated Outdoor Coil

Nominal Cooling Capacity
5.4 kW – 10.2 kW

APRIL 2013

ISDL-K SERIES – DUCTED SPLIT SYSTEM AIR CONDITIONERS

GENERAL

ISDL ✳K - 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.

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. 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 motor enables fine tuning of the indoor unit to match the supply air requirements. 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. 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.

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. Filter box (c/w washable filter rated EU2)
3. Spring mounting kit.
4. Electric booster heat (add-on box)
   - 2 kW for ISDL 56K, 83K
   - 3 kW for ISDL 96K, 110K
   Complete with safety cutouts required to meet AS/NZS 3350.2.40 1997.

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.

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 30 m. For line lengths between 30 m and 40 m, refer to **temperzone**'s *Split Systems Installation Guide (refer www.temperzone.biz/Technical Support).*

Maximum line length for OSA 83–110RK when extended is 40 m.

Max. height separations between units are:

OSA 55RK:
Outdoor unit above indoor unit : 12 m
Outdoor unit below indoor unit : 12 m.
OSA 83– 110RK:
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 55 – 110 RKS :
1 phase 200–252 V a.c. 50 Hz
with neutral and earth.

OSA 110RKT :
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 FAN		INDOOR COIL E.A.T.		OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B.											
					23		27		31		35		39		43	
Indoor Unit / Outdoor Unit	SPEED	AIR l/s	W.B. °C	D.B. °C	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.
ISDL 56K / OSA 55	HIGH	280	15	21	5.4	4.3	5.4	4.3	5.2	4.2	5.0	4.1	4.6	3.8	4.2	3.5
			17	23	5.7	4.2	5.6	4.2	5.5	4.1	5.3	4.0	4.9	3.8	4.5	3.5
			19	27	6.0	4.8	5.9	4.8	5.8	4.7	(5.4)	4.6	5.2	4.4	4.8	4.1
			21	31	6.3	5.7	6.2	5.7	6.1	5.6	5.8	5.5	5.5	5.2	5.1	4.9
ISDL 83K / OSA 83	HIGH	380	15	21	8.1	6.4	8.0	6.4	7.8	6.3	7.4	6.1	6.9	5.7	6.3	5.3
			17	23	8.5	6.3	8.4	6.3	8.2	6.2	7.8	6.0	7.4	5.7	6.7	5.3
			19	27	9.0	7.2	8.9	7.2	8.6	7.1	(8.3)	6.9	7.8	6.5	7.2	6.1
			21	31	9.4	8.5	9.3	8.5	9.1	8.4	8.7	8.2	8.2	7.8	7.6	7.3
ISDL 96K / OSA 95	HIGH	500	15	21	9.3	7.4	9.2	7.4	8.9	7.2	8.5	7.0	8.0	6.6	7.3	6.1
			17	23	9.8	7.2	9.7	7.2	9.4	7.1	9.0	6.9	8.5	6.5	7.8	6.0
			19	27	10.3	8.3	10.2	8.3	9.9	8.1	(9.5)	7.9	9.0	7.5	8.3	7.0
			21	31	10.8	9.8	10.7	9.8	10.4	9.7	10.0	9.4	9.5	9.0	8.7	8.4
ISDL 110K / OSA 110	HIGH	500	15	21	10.0	7.9	9.9	7.9	9.6	7.8	9.2	7.5	8.6	7.1	7.8	6.6
			17	23	10.6	7.8	10.4	7.8	10.2	7.6	9.7	7.4	9.1	7.0	8.4	6.5
			19	27	11.1	8.9	11.0	8.9	10.7	8.8	(10.2)	8.5	9.6	8.1	8.9	7.6
			21	31	11.6	10.5	11.5	10.5	11.2	10.4	10.8	10.1	10.2	9.7	9.4	9.0

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 56K / OSA 55	15	3.2	2.8	3.5	3.0	3.7	3.1	4.0	3.1	4.2	3.2	4.5	3.5	4.8	3.8	5.1	5.1
	20	3.2	2.8	3.4	3.0	3.7	3.0	3.9	3.1	4.1	3.1	4.4	3.2	(4.7)	3.7	5.0	5.0
	25	3.0	2.7	3.3	2.8	3.5	2.9	3.8	3.0	4.0	3.0	4.3	3.1	4.6	3.5	4.8	4.8
ISDL 83K / OSA 83	15	5.2	4.7	5.6	5.1	6.0	5.4	6.4	5.6	6.8	5.7	7.3	6.6	7.8	7.7	8.1	8.1
	20	5.0	4.6	5.5	5.0	5.9	5.3	6.3	5.5	6.7	5.6	7.1	6.4	(7.6)	7.5	8.0	8.0
	25	4.9	4.4	5.3	4.8	5.7	5.1	6.0	5.3	6.4	5.4	6.9	6.2	7.3	7.3	7.7	7.7
ISDL 96K / OSA 95	15	5.9	5.3	6.4	5.7	6.8	6.1	7.3	6.4	7.7	6.5	8.3	7.4	8.8	8.7	9.2	9.2
	20	5.8	5.2	6.2	5.6	6.7	6.0	7.1	6.3	7.5	6.4	8.1	7.3	(8.6)	8.5	9.0	9.0
	25	5.6	5.0	6.0	5.4	6.4	5.8	6.8	6.0	7.3	6.1	7.8	7.0	8.3	8.2	8.7	8.7
ISDL 110K / OSA 110	15	7.4	6.5	7.9	6.5	8.3	6.6	8.7	7.0	9.2	7.9	9.6	9.4	10.0	10.0	10.4	10.4
	20	7.4	6.5	7.8	6.4	8.2	6.5	8.6	6.9	9.1	7.8	9.5	9.3	(9.9)	9.9	10.3	10.3
	25	7.1	6.3	7.5	6.2	8.0	6.3	8.4	6.7	8.8	7.6	9.2	9.1	9.7	9.7	10.1	10.1

PIPE LENGTH CAPACITY LOSS

ON COOLING CYCLE DUE TO PRESSURE DROP
Note: Loss percentage is approximate only.
No allowance made for vertical piping.

System	Pipe Size (mm)		Equivalent Line Pipe Length (m)				
	Liquid	Suction	5	10	15	20	25
ISDL 56K / OSA 55	6	13	4 %	6 %	9 %	–	–
	6	16	–	1.5 %	2.5 %	3.5 %	5 %
	Liquid	**Suction**	**5**	**10**	**15**	**20**	**30**
ISDL 83K / OSA 83	10	16	2 %	4 %	6.5 %	9 %	13 %
	10	19	–	–	3 %	4 %	6 %
ISDL 96K / OSA 95	10	19	1 %	1.5 %	2.5 %	3.5 %	5 %
ISDL 110K / OSA 110	10	19	0.75 %	1.5 %	2.25 %	3 %	5 %

Suction Pipe Size OD	Additional Pipe Length to allow per Bend Long 90° Radius (2 x pipe dia.)
16 mm	0.30 m
19 mm	0.42 m

PERFORMANCE DATA

AIR HANDLING

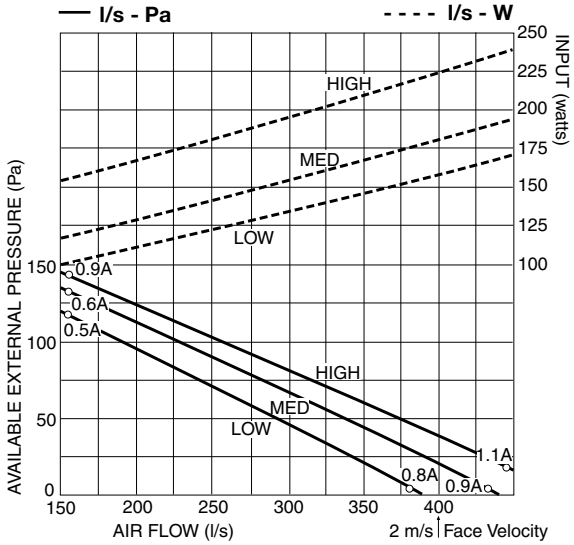
Note: Airflows are for a dry coil. Reduce airflow by 10% in high moisture removal conditions.

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

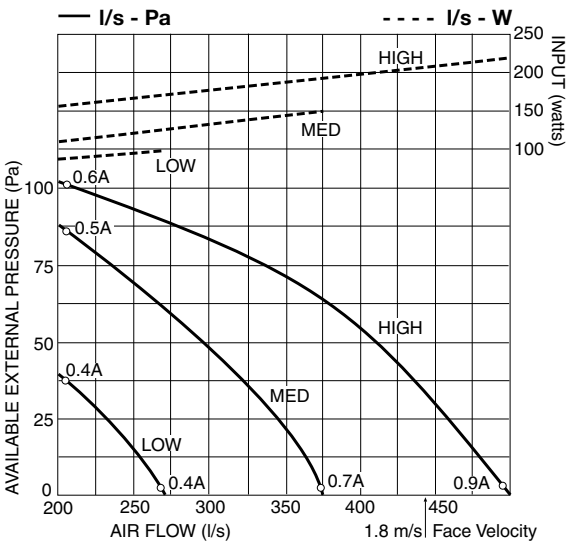
Air flows given are for ISDL units without filter installed.

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

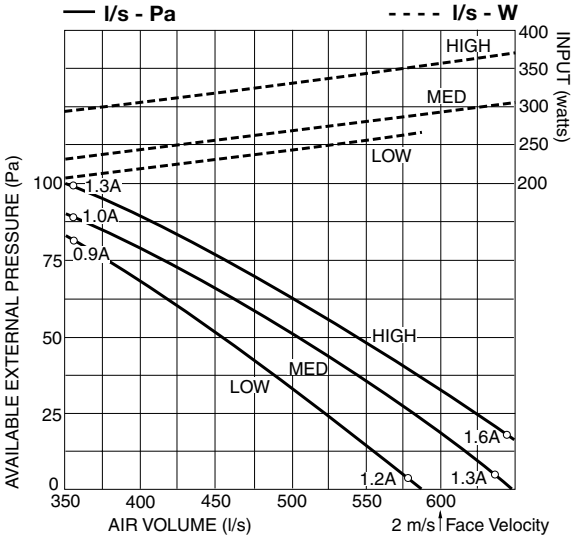
ISDL 56K



ISDL 83K



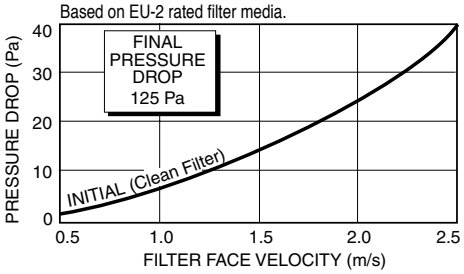
ISDL 96K, 110K



FILTERS - PRESSURE DROP

An allowance must be made for filter pressure drop (if filters required) when calculating Total Available External Pressure.

Based on EU-2 rated filter media.



$$\text{Face Velocity} = \frac{\text{Airflow (l/s)}}{\text{Filter Face Area (m}^2\text{) x 1000}}$$

Filter Areas:

ISDL 56K - 0.201 m^2

ISDL 83K - 0.245 m^2

ISDL 96K, 110K - 0.289 m^2

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

MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQ. Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS dB					
ISDL 56K	LOW	57	55	57	57	50	47	40
	MED	59	56	59	58	52	49	43
	HIGH	60	57	60	59	54	50	44
ISDL 83K	LOW	54	54	54	52	49	44	38
	MED	56	56	55	56	51	47	40
	HIGH	57	56	57	56	53	48	42
ISDL 96/110 K	LOW	57	55	55	56	51	48	40
	MED	58	57	57	57	53	50	42
	HIGH	59	58	58	58	55	51	44

Return Air Inlet + Case Breakout

SWL dB(A)	OCTAVE BAND FREQ. Hz					
	125	250	500	1 k	2 k	4 k
	SOUND PRESSURE LEVELS dB					
59	57	59	60	53	47	40
62	59	61	62	56	49	42
63	60	63	63	58	51	45
58	56	59	59	52	45	40
61	59	61	61	55	48	43
63	60	63	62	57	50	45
57	55	55	56	51	48	40
58	57	57	57	53	50	42
59	58	59	58	55	51	44

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

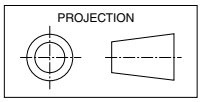
Sound Pressure Level (SPL) in decibels re 20 µPa.

MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQ. Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS dB					
OSA 55	LOW	63	68	63	61	57	52	47
	MED	64	66	64	62	59	54	49
OSA 83	LOW	66	69	67	66	60	54	49
	MED	68	70	68	68	63	55	50
OSA 95	MED	66	69	67	66	60	54	49
	HIGH	68	70	68	68	63	55	50
OSA 110	MED	66	74	67	65	61	55	51
	HIGH	68	73	69	67	63	56	52

SPL @ 3 m dB(A)	OCTAVE BAND FREQ. Hz					
	125	250	500	1 k	2 k	4 k
	SOUND PRESSURE LEVELS dB					
47	52	47	45	41	36	31
48	50	48	46	43	38	33
50	53	51	50	44	36	33
52	54	52	52	47	39	34
50	53	51	50	44	36	33
52	54	52	52	47	39	34
50	58	51	49	45	39	35
52	57	53	51	47	40	36

DIMENSIONS (mm)

Not to Scale

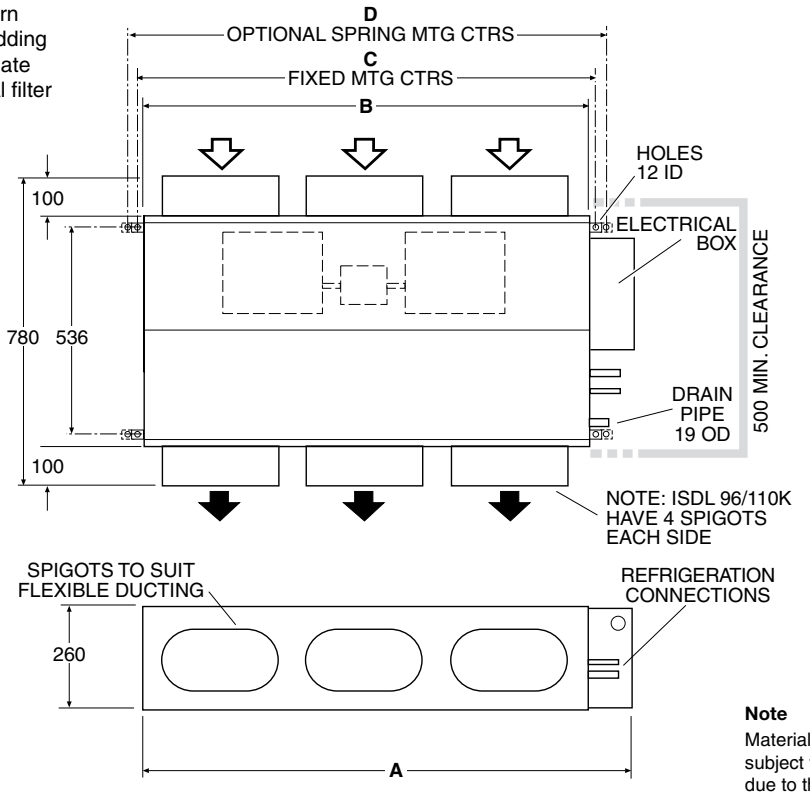


ISDL Indoor Unit

MODEL	A	B	C	D	Spigots
ISDL 56K	1040	927	962	1020	250 dia. (x6)
ISDL 83K	1235	1122	1157	1215	250 dia. (x6)
ISDL 96/110 K	1430	1317	1352	1410	250 dia. (x8)

ISDL 83K shown here

Optional Filter Box fits between return air spigot plate and main chassis, adding 95 mm to depth of unit. Allow adequate clearance either side for the optional filter to be removed.

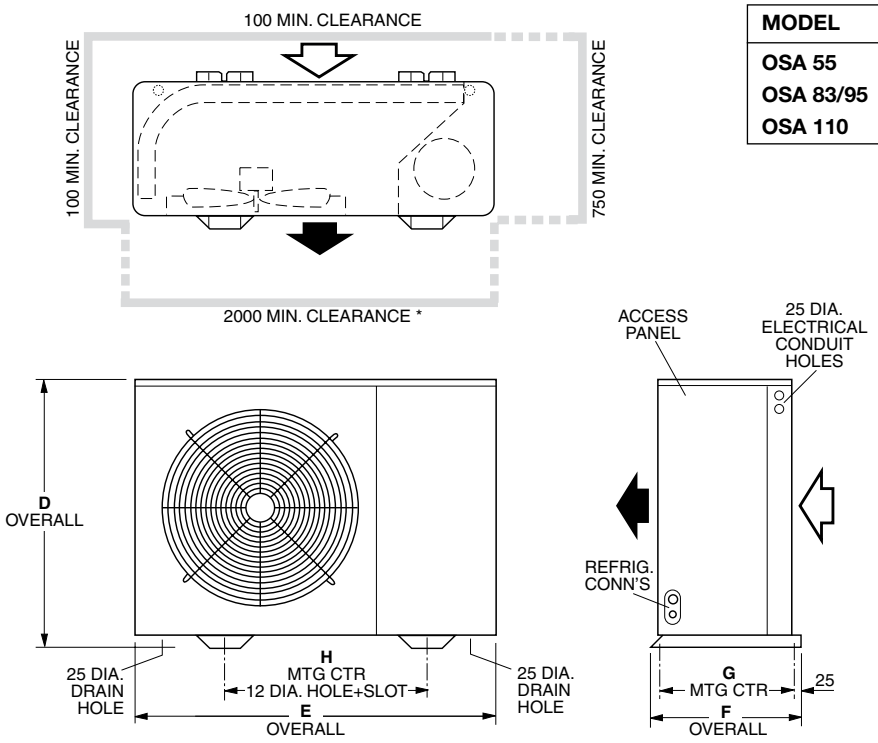


Note

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

OSA Outdoor Unit

MODEL	D	E	F	G	H
OSA 55	665	885	330	331	548
OSA 83/95	660	1040	395	349	686
OSA 110	795	1035	400	349	582



SPECIFICATIONS

SYSTEM	Indoor Unit : Outdoor Unit :	ISDL 56K OSA 55RKS	ISDL 83K OSA 83RKS	ISDL 96K OSA 95RKS	ISDL 110K OSA 110RKS	ISDL 110K OSA 110RKT
Nominal Cooling Capacity *1	kW	5.4	8.3	9.5	10.2	10.2
Net Cooling Capacity	kW	5.4	8.1	9.3	10.2	10.2
Heating Capacity *2	kW	4.7	7.5	8.6	9.9	9.9
E.E.R. (cooling)		2.91	2.90	2.91	2.78	2.78
C.O.P. (heating)		2.92	3.08	2.91	3.14	3.14
Air Flow *3	l/s	280	380	500	500	500
Sound Levels (SWL) *4	Indoor Unit	57	54	56	56	56
	Outdoor Unit	63	66	66	66	66
Power Source *5		1 phase 230 V a.c. 50 Hz				3 ph. 415 V
Indoor Fan Motor Rating (4 pole)	W	150	150	75 + 150	75 + 150	75 + 150
Indoor Fan Full Load Amps	A	1.4	1.4	0.7 + 1.4	0.7 + 1.4	0.7 + 1.4
Running Amps (Total System)	A	11.5	13.4	13.4	16.3	6.7 / 5.7 / 5.7
Recommended External Fuse	A	20	25	25	25	25
Refrigerant		HFC - 410A (R410A)				
Maximum Vertical Separation	m	12	16	16	16	16
Maximum Standard Line Length	m	30	30	30	30	30
Maximum Extended Line Length	m	–	40	40	40	40
Pipe Sizes (Suction/Liquid)	mm OD	16 / 6	16 / 10	19 / 10	19 / 10	19 / 10
Finish	Indoor Unit	zinc galvanised steel				
	Outdoor Unit	grey polyester powder coat				
Weight (net/shipping) kg	Indoor Unit	30 / 37	33 / 43	42 / 53	42 / 53	42 / 53
	Outdoor Unit	73 / 78	85 / 92	85 / 92	88 / 96	88 / 96

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 Power Levels (SWL) are measured at nominal cooling capacity conditions stated above.

*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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