

**Ducted Single Phase
Split System Air Conditioner**

Technical Data
ISD 83K / OSA 83RK



**Optional
SAT Controller**

Extra Long Life
Epoxy Coated Outdoor Coil

Nominal Cooling Capacity
8.7 kW

ISD 83K / OSA 83RK DUCTED SINGLE PHASE SPLIT SYSTEM AIR CONDITIONER

GENERAL

The ISD indoor unit, together with its associated OSA outdoor unit, provides a reverse cycle (heat pump) single phase 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 and residential premises, e.g. offices, motels, shops and homes.

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 (refer Air Flow graph; 2.5 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.

Efficient. The outdoor unit incorporates a high efficiency rotary compressor. Heat exchange coils incorporate 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.

Quiet. 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 unit requires only a 100 mm gap on the coil side where installation is against a wall. Its slimline cabinet is particularly practical where there is restricted space, e.g. side access pathways, balconies, narrow ledges, etc. A vertical discharge grille is available to deflect prevailing winds and reduce clearances. The unit is 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. The 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 plate fins on mechanically expanded rifled copper tube. The indoor unit's cabinet is constructed from high grade galvanised steel and also includes a plastic drain tray for complete corrosion resistance.

Service Access. The indoor unit's built-in drain tray can be removed for ease of cleaning and service accessibility.

Insulation. Closed cell foam insulation has been used in the indoor unit's 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.

Mounting. The indoor unit can be mounted rigid, or using the optional spring mounting brackets which minimise transfer of vibration.

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.

Optional Equipment

Outdoor Unit:

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

Indoor Unit:

1. Filter box - integrated return air spigot and washable polypropylene net filter.

2. **temperzone** SAT Controller.
3. Spring Mounting Kit.
4. 2 kW electric booster heater box - complete with safety cutouts required to meet AS/NZS 3350.2.40 1997.
5. Supply and return air plenums.
6. Safety drain tray.

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 type compressor is hermetically sealed, quiet running and supported on rubber mounts to minimise vibration.

REFRIGERATION PIPING

The standard unit 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 when extended is 40m.

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

The OSA 83 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. Accurator expansion devices control the flow of refrigerant. The matched indoor unit is shipped with a holding charge of nitrogen. Both units have brazed pipe connections.

WIRING

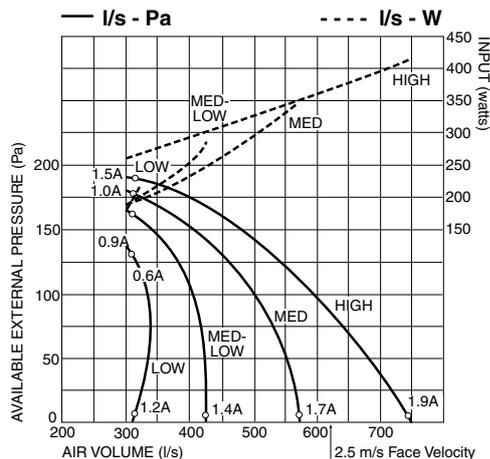
The electrical supply required (including voltage fluctuation limits) is:
1 phase 200-252 V a.c. 50 Hz with neutral and earth. The compressor crankcase heater requires a 24 hour power supply. A control panel, located in the outdoor unit, is fully wired ready to accept the main power supply.

AIR HANDLING

Note: Airflows are for a dry coil. Reduce airflow by 5% in high moisture removal conditions. In a free blow application, beware of exceeding indoor fan motor's full load amp limit.

As filters are optional, the fan air flows given are for units installed without filters.

If using EU-2 filter media, provide 0.08 m² face area per 100 l/s of airflow to maximise efficiency.



ELECTRICAL

E.E.R. (cooling)	2.96
Indoor Fan Full Load Amps	1.4 A
Running Amps (Total System)	13.4 A
Recom'd External Protection	25 A

The manufacturer operates a quality management system that conforms to AS/NZS ISO 9001:2000.

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.

MODELS Indoor / Outdoor Unit / Unit	INDOOR FAN		INDOOR COIL E.A.T.		OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B.											
	SPEED	AIR l/s	W.B. °C	D.B. °C	23		27		31		35		39		43	
					Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.
ISD 83K / OSA 83RKS	MED	475	15	21	8.6	6.8	8.5	6.8	8.2	6.7	7.8	6.4	7.3	6.1	6.7	5.6
			17	23	9.0	6.6	8.9	6.6	8.7	6.5	8.3	6.3	7.8	6.0	7.1	5.6
			19	27	9.5	7.6	9.4	7.6	9.1	7.5	8.7	7.3	8.2	6.9	7.6	6.5
			21	31	9.9	9.0	9.8	9.0	9.6	8.9	9.2	8.6	8.7	8.3	8.0	7.7

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.

Pipe Size (mm)		Equivalent Line Pipe Length (m)					Additional Pipe Length to allow per Bend		
Liquid	Suction	5	10	15	20	30	Suction Pipe Size OD	16 mm	19 mm
10	16	2 %	4 %	6 %	8 %	12 %	Long 90° Radius (2 x pipe dia.)	0.3 m	0.4 m
10	19	1 %	1.5 %	2.5 %	3.5 %	5 %			

HEATING CAPACITY (kW)

G = Gross Heating Capacity kW, based on nominal air flow of 475 l/s.

N = Net Heating Capacity kW allowing for average defrost.

○ = Nominal Capacity (kW)

MODELS Indoor / Outdoor Unit / 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
ISD 83K / OSA 83RKS	15	5.4	4.9	5.9	5.3	6.3	5.6	6.7	5.9	7.1	6.0	7.6	6.8	8.1	8.0	8.5	8.5
	20	5.3	4.8	5.7	5.2	6.1	5.5	6.5	5.8	6.9	5.9	7.5	6.7	8.1	7.9	8.3	8.3
	25	5.1	4.6	5.5	5.0	5.9	5.3	6.3	5.5	6.7	5.6	7.2	6.5	7.6	7.6	8.0	8.0

SOUND LEVELS

Sound Power Levels (SWL)

Test Conditions: BS 848 PT2 1985. Installation Type A (free inlet and outlet). Direct method of measurement (reverberant room).
Measured in decibels re 1 picowatt.

Indoor Unit - Supply Air Outlet

FAN SPEED	AIR FLOW l/s	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS (SWL) dB					
LOW	300	56	54	54	55	50	48	44
MED-LOW	400	61	60	59	59	55	53	51
MED	475	65	63	62	62	60	58	56
HIGH	575	68	64	64	64	63	60	58

Supply Air Outlet + Insulated Duct *

FAN SPEED	AIR FLOW l/s	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS (SWL) dB					
MED	475	61	60	60	60	55	50	47

* 1 metre of 25 mm insulated duct

Outdoor Unit

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 83	LOW	65	67	66	66	58	51	47	49	51	50	50	42	35	31
	MED	66	69	67	66	60	54	49	50	53	51	50	44	38	33

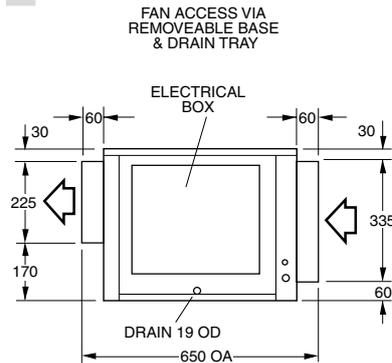
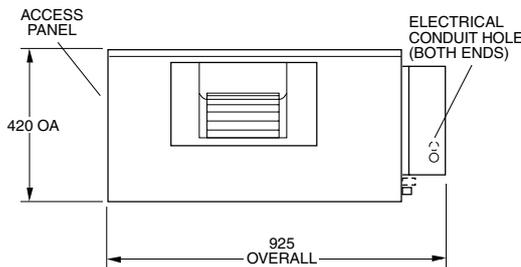
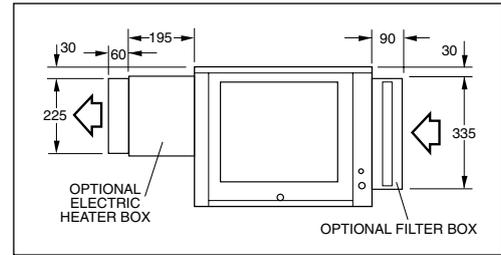
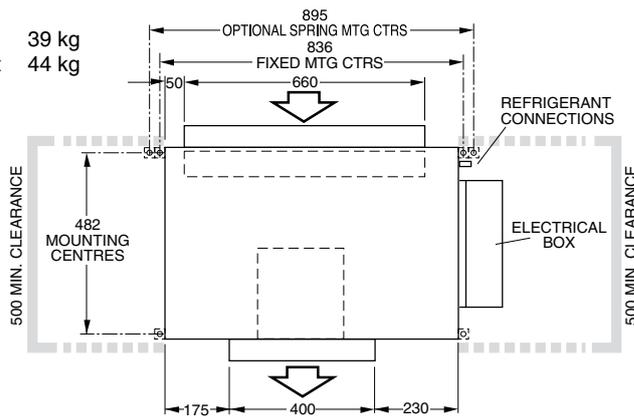
Sound Pressure Level (SPL) in decibels re 20 µPa.

DIMENSIONS (mm)

Not to Scale

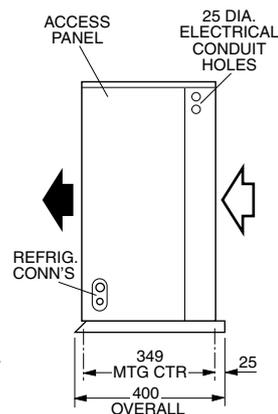
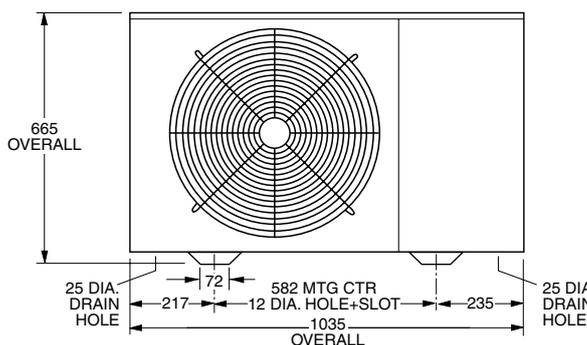
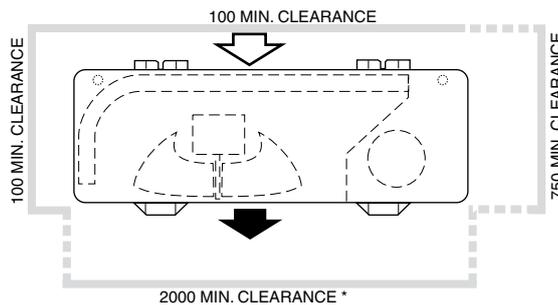
ISD 83K Indoor Unit

Net Weight 39 kg
Shipping Weight 44 kg



OSA 83RKS Outdoor Unit

Net Weight 86 kg
Shipping Weight 94 kg



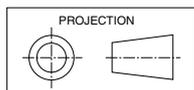
Recommended Pipe Line Sizes

Liquid: 10 mm OD
Suction: 16 mm OD

Note

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

* 600 min with optional Vertical Discharge Grille



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