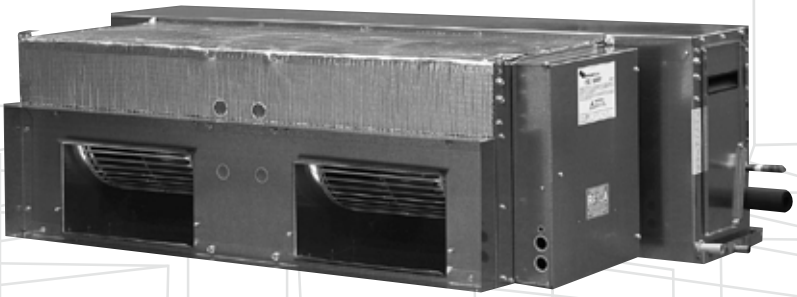
temperzone
QUALITY AIR CONDITIONING

Ducted Split System Air Conditioner

Technical Data

ISD 184KY / OSA 184RKTV

R410A



SEPARABLE INDOOR UNIT

diGital OPTION

Optional SAT Controller

High Efficiency EC Motor

Extra Long Life
Epoxy Coated Outdoor Coil

Nominal Cooling Capacity
18.4 kW

SEPTEMBER 2012

ISD 184K / OSA 184RKTV DUCTED SPLIT SYSTEM AIR CONDITIONER

GENERAL

The ISD indoor unit, together with its associated OSA outdoor unit, provides a reverse cycle (heat pump) split system air conditioner designed and developed to comply with AS/NZS 3823 specified conditions. The system has been tested and proven for cooling operation in outdoor temperatures up to 50°C.

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 (for reference 2.0 m/s is marked on the graph below).

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.

Separable. The indoor units are separable for ease of installation through small man holes – minimum 550 mm sq. clear aperture. It may be desireable in some applications to keep the two separate parts of the unit apart and joined by ducting, eg over a ceiling joist. A pair of the optional Spigot Plate Adaptors are available to facilitate this option.

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 unit requires only a 150 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.

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.

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-100 Controller. The optional Signal Isolator will be required for continuously variable speed control applications.

Self Diagnostics. The Unit Controller (UC) 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. Anti-vibration mounts (rubber)
2. Drain connection - right angle

Indoor Unit:

1. **temperzone** SAT Controller (or TZT-100 Controller for digital versions).
2. Spring Mounting Kit.
3. Spigot Plate Adaptors – Double Inlet (for use when separating indoor unit) Ø450 mm
4. Signal Isolator (Item no. 201-000-129) for using EC motors in a 0–10V DC continuously variable speed mode.

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 scroll 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 60 m. For line lengths between 60 m and 90 m, refer to **temperzone**'s *Split Systems Installation Guide (refer www.temperzone.biz/Technical Support).*

Maximum line length when extended is 90m.

Max. height separations between units are:
Outdoor unit above indoor unit : 20 m
Outdoor unit below indoor unit : 20 m.

The OSA 184 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: 3 phase 342–436 V a.c. 50 Hz with neutral and earth.

The compressor crankcase heater requires a 24 hour power supply. A control panel, with 24V control circiuit, located in each outdoor unit, is fully wired ready to accept the main power supply. Each system conforms with emission standards EN 55014-1, EN 60335-1 and EN 60335-2-40.

Digital Version:

Digital Scroll Compressor. The digital version of this unit provides a variable capacity ability that enables closer control of room temperature. This is achieved by avoiding on/off cycling of the compressor. These compressors have proven very reliable because of their design simplicity. Electrical harmonic noise is very low.

Extended Capability. Digitals are particularly suitable for applications requiring full or high proportions of fresh air, VAV, close control and supply air temperature control.

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.

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.
ISD 184K / OSA 184RK	HIGH	1020	21	15	18.0	14.2	17.8	14.2	17.3	14.0	16.5	13.5	15.4	12.8	14.0	11.8
			23	17	19.0	13.9	18.7	13.9	18.2	13.7	17.4	13.3	16.3	12.6	15.0	11.7
			27	19	19.9	16.0	19.7	16.0	19.2	15.7	(18.4)	15.3	17.3	14.5	15.9	13.5
			31	21	20.9	18.9	20.7	18.9	20.1	18.7	19.3	18.1	18.3	17.3	16.9	16.2

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.

Performance Loss per additional 10m beyond first 5m.
2.1 %
4.0 %

Suction Pipe Size OD	Additional Pipe Length to allow per Bend Long 90° Radius (2 x pipe dia.)
22 mm	0.50 m
19 mm	0.42 m

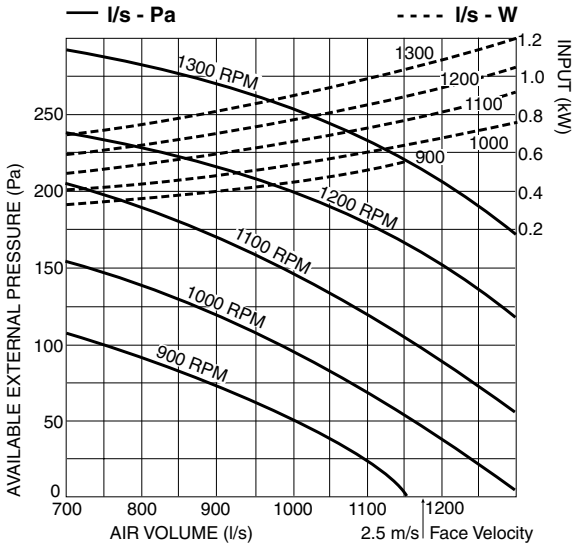
PERFORMANCE DATA

HEATING CAPACITY (kW)

G = Gross Heating Capacity kW, based on nominal air flow of 1300 l/s.
N = Net Heating Capacity kW allowing for average defrost.
(◯) = Nominal Capacity (kW)

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
ISD 184K / OSA 184RK	15	11.7	10.6	12.7	11.4	13.6	12.1	14.5	12.4	15.3	13.1	16.5	15.6	17.5	17.5	18.4	18.4
	20	11.5	10.4	12.5	11.2	13.3	11.8	14.2	12.2	15.0	12.9	16.1	15.3	(17.2)	17.2	18.0	18.0
	25	11.1	10.0	12.0	10.8	12.8	11.4	13.6	11.7	14.5	12.3	15.5	14.6	16.5	16.5	17.4	17.4

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 ISD 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.

Optional Polypropylene Net Filter Media (clean):

Coil Face Velocity (m/s)	1.5	2.0	2.5
Pressure Loss (Pa)	5	9	13

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	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
		125	250	500	1 k	2 k	4 k
		SOUND POWER LEVELS (SWL) dB					
900 RPM	68	71	64	63	62	61	58
1000 RPM	72	75	69	67	67	65	63
1200 RPM	76	76	71	70	71	69	67

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

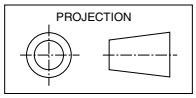
Outdoor Unit

MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQ. Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS dB					
OSA 184V	HIGH	66	67	65	64	62	59	51

SPL @ 3 m dB(A)	OCTAVE BAND FREQ. Hz					
	125	250	500	1 k	2 k	4 k
	SOUND PRESSURE LEVELS dB					
50	51	49	48	46	43	35

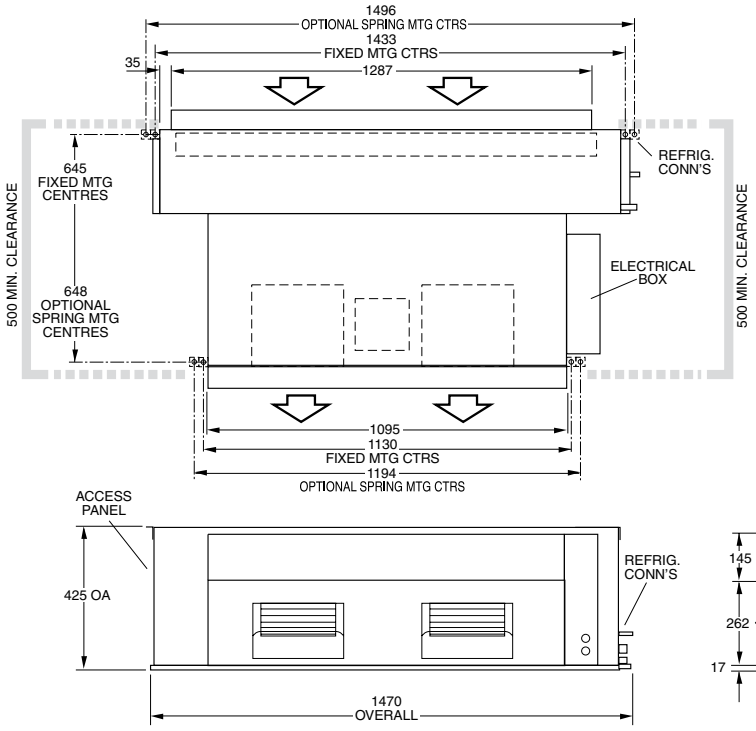
Sound Pressure Level (SPL) in decibels re 20 µPa.

DIMENSIONS (mm)

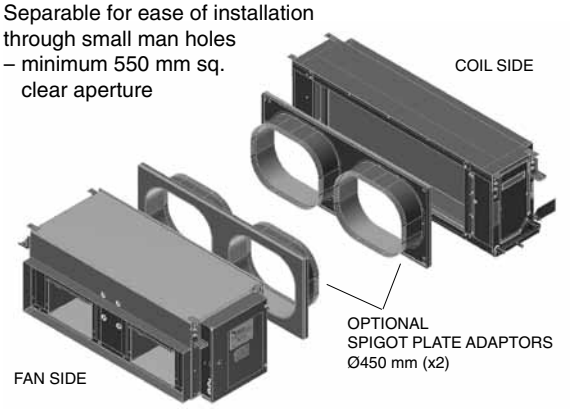


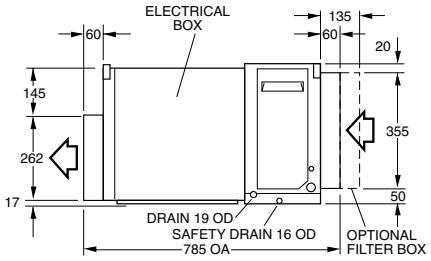
Not to Scale

ISD 184KY Indoor Unit



Separable for ease of installation through small man holes – minimum 550 mm sq. clear aperture





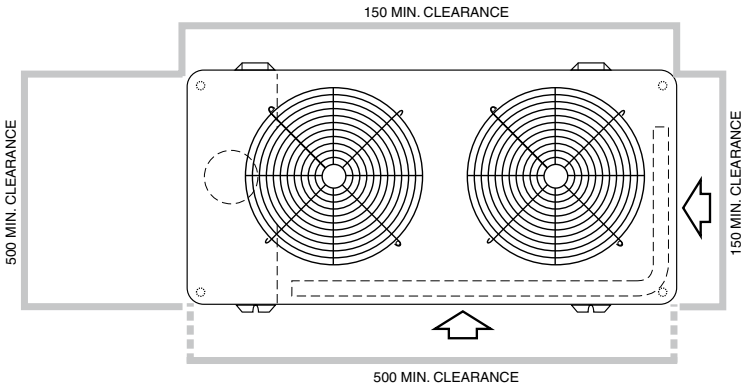
OSA 184RKTV Outdoor Unit

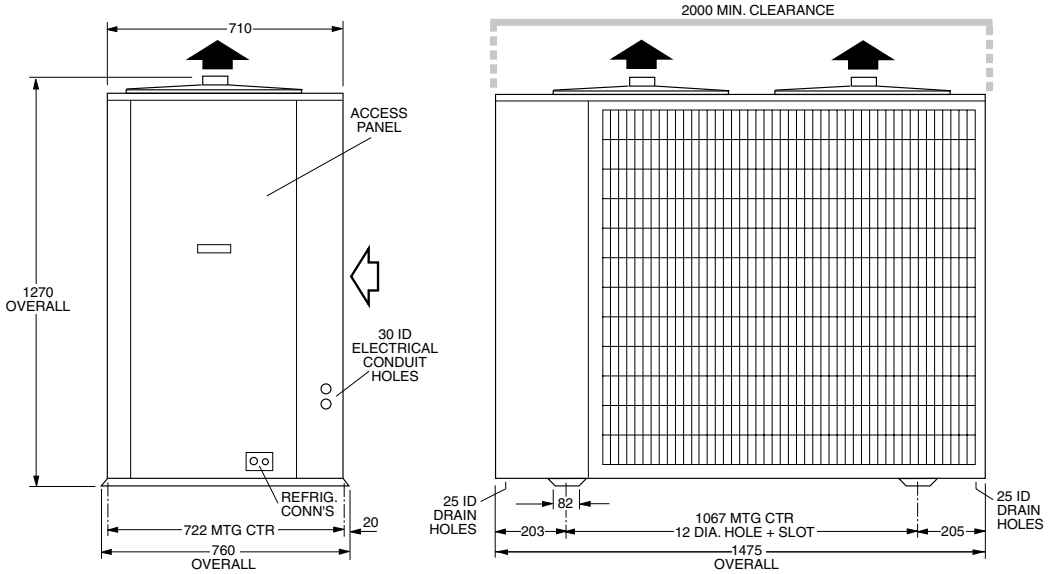
Recommended Pipe Line Sizes

Liquid: 13 mm OD
Suction: 19 or 22 mm OD

Note

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





SPECIFICATIONS

SYSTEM	Indoor Unit : Outdoor Unit :		ISD 184KY OSA 184RKTV *6
Nominal Cooling Capacity *1		kW	18.4
Net Cooling Capacity *1		kW	17.81
EER / AEER (cooling)			3.24 / 3.22
Heating Capacity *2		kW	17.2
COP / ACOP (heating)			3.51 / 3.49
Air Flow *3		l/s	1290
Sound Levels *4	Indoor Unit (SWL) on Med.		72
	Outdoor Unit (SPL)		50
Power Source *5			3 ph. 415 V a.c. 50 Hz
Indoor Fan Maximum Current		A	8
Running Amps (Total System)		A/ph.	14 / 8 / 8
Max. Running Amps (Total System)		A/ph.	16 / 10 /10
Refrigerant			HFC-410A (R410A)
Maximum Vertical Separation		m	20
Maximum Standard Line Length		m	30
Maximum Extended Line Length		m	60
Pipe Sizes (Suction/Liquid)		mm OD	19 or 22 / 13
Finish	Indoor Unit		zinc galvanised steel
	Outdoor Unit		grey polyester powder coat
Weight (net/shipping) kg	Indoor Unit		95 / 116
	Outdoor Unit		205 / 240

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.

*6 Digital compressor version OSA 184RKTGV.

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