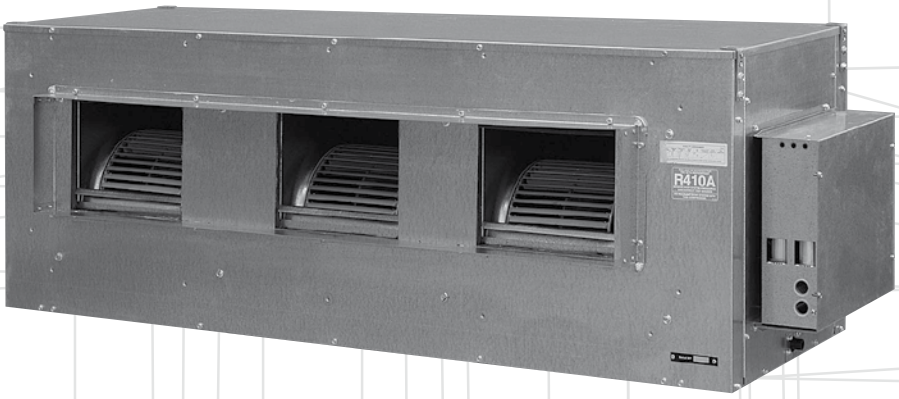
temperzone
QUALITY AIR CONDITIONING

Ducted Split System Air Conditioner

Technical Data

ISD 298K / OSA 298RKTB

R410A



Twin System Enables Staging

diGital OPTION

TZT-701 Controller &
Digital Scroll Compressor
for close temperature control

Extra Long Life
Epoxy Coated Outdoor Coil

Nominal Cooling Capacity
31.0 kW

JUNE 2011

ISD 298KB / OSA 298RKTB DUCTED SPLIT SYSTEM AIR CONDITIONER

GENERAL

ISD 298KB - Indoor unit
OSA 298RKTB - Outdoor unit
OSA 298RKTBG - Outdoor unit, digital

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 and exceed AS/NZS 3823 specified conditions (i.e. guaranteed cooling cycle performance at 43°C outdoor temperature).

The outdoor unit is available with a **digital** scroll type compressor.

APPLICATIONS

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

Suitable for applications requiring full or high proportions of fresh air, VAV, close control and supply air temperature control.

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.

FEATURES

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

Economical. Each ISD/OSA system has two independent refrigeration circuits to provide the flexibility and economy of two stage operation, i.e. utilising one or two circuits as conditions vary, plus the advantage of staggered starting.

Efficient. The outdoor unit incorporates a high efficiency scroll compressor. Heat exchange coils incorporate inner grooved (rifled) tube for better heat transfer.

Performance. The indoor unit has 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.

User Friendly. The optional TZT-701 Controller 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".

Quiet. The compressor is isolated in a built-in, insulated compartment to minimise noise. The indoor unit is also insulated for noise attenuation.

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. Anti-vibration mounts (rubber)
2. Drain connection - right angle

Indoor Unit:
1. **temperzone** TZT-701 Controller kit or SAT-2 (24V) Controller kit, latter of which is not suitable for digital systems.
2. Filter box - integrated return air spigot and washable polypropylene net filter.
3. Spring Mounting Kit.
4. Supply and return air plenums.

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 30 m. For line lengths between 30 m and 60 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 298 is shipped from the factory with a holding charge of HFC-410A (R410A) refrigerant. 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 circuit, is located in the outdoor unit and is fully wired ready to accept the main power supply.

Digital Version:

Digital Scroll Compressor. 'Digital' systems include one conventional scroll compressor and one 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.

Control Option. The system is set up for the compressor to be 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-701 Controller.

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

ELECTRICAL

E.E.R. (cooling) (Digital)	3.05 (3.09)
Indoor Fan Full Load Amps	3.4 / 1.9
Running Amps (Total System)	22 / 15 / 15
Recom'd External Protection	40 A

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. W.B. °C	INDOOR COIL E.A.T. D.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 298KB / OSA 298RK	HIGH	1570	15	21	30.4	24.0	30.0	24.0	29.1	23.6	27.8	22.8	26.0	21.5	23.7	19.9
			17	23	32.0	23.5	31.6	23.5	30.7	23.1	29.4	22.4	27.6	21.2	25.3	19.7
			19	27	33.6	26.9	33.2	26.9	32.4	26.5	(31.0)	25.7	29.2	24.5	26.9	22.8
			21	31	35.2	31.9	34.8	31.9	34.0	31.5	32.6	30.6	30.8	29.2	28.5	27.4

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) Liquid	Suction	Equivalent Line Pipe Length (m) 5	10	15	20	30
13	22	0.7 %	2.1 %	3.4 %	4.7 %	6.1 %

Additional Pipe Length to allow per Bend	
Suction Pipe Size OD	22 mm
Long 90° Radius (2 x pipe dia.)	0.5 m

HEATING CAPACITY (kW)

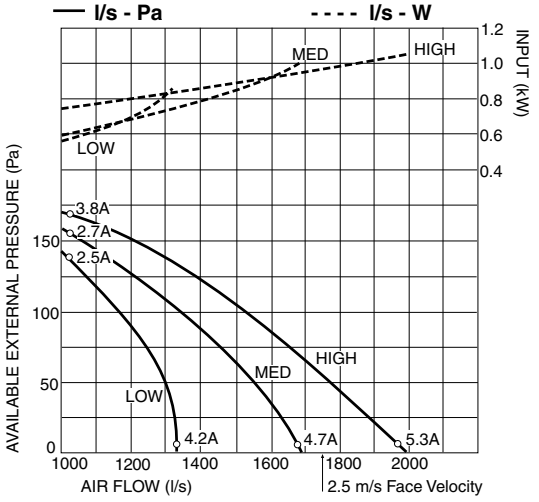
G = Gross Heating Capacity kW, based on nominal air flow.
N = Net Heating Capacity kW allowing for average defrost.
◯ = Nominal Capacity (kW)

MODELS Indoor Unit / Outdoor Unit	INDOOR ENTERING AIR TEMP. °C D.B.	OUTDOOR COIL ENTERING AIR TEMPERATURE (E.A.T.) °C D.B. – 5 G	– 5 N	– 3 G	– 3 N	– 1 G	– 1 N	1 G	1 N	3 G	3 N	5 G	5 N	7 G	7 N	9 G	9 N
ISD 298KB / OSA 298RK	15	21.1	19.0	22.9	20.6	24.4	21.9	26.0	22.9	27.5	23.2	29.7	26.6	31.5	31.2	33.1	33.1
	20	20.7	18.6	22.4	20.2	24.1	21.6	25.6	22.6	27.2	22.9	29.0	26.3	(30.9)	30.6	32.4	32.4
	25	19.9	18.0	21.6	19.4	23.2	20.7	24.4	21.6	26.0	21.9	28.1	25.0	29.7	29.4	31.2	31.2

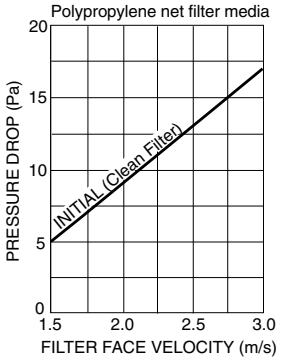
AIR HANDLING

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.



OPTIONAL FILTER - PRESSURE DROP



PERFORMANCE DATA

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

MODEL	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					
ISD 298KB	LOW	1300	60	64	59	59	56	51	45
	MED	1450	66	70	65	63	60	58	52
	HIGH	1570	68	71	68	65	62	60	55

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 POWER LEVELS dB					
OSA 298	HIGH	76	83	74	72	72	67	60	60	67	58	56	56	51	44

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

NOMENCLATURE

Example: **I S D 2 9 8 K B H**

Series
- **I** - Indoor
- **S** - Split
- **D** - Ducted

Size
Divide by 10 to get approx. nominal Capacity in kilowatts

Type
- **K** - R410A refrigerant compatible
- **B** - Twin circuit system
- **H** - Horizontal discharge supply air fan
- **V** - Vertical discharge supply air fan

Example: **O S A 2 9 8 R K T B G V**

Series
- **O** - Outdoor
- **S** - Split
- **A** - Air Cooled

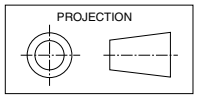
Size
Divide by 10 to get approx. nominal Capacity in kilowatts

Type
- **R** - Reverse cycle
- **K** - Refrigerant R410A
- **T** - Three phase power supply
- **B** - Twin compressor system (twin circuit)
- **G** - Digital compressor system (single)
- **V** - Vertical discharge fans

DIMENSIONS (mm)

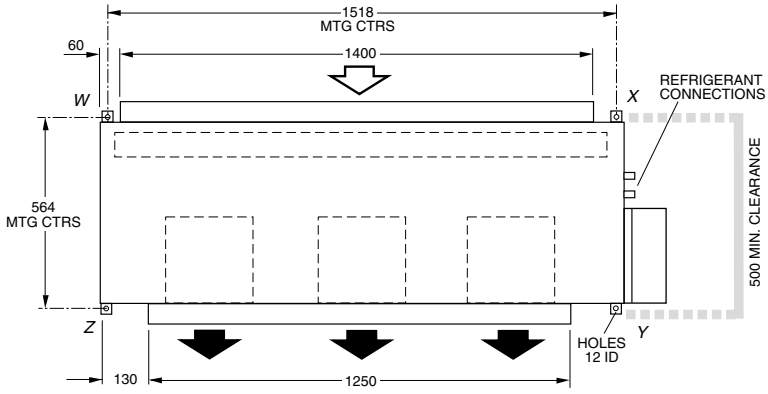
Not to Scale

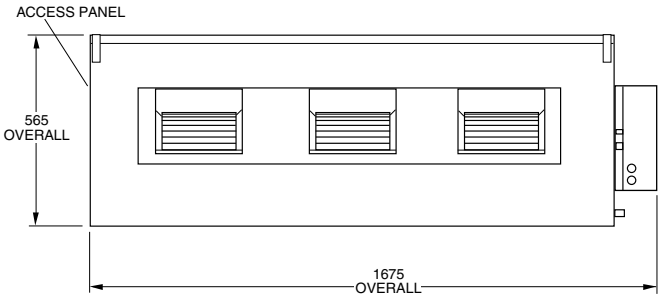
ISD 298KB Indoor Unit

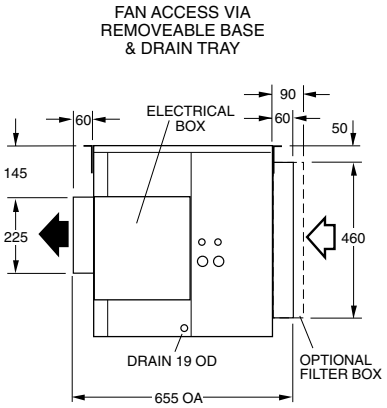


CORNER LOADS (kg)			
W	X	Y	Z
23	29	35	29

Net Weight 116 kg
Shipping Weight 119 kg







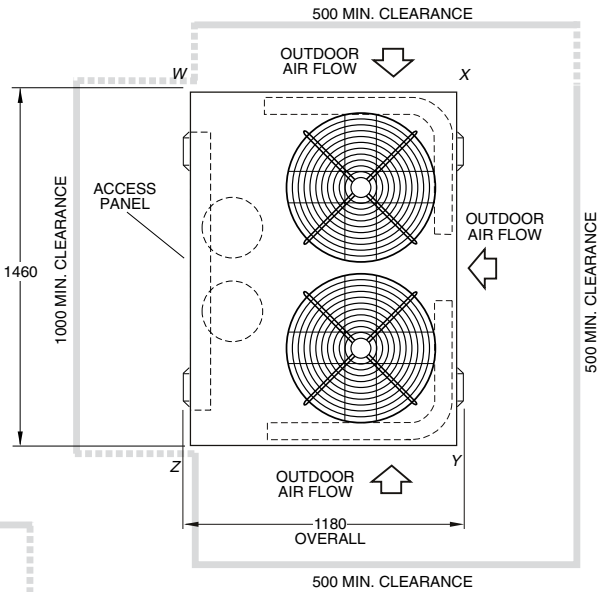
OSA 298RKTB Outdoor Unit
OSA 298RKTBG

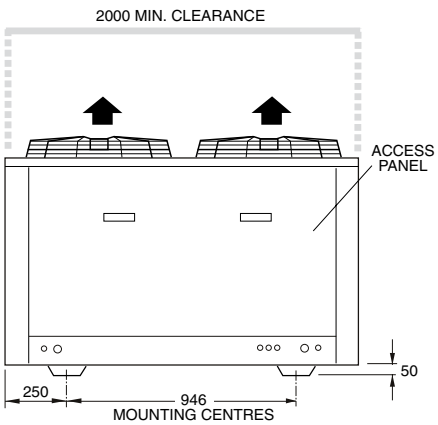
CORNER LOADS (kg)			
W	X	Y	Z
92	50	50	92

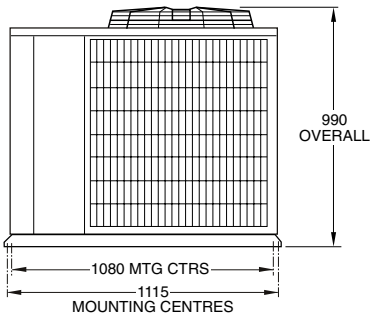
Net Weight 285 kg
Shipping Weight 330 kg

Recommended Pipe Line Sizes

Liquid (x2): 13 mm OD
Suction (x2): 22 mm OD







Note

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

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