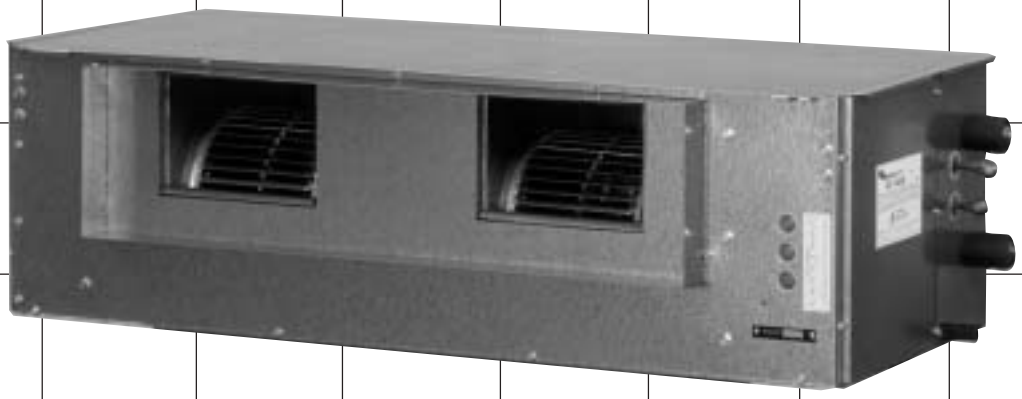
ENERGY EFFICIENT

temperzone

ISD 146QB / OSA 146B

Technical Data

Ducted Single Phase
Split System Air Conditioner



EXTRA LONG LIFE EPOXY COATED OUTDOOR COIL

Nominal Cooling Capacity

14.6 kW

Twin System Enables Staging

JUNE 2003

ISD 146QB / OSA 146B DUCTED SINGLE PHASE SPLIT SYSTEM AIR CONDITIONER

GENERAL

ISD 146QB - Indoor unit usable for reverse cycle or cooling only
OSA 146B - A general designation for outdoor unit
OSA 146CB - Outdoor unit, cooling only version
OSA 146RB - Outdoor unit, reverse cycle version

The ISD indoor unit, together with its associated OSA outdoor unit, provides a single phase, twin system, 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.

The twin system outdoor and indoor units together provide the facility for capacity control (staging) or staggered starting. The second compressor starts only when required to meet the current load conditions, thereby lowering operating costs.

Alternatively, the outdoor unit can be connected to two independently controlled indoor units of half capacity, thereby providing the ability to service two zones instead of just one. Refer to separate **temperzone** pamphlets for performance data of other suitable indoor units, e.g. ISD 75Q, ISDL 71Q, GME 222 or ISK 73

Air Flow Selection

The nominal indoor air flow and temperature /humidity conditions meet ASHRAE rating standards (incl. 50%RH). 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

Efficient. The outdoor unit includes two high efficiency scroll compressors. 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.

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 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. 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 for all weather protection (IP45). 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.

OPTIONAL EQUIPMENT

Outdoor Unit:
1. **temperzone** HP Fan Speed Controller (4 amp) - recommended where cooling is required in below 20°C ambient conditions for long periods of time.
2. Wall mounting brackets.
3. Quick Start Soft Starter for lowering starting current.

Indoor Unit:
1. Filter box - integrated return air spigot and washable filter (rated EU2).
2. **temperzone** TTS-10 Wall Thermostat kit
3. Spring Mounting Kit.
4. 3 kW electric booster heater box - complete with safety cutouts required to meet AS/NZS 3350.2.40 1997.

SAFETY FEATURES

1. HP switches (auto reset), LP switches (auto reset) and anti-rapid cycle timers for compressor protection. The compressors also have internal overload protection.
2. Circuit breaker control circuits.
3. Time-and-temperature controlled electronic de-ice switches prevents icing up of the outdoor coil during heating cycle (OSA 146RB only).

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 of up to 30 m per system.

Max. height separations between units are :
Reverse Cycle systems:
Outdoor unit above indoor unit : 12 m
Outdoor unit below indoor unit : 12 m.
Cooling Only systems:
Outdoor unit above indoor unit : 18 m
Outdoor unit below indoor unit : 12 m.

For extended line lengths contact your nearest **temperzone** sales office for additional details on piping requirements.

The OSA 146 B is shipped from the factory with a charge of HCFC-22 (R22) refrigerant sufficient for a 10 m line length per system. 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 flared pipe connections.

WIRING

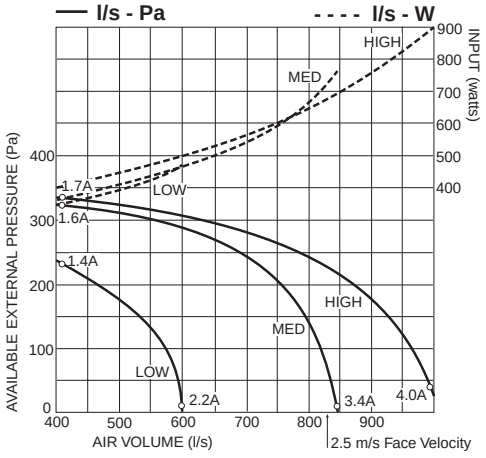
The electrical supply required (including voltage fluctuation limits) is:
1 phase 200-252 V a.c. 50 Hz with neutral and earth. A control panel, located in the outdoor unit, is fully wired ready to accept the main power supply.

The manufacturer operates a quality management system that conforms to international standard ISO 9002.

AIR HANDLING

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

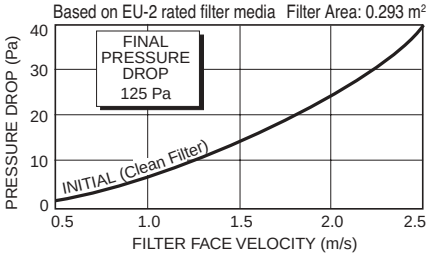
As filters are optional, the fan air flows given are for units installed without filters.



ELECTRICAL

E.E.R. (cooling)	2.9
Indoor Fan Full Load Amps	5.7 A
Running Amps (Total System)	17 A (x2)
Recommended External Fuse	32 A (x2)

FILTER PRESSURE DROP



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 146QB / OSA 146B	HIGH	875	17	23	14.8	10.6	14.4	10.4	14.0	10.2	13.6	10.2	13.2	10.0	12.8	9.8
			19	27	15.8	12.2	15.4	12.0	14.8	11.8	(14.6)	11.8	14.0	11.6	13.6	11.4
			21	31	16.6	13.8	16.2	13.6	15.8	13.4	15.4	13.4	15.0	13.2	14.4	13.0

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

NOTE: An optional Outdoor Unit fan speed controller is available and is recommended where cooling is required in below 20°C ambient conditions for long periods of time.

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
10	16	2 %	4 %	6.5 %	9 %	13 %
10	19	-	-	3 %	4 %	6 %

Additional Pipe Length to allow per Bend		
Suction Pipe Size OD	16 mm	19 mm
Long 90° Radius (2 x pipe dia.)	0.3 m	0.4 m

HEATING CAPACITY (kW)

G = Gross Heating Capacity kW, based on nominal air flow of 875 l/s.
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. -4 G	-4 N	-2 G	-2 N	0 G	0 N	2 G	2 N	4 G	4 N	6 G	6 N	8 G	8 N	10 G	10 N
ISD 146QB / OSA 146RB	15	9.8	8.8	10.4	9.4	11.2	10.0	11.8	10.2	12.6	10.6	13.4	12.2	14.2	14.2	14.8	14.8
	20	9.6	8.6	10.2	9.2	10.8	9.6	11.6	10.0	12.2	10.4	13.2	12.0	(14.0)	14.0	14.4	14.4
	25	9.2	8.2	9.8	8.8	10.6	9.4	11.2	9.6	11.8	10.0	12.6	11.6	13.4	13.4	14.0	14.0

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	600	63	60	60	62	58	55	51
MED	800	71	67	68	67	67	63	61
HIGH	900	75	70	71	70	72	67	65

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					
HIGH	900	64	59	60	59	61	56	54

* 1 metre of 25 mm insulated duct

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 146B	MED	64	72	66	62	58	51	45
	HIGH	66	73	69	64	61	54	47

SPL @ 3 m dB(A)	OCTAVE BAND FREQ. Hz 125	250	500	1 k	2 k	4 k
	SOUND PRESSURE LEVELS dB					
48	56	50	46	42	35	39
50	57	53	48	45	38	41

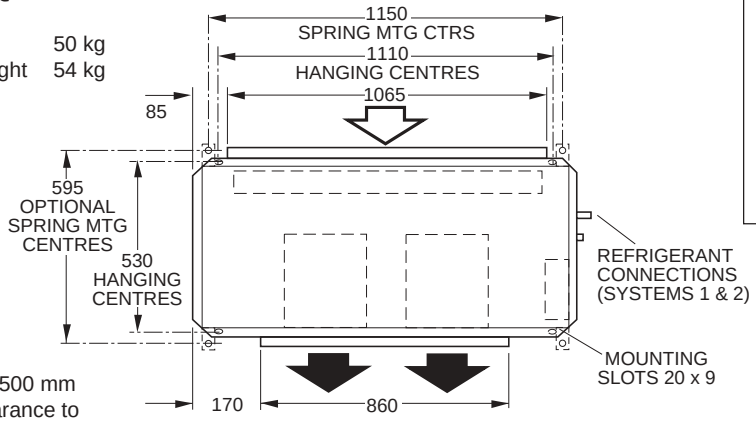
Sound Pressure Level (SPL) in decibels re 20 µPa.

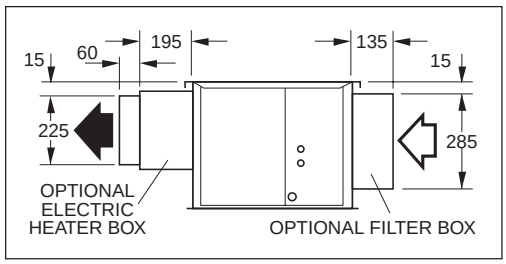
DIMENSIONS (mm)

Not to Scale

ISD 146QB Indoor Unit

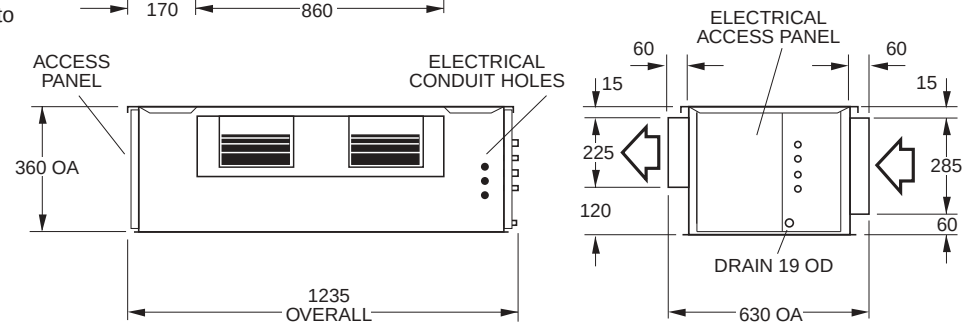
Net Weight	50 kg
Shipping Weight	54 kg





Note : Allow 500 mm minimum clearance to each access panel.

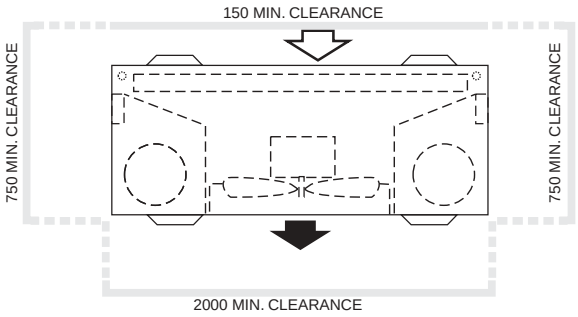
FAN ACCESS VIA
REMOVEABLE BASE
& DRAIN TRAY



OSA 146B Outdoor Unit

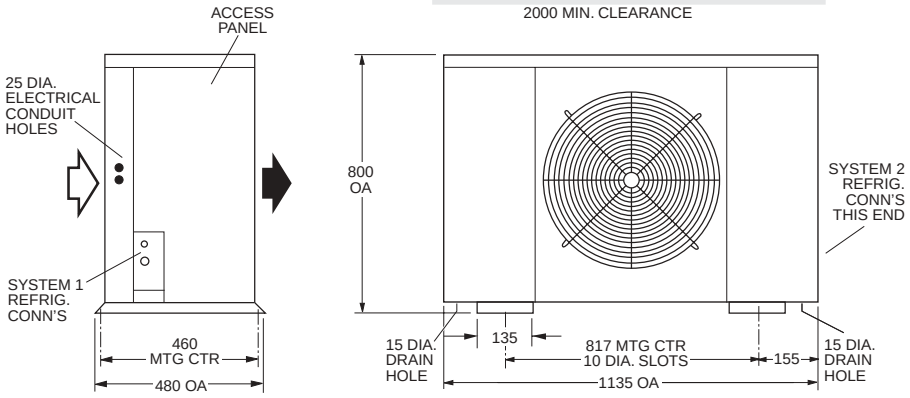
	OSA 146CB	OSA 146RB
Net Weight	139 kg	142 kg
Shipping Weight	151 kg	154 kg

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



Recommended Pipe Sizes

Suction (x2): 16 mm OD
Liquid (x2): 10 mm OD



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Available from

temperzone limited
Head Office, Auckland : 38 Tidal Rd, Mangere, N.Z.
Private Bag 93303, Otahuhu, NEW ZEALAND.
Email sales@temperzone.co.nz Website: www.temperzone.biz

temperzone australia pty ltd
Head Office, Sydney : 7A Bessemer St
PO Box 6448, Delivery Centre, Blacktown, NSW 2148,
AUSTRALIA. Email sales@temperzone.com.au

AUCKLAND
Ph. 0-9-279 5250
Fax 0-9-275 5637

SYDNEY
Ph. (02) 8822-5700
Fax (02) 8822-5711

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Ph. (03) 9551-7422
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Fax HK 2834 0050

TOWNSVILLE
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Fax (03) 6272-0506

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