temperzone
QUALITY AIR CONDITIONING

Ducted Three Phase Split System Air Conditioner

Technical Data

ISD / OSA 780B, 920B

Twin System Enables Staging

Extra Long Life Epoxy Coated Outdoor Coil

Nominal Cooling Capacity
78 kW 92 kW

JUNE 2006

ISD / OSA 780B, 920B DUCTED THREE PHASE SPLIT SYSTEM AIR CONDITIONER

GENERAL

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

The ISD indoor unit, together with its associated OSA outdoor unit, provides a three 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 commercial premises, e.g. banks, supermarkets, shopping malls, food outlets, auditoriums and restaurants.

Air Flow Selection

The nominal indoor air flow and temperature /humidity conditions meet AS/NZS 3823 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

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. Heat exchange coils incorporate inner grooved (rifled) tube for better heat transfer. Use of thermostatic expansion valves ensure the system remains efficient over a wide range of operating conditions.

Performance. Use of an adjustable pulley driven indoor fan motor enables fine tuning of the indoor unit to match the supply air requirements.

Quiet. The indoor unit's generous insulation ensures a quiet unit.

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 and drain tray are constructed from high grade galvanised steel - polyester powder coated for increased durability. 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 polyester powder coated drain tray.

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.

OPTIONAL EQUIPMENT

Outdoor Unit:
1. **temperzone** HP Fan Speed Controller - recommended where cooling is required in below 20°C ambient conditions for long periods of time.
2. Coil protection guards.

Indoor Unit:
1. Vertical projection supply air outlet.
2. Filters (rated EU4) integrated with return air spigot - six 50 mm deep pleated filters
3. 18 kW electric booster heat (factory fitted) - complete with safety cutouts required to meet AS/NZS 3350.2.40 1997.

SAFETY FEATURES

1. HP switch (auto reset), LP switch (auto reset) and an anti rapid cycle timer for compressor protection. The compressor also has internal and external overload protection.
2. Circuit breaker control circuits.
3. Time-and-temperature controlled electronic de-ice switch prevents icing up of the outdoor coil during heating cycle (OSA ✳R only).
4. Crankcase heaters prevent liquid refrigerant condensing in the compressors during the 'off' cycle.
5. Phase rotation protection device.

COMPRESSORS

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.

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

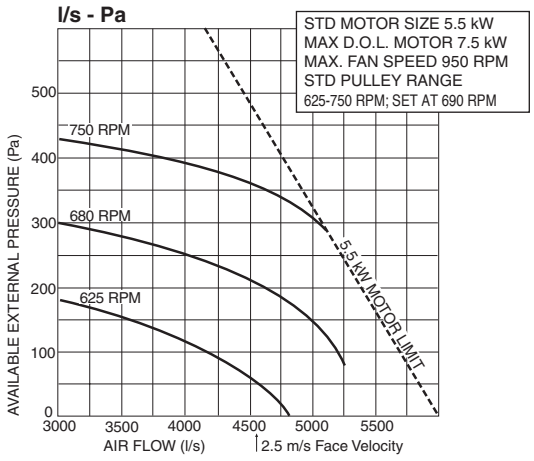
The OSA unit is shipped from the factory with a holding charge of HCFC-22 (R22) refrigerant. Liquid and suction service valves are provided. Thermostatic expansion devices control the flow of refrigerant. The matched indoor unit is shipped with a holding charge of nitrogen. Both units have one flare and one brazed pipe connection.

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

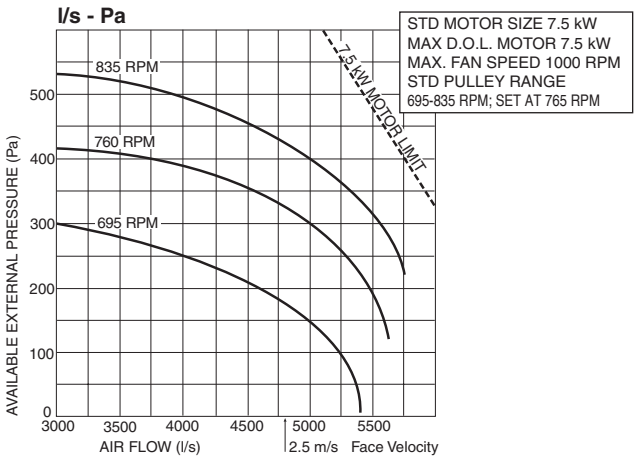
AIR HANDLING

Note: Refer to back page for filter pressure drop graph

ISD 780QB



ISD 920QB



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 AIR FLOW 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 780QB / OSA 780B	4750	15	21	75.9	58.5	74.1	57.7	72.0	56.8	69.9	55.9	67.5	54.8	65.0	53.7
		17	23	80.8	58.1	78.6	57.2	76.5	56.3	74.2	55.5	72.0	54.5	69.7	53.6
		19	27	85.5	66.8	83.2	66.0	80.9	65.1	(78.7)	64.2	76.3	63.3	73.9	62.5
		21	31	90.4	75.4	88.1	74.6	85.7	73.8	83.2	72.9	80.8	72.1	78.3	71.2
ISD 920QB / OSA 920B	5400	15	21	89.5	71.7	87.0	70.6	84.5	69.5	81.8	68.3	79.0	67.1	76.3	65.9
		17	23	95.1	71.6	92.5	70.5	89.7	69.4	87.0	68.2	84.3	67.2	81.5	66.0
		19	27	100.6	82.8	97.8	81.7	94.9	80.7	(92.0)	79.6	89.2	78.5	86.3	77.4
		21	31	106.3	93.9	103.3	92.9	100.3	91.8	97.4	90.8	94.3	89.8	91.4	88.8

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. Bracketed figures apply to ISD/OSA 920B.

Pipe Size (mm) Liquid	Suction	Equivalent Line Pipe Length (m) 10	20	30	40
16 (19)	35	1 % (1.5 %)	2 % (3 %)	3 % (5 %)	4 % (6.5 %)
16 (19)	41	- (1 %)	1 % (2 %)	2 % (3 %)	3 % (4 %)

Additional Pipe Length to allow per Bend		
Suction Pipe Size OD	41 mm	35 mm
Long 90° Radius (2 x pipe dia.)	0.80 m	0.76 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)

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 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 780QB / OSA 780RB	15	53.3	48.0	57.7	51.9	61.7	55.5	65.6	57.8	69.6	58.8	74.8	67.3	79.6	78.8	83.5	83.5
	20	52.3	47.0	56.6	50.9	60.5	54.4	64.4	56.6	68.3	57.7	73.3	66.0	(78.0)	77.2	81.9	81.9
	25	50.3	45.3	54.5	49.0	58.2	52.4	62.0	54.5	65.7	55.5	70.6	63.5	75.1	74.4	78.9	78.9
ISD 920QB / OSA 920RB	15	62.9	55.0	68.0	58.5	72.7	60.0	77.4	61.2	82.1	62.0	88.2	68.5	93.8	73.2	98.5	98.5
	20	61.6	53.9	66.7	57.4	71.3	58.8	75.9	60.0	80.5	60.8	86.5	63.1	(92.0)	71.8	96.6	96.6
	25	59.4	51.9	64.2	55.2	68.7	56.6	73.1	57.7	77.5	58.5	83.3	60.8	88.6	69.1	93.0	93.0

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, at nominal airflow.

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 780QB	750 RPM	3500	82	81	82	79	77	76	73
	750 RPM	4750	86	87	85	82	80	80	77
ISD 920QB	715 RPM	3500	80	81	79	75	73	74	72
	835 RPM	5400	86	86	84	82	81	80	77

Outdoor Unit

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

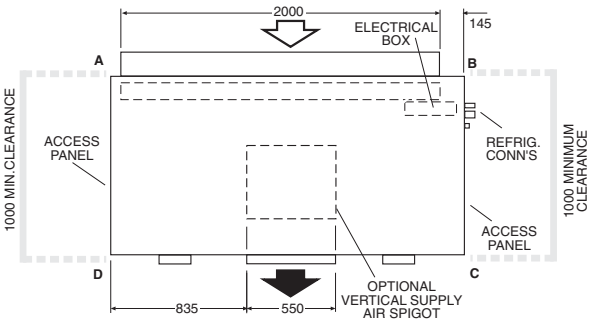
MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQ. Hz 125	250	500	1 k	2 k	4 k	SPL @ 3 m dB(A)	OCTAVE BAND FREQ. Hz 125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS dB							SOUND PRESSURE LEVELS dB					
OSA 780B	LOW	86	82	81	79	83	81	76	70	65	65	63	67	65	60
	HIGH	87	85	81	81	84	81	76	71	66	65	65	68	65	60
OSA 920B	LOW	86	81	80	79	83	81	76	70	64	64	63	67	65	60
	HIGH	87	82	82	81	84	81	76	71	63	66	65	68	65	60

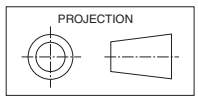
DIMENSIONS (mm)

Not to Scale

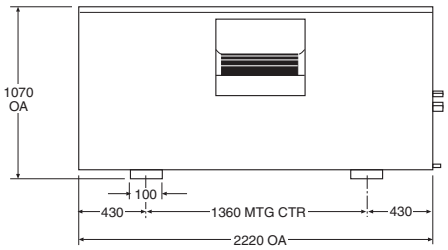
SPECIFICATIONS

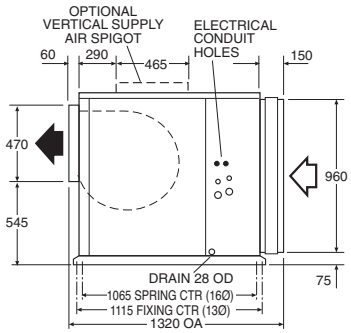
ISD 780QB, 920QB Indoor Unit





Corner Loads (kg)			
A	B	C	D
96	120	78	55
108	134	87	60

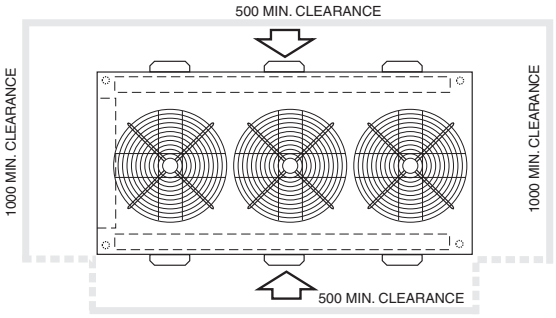


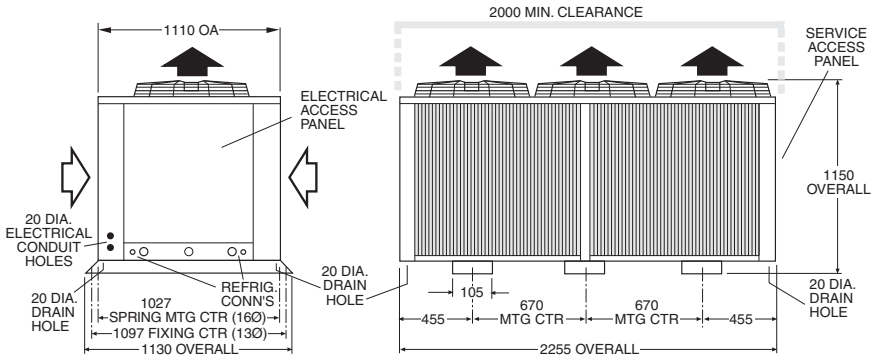


SYSTEM	ISD/OSA:		780B	920B
Cooling Capacity *1		kW	78.7	92.0
Heating Capacity *2		kW	78.0	92.0
E.E.R. (cooling)			2.69	2.74
Air Flow *3		l/s	4750	5400
Sound Levels:	- Indoor Unit		82	80
(SWL)	- Outdoor Unit		86	86
Power Source *4			3 ph. 400V ac 50Hz	
Indoor Fan Full Load Amps/ph.			10.3	15
Running Amps/ph. (Total Sys.)			54	64
Recommended External Fuse			100 A/ph.	100 A/ph.
Refrigerant			HCFC-22 (R22)	
Standard Line Length		m	30	30
Max. Extended Line Length		m	70	70
Vertical Separation Limits (m):				
- Outdoor unit above indoor unit			18	18
- Outdoor unit below indoor unit			12	12
Recommended Interconnecting Pipe Sizes: (mm OD)	- Suction		35 (x2)	35 (x2)
	- Liquid		16 (x2)	19 (x2)
Finish:	- Indoor Unit		zinc galvanised steel	
	- Outdoor Unit		polyester powder coat	
Weights (net/shipping) (kg):				
	- Indoor Unit		349 / 384	389 / 424
	- Outdoor Unit		520 / 550	570 / 600

OSA 780B, 920B Outdoor Unit

Point loads are approximately the same at each corner





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

Notes:

*1 Nominal Cooling Capacity at AS/NZS 3823 conditions:
Indoor Entering Air Temp. 27°C d.b., 19°C w.b.;
Outdoor Entering Air Temp. 35°C d.b.

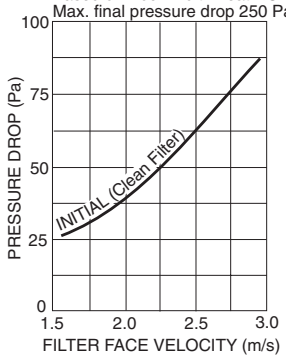
*2 Nominal Heating Capacity (reverse cycle systems) at AS/NZS 3823 conditions:
Indoor Entering Air Temp. 21°C d.b.;
Outdoor Ent. Air Temp. 7°C d.b., 6°C w.b.

*3 Supply air flow at nominal conditions.

*4 Voltage fluctuation limits 342–462 V.

OPTIONAL FILTERS - PRESSURE DROP

Based on Koch Multi-Pleat HC filter.
Max. final pressure drop 250 Pa.



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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CHRISTCHURCH
Ph. 0-3-379 3216
Fax 0-3-379 5956

SINGAPORE
Ph. SNG 6733 4292
Fax SNG 6235 7180

NEWCASTLE
Ph. (02) 4962-1155
Fax (02) 4961-5101

HOBART
Ph. (03) 6272-0066
Fax (03) 6272-0506

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