

Ducted Three Phase Split System Air Conditioner

Technical Data
ISD / OSA 250 – 410



Staging Systems Included

**Extra Long Life
Epoxy Coated Outdoor Coil**

**Nominal Cooling Capacity
26 kW – 41 kW**

ISD / OSA 250 - 410 – DUCTED SPLIT SYSTEM AIR CONDITIONERS

GENERAL

- ISD *Q** - Indoor unit usable for reverse cycle or cooling only
- OSA** - A general designation for outdoor unit
- OSA *C** - Outdoor unit, cooling only version
- OSA *R** - Outdoor unit, reverse cycle version
- OSA *CA** - Cooling only version with tandem compressor system
- OSA *RA** - Reverse cycle version with tandem compressor system

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. offices, motels, shops and restaurants.

The OSA 260 A, 290 A and 410 A have tandem compressor (single circuit) systems, providing 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.

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. 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. A dynamically balanced forward curved fan with a multi-speed motor enables fine tuning of the indoor unit to match the supply air requirements. Each 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 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 is constructed from high grade galvanised steel - polyester powder coated for all weather protection. 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 includes a polyester powder coated drain tray.

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 either 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 general fault indicator is included for interface to external systems.

OPTIONAL ACCESSORIES

Outdoor Unit:

1. LP switch.
2. Fault indicating auxiliary relay board.
3. Coil protection guard.

Indoor Unit:

1. Filter box - integrated return air spigot and washable filter (rated EU2).
2. HAN-L5 or HAN-L6 Controller
3. Spring Mounting Kit.
4. 9 kW electric booster heat kit (factory fitted) - complete with safety cutouts required to meet AS/NZS 3350.2.40 1997.

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 (OSA 127R only).
5. Frost protection on cooling cycle.
6. Sensor fault indication.
7. Crankcase heater prevents liquid refrigerant condensing in the compressors during the 'off' cycle.
8. Compressor minimum run time to ensure oil return.
9. Phase rotation protection device.

COMPRESSOR

Each hermetic type compressor is suction gas cooled and supported on rubber mounts to minimise vibration.

REFRIGERATION PIPING

The standard unit allows for a line length of up to 30 m (tandem sys.) or 50 m (others).

Max. height separations between units are :
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 Outdoor 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, and two brazed pipe connections. The outdoor unit has one flare and one brazed pipe connection.

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.

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

PIPE LENGTH CAPACITY LOSS

ON COOLING CYCLE DUE TO PRESSURE DROP

Note: Loss percentage is approximate only. No allowance made for vertical piping.

System	Pipe Size (mm)		Equivalent Line Pipe Length (m)			
	Liquid	Suction	10	20	30	40
ISD / OSA 250	16	28	1 %	2.5 %	3.5 %	5 %
	16	35	-	1 %	1.5 %	2 %
ISD / OSA 260 A	16	28	1 %	2.5 %	3.5 %	5 %
	16	35	-	1 %	1.5 %	2 %
ISD / OSA 290 A	16	28	1 %	2.5 %	4 %	6 %
	16	35	-	1 %	1.5 %	3 %

System	Pipe Size (mm)		Equivalent Line Pipe Length (m)			
	Liquid	Suction	10	20	30	40
ISD / OSA 300	16	28	1 %	2.5 %	4 %	6 %
	16	35	-	1 %	1.5 %	3 %
ISD / OSA 390	16	35	1 %	2 %	3 %	4 %
ISD / OSA 410 A	16	35	1 %	2 %	3 %	4 %

Additional Pipe Length to allow per Bend		
Suction Pipe Size OD	28 mm	35 mm
Long 90° Radius (2x dia.)	0.6 m	0.8 m

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	INDOOR FAN		INDOOR COIL E.A.T.		OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B.											
	SPEED	AIR I/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 250Q / OSA 250	MED	1500	15	21	25.8	18.5	25.1	18.2	24.5	17.9	23.8	17.6	23.0	17.3	22.2	16.9
			17	23	27.1	19.2	26.4	18.9	25.6	18.6	24.9	18.3	24.1	18.0	23.4	17.6
			19	27	28.6	21.9	27.9	21.7	27.1	21.4	26.3	21.1	25.5	20.8	24.7	20.5
			21	31	30.2	24.7	29.4	24.4	28.6	24.1	27.8	23.8	27.0	23.6	26.2	23.3
ISD 250Q / OSA 260 A	MED	1500	15	21	25.1	19.1	24.4	18.9	23.8	18.5	23.1	18.2	22.3	17.9	21.5	17.6
			17	23	26.6	19.0	25.9	18.7	25.2	18.4	24.5	18.1	23.7	17.8	23.0	17.5
			19	27	28.1	21.8	27.4	21.5	26.7	21.2	26.0	20.9	25.2	20.7	24.4	20.4
			21	31	29.7	24.5	29.0	24.3	28.2	24.0	27.5	23.7	26.7	23.5	25.9	23.2
ISD 300Q / OSA 290 A	HIGH	1800	15	21	28.1	21.6	27.4	21.2	26.6	20.9	25.8	20.5	24.9	20.1	24.0	19.8
			17	23	31.5	22.0	30.7	21.7	29.8	21.3	28.9	21.0	28.1	20.6	27.1	20.3
			19	27	33.4	25.2	32.5	24.9	31.6	24.6	30.7	24.2	29.8	23.9	28.9	23.5
			21	31	35.3	28.4	34.4	28.0	33.5	27.7	32.5	27.4	31.6	27.1	30.6	26.7
ISD 300Q / OSA 300	HIGH	1800	15	21	30.4	22.5	29.6	22.2	28.8	21.8	28.0	21.5	27.0	21.1	26.1	20.7
			17	23	32.4	22.4	31.6	22.1	30.7	21.7	29.8	21.3	28.9	21.0	28.0	20.6
			19	27	34.3	26.6	33.4	25.2	32.5	24.9	31.5	24.5	30.6	24.2	29.6	23.8
			21	31	36.3	28.7	35.3	28.4	34.3	28.0	33.4	27.7	32.4	27.4	31.4	27.0
ISD 390Q / OSA 390	HIGH	2340	15	21	37.7	28.5	36.6	28.0	35.6	27.6	34.6	27.1	33.4	26.6	32.2	26.1
			17	23	39.9	27.7	38.9	27.3	37.8	26.8	36.7	26.4	35.6	26.0	34.5	25.5
			19	27	42.2	31.7	41.1	31.2	40.0	30.8	39.0	30.4	37.8	30.0	36.6	29.5
			21	31	44.7	35.5	43.5	35.1	42.4	34.7	41.2	34.3	40.0	33.9	38.8	33.5
ISD 390Q / OSA 410 A	HIGH	2340	15	21	40.1	29.5	38.9	29.0	37.7	28.4	36.4	27.9	35.2	27.4	33.9	26.8
			17	23	42.9	31.2	41.5	30.7	40.1	30.1	38.7	29.5	37.3	29.0	35.8	28.3
			19	27	45.4	36.0	44.0	35.4	42.5	34.8	41.0	34.3	39.5	33.7	37.9	33.1
			21	31	48.0	40.6	46.5	40.0	44.9	39.5	43.3	38.9	41.7	38.4	40.1	37.8

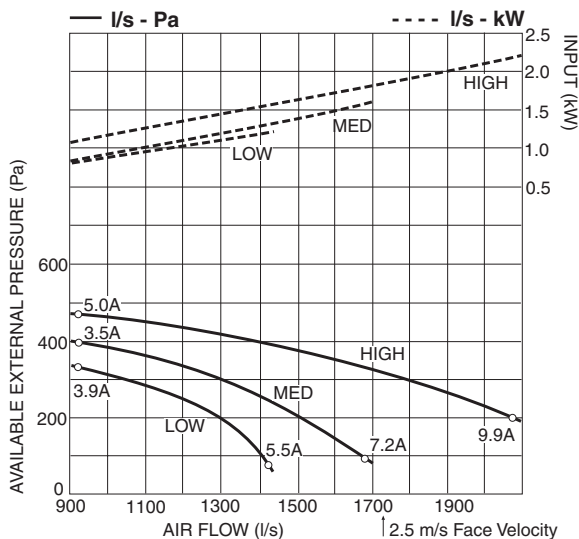
Indoor Air Flow Correction Factors @ nominal conditions

	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

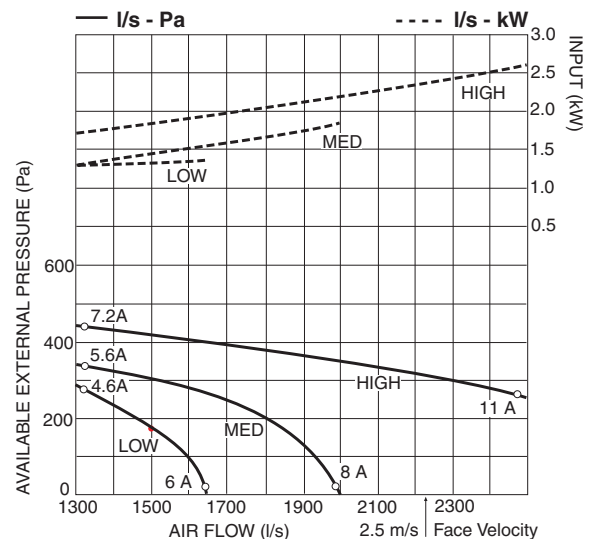
AIR HANDLING

Note: In a free blow or low resistance application, beware of exceeding indoor fan motor's full load amp limit (refer back page). As filters are optional, the fan air flows given are for units installed without filters. Refer to back page for filter pressure drop data.

ISD 250Q, 300Q



ISD 390Q



PERFORMANCE DATA

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		- 3		- 1		1		3		5		7		9	
		G	N	G	N	G	N	G	N	G	N	G	N	G	N	G	N
ISD 250Q / OSA 250R	15	17.8	15.5	19.2	16.5	20.6	17.0	21.9	17.3	23.2	17.5	24.9	19.4	26.5	20.7	27.8	27.8
	20	17.4	15.2	18.9	16.2	20.2	16.6	21.5	16.9	22.8	17.2	24.4	17.8	26.0	20.3	27.3	27.3
	25	16.8	14.7	18.2	15.6	19.4	16.0	20.7	16.3	21.9	16.5	23.5	17.2	25.0	19.5	26.3	26.3
ISD 250Q / OSA 260RA	15	18.9	16.6	20.5	17.6	21.9	18.1	23.3	18.4	24.7	18.7	26.6	20.6	28.3	22.0	29.7	29.7
	20	18.6	16.2	20.1	17.3	21.5	17.7	22.9	18.1	24.2	18.3	26.0	19.0	27.7	21.6	29.1	29.1
	25	17.9	15.6	19.3	16.6	20.7	17.1	22.0	17.4	23.3	17.6	25.1	18.3	26.7	20.8	28.0	28.0
ISD 300Q / OSA 290RA	15	19.8	17.3	21.4	18.4	22.9	18.9	24.4	19.3	25.9	19.5	27.8	21.6	29.6	23.1	31.1	31.1
	20	19.4	17.0	21.0	18.1	22.5	18.5	23.9	18.9	25.4	19.2	27.3	19.9	29.0	22.6	30.5	30.5
	25	18.7	16.4	20.2	17.4	21.6	17.9	23.0	18.2	24.4	18.4	26.3	19.2	27.9	21.8	29.3	29.3
ISD 300Q / OSA 300R	15	21.4	18.7	23.1	19.9	24.7	20.4	26.3	20.8	27.9	21.1	30.0	23.3	31.9	24.9	33.5	33.5
	20	21.0	18.3	22.7	19.5	24.3	20.0	25.8	20.4	27.4	20.7	29.4	21.5	31.3	24.4	32.9	32.9
	25	20.2	17.7	21.9	18.8	23.4	19.3	24.9	19.6	26.4	19.9	28.3	20.7	30.1	23.5	31.6	31.6
ISD 390Q / OSA 390R	15	25.2	22.1	27.3	23.5	29.2	24.1	31.1	24.5	32.9	24.9	35.4	27.5	37.6	29.4	39.5	39.5
	20	24.7	21.6	26.8	23.0	28.6	23.6	30.4	24.0	32.3	24.4	34.7	25.3	36.9	28.8	38.7	38.7
	25	23.8	20.8	25.8	22.2	27.5	22.7	29.3	23.2	31.1	23.5	33.4	24.4	35.5	27.7	37.3	37.3
ISD 390Q / OSA 410RA	15	28.0	24.5	30.3	26.1	32.4	26.7	34.5	27.3	36.6	27.6	39.3	30.5	41.8	32.6	43.9	43.9
	20	27.5	24.0	29.7	25.6	31.8	26.2	33.8	26.7	35.9	27.1	38.5	28.1	41.0	32.0	43.1	43.1
	25	26.5	23.1	28.6	24.6	30.6	25.2	32.6	25.7	34.5	26.1	37.1	27.1	39.5	30.8	41.5	41.5

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 250Q & ISD 300Q	LOW	1270	66	65	63	63	62	59	55
	MED	1500	71	70	68	68	66	64	61
	HIGH	1800	78	76	75	75	73	71	69
ISD 390Q	LOW	1600	70	69	68	68	65	60	58
	MED	1900	74	73	72	72	69	65	63
	HIGH	2340	79	77	77	77	74	70	68

Supply Air Outlet + Insulated Duct *

ISD 250Q,300Q	HIGH	1800	68	68	69	67	62	58	56
ISD 390Q	HIGH	2340	69	69	71	69	63	57	55

* 1 metre of 25 mm insulated duct

Outdoor Unit

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

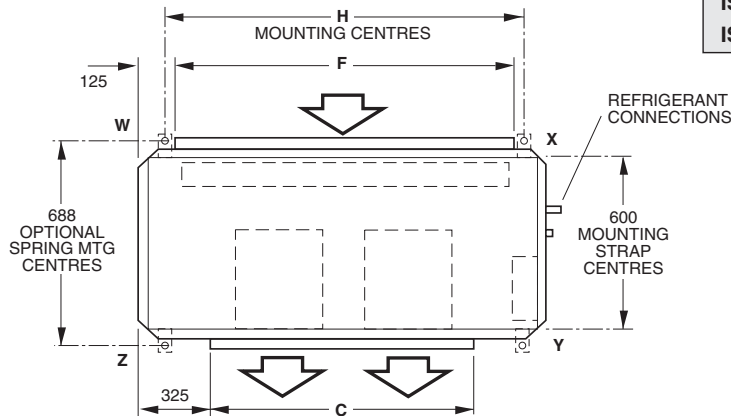
MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQ. Hz						SPL @ 3 m dB(A)	OCTAVE BAND FREQ. Hz					
			125	250	500	1 k	2 k	4 k		125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS dB							SOUND PRESSURE LEVELS dB					
OSA 250	MED	73	76	75	71	69	64	59	57	60	59	55	53	48	43
	HIGH	75	78	76	72	70	66	60	59	62	60	56	54	50	44
OSA 260A	MED	75	80	76	73	70	66	60	59	64	60	57	54	50	44
	HIGH	76	82	78	74	71	66	60	60	66	62	58	55	50	45
OSA 290A	LOW	81	83	79	78	77	73	67	65	67	63	62	61	57	51
	HIGH	82	85	80	78	78	73	67	66	69	64	62	62	57	51
OSA 300	LOW	81	83	79	78	77	73	67	65	67	63	62	61	57	51
	HIGH	82	85	80	78	78	73	67	66	69	64	62	62	57	51
OSA 390	LOW	82	86	81	78	77	76	70	66	70	65	62	61	60	54
	HIGH	83	88	82	79	78	77	71	67	72	66	63	62	61	55
OSA 410A	LOW	82	86	81	78	77	76	70	66	70	65	62	61	60	54
	HIGH	83	88	82	79	78	77	71	67	72	66	63	62	61	55

DIMENSIONS (mm)

Not to Scale

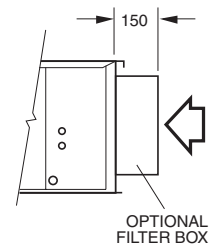
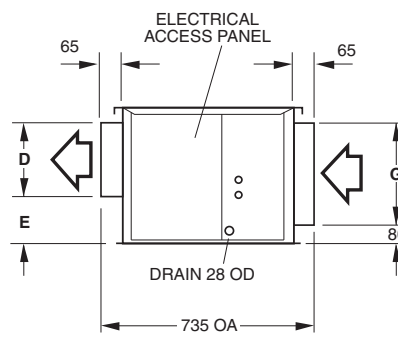
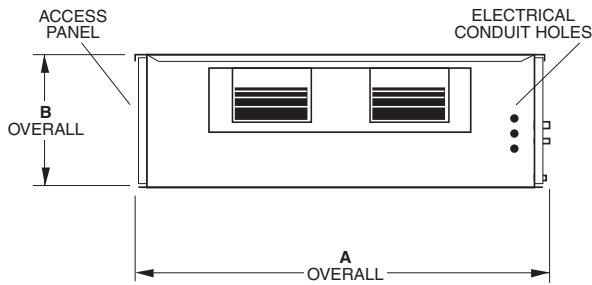
ISD 250Q, 300Q, 390Q Indoor Unit

MODEL	A	B	C	D	E	F	G	H
ISD 250	1625	575	975	300	240	1375	425	1518
ISD 300	1625	575	975	300	240	1375	425	1518
ISD 390	1680	700	1030	310	355	1430	555	1573

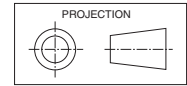


MODEL	CORNER LOADS (kg)			
	W	X	Y	Z
ISD 250Q	29	35	31	25
ISD 300Q	29	35	31	25
ISD 390Q	37	41	32	35

Note : Allow 1 m minimum clearance to each access panel.

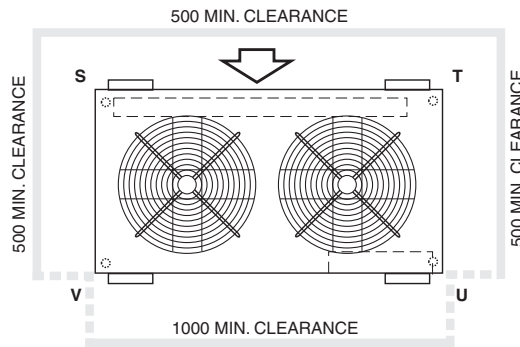


OSA 250, 260A, 290A, 300, 390, 410A Outdoor Unit



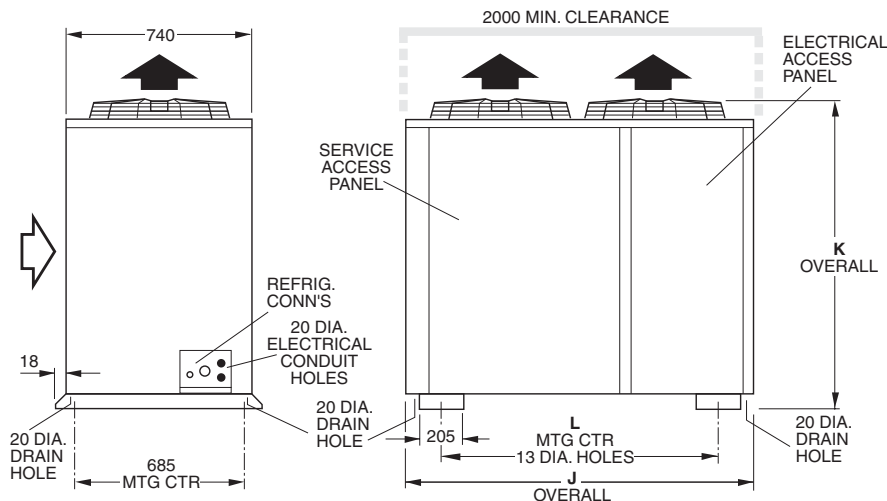
MODEL	CORNER LOADS (kg)						
	J	K	L	S	T	U	V
OSA 250	1400	1060	1084	50	70	63	43
OSA 260A	1400	1060	1084	53	67	68	54
OSA 290A	1400	1140	1084	53	68	69	54
OSA 300	1400	1140	1084	50	70	63	43
OSA 390	1730	1140	1110	67	80	77	63
OSA 410A	1730	1140	1110	60	83	83	61

OSA 250 and 260A have low profile fans; refer cover photo.



Note

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



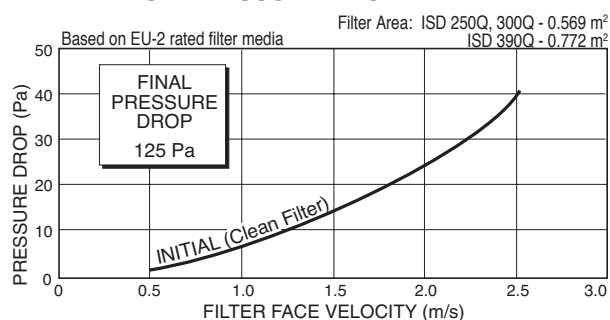
SPECIFICATIONS

SYSTEM	Indoor Unit : Outdoor Unit :	ISD 250Q OSA 250	ISD 250Q OSA 260 A*6	ISD 300Q OSA 290 A*6	ISD 300Q OSA 300	ISD 390Q OSA 390	ISD 390Q OSA 410 A*6
Cooling Capacity *1	kW	26.3	26.0	30.7	31.5	39	41
Heating Capacity *2 (OSA*R)	kW	26.0	27.7	29.0	31.3	37	41
E.E.R. (Cooling)		2.80	2.76	2.69	2.73	2.69	2.68
Air Flow *3	l/s	1500	1500	1800	1800	2340	2340
Sound Levels (SWL) *4:	- Indoor Unit	71	71	78	78	79	79
	- Outdoor Unit	74	74	81	81	82	82
Power Source *5		3 phase 400 V a.c. 50 Hz					
Indoor Fan Full Load Amps	A	6.3 (x2)	6.3 (x2)	6.3 (x2)	6.3 (x2)	6.3 (x2)	6.3 (x2)
Running Amps (Total System)	A/ph.	17 / 16 / 16	15 / 17 / 16	17 / 17 / 21	20 / 18 / 18	21 / 23 / 21	24 / 24 / 24
Recommended External Fuse	A/ph.	32	32	32	32	50	50
Refrigerant		H C F C - 2 2 (R 2 2)					
Standard Line Length	m	50	30	30	50	50	30
Maximum Line Length	m	70	50	50	70	70	50
Vertical Separation Limits (m):	- Outdoor unit above Indoor unit	18	18	18	18	18	18
	- Outdoor unit below Indoor unit	12	12	12	12	12	12
Recommended Interconnecting Pipe Sizes (mm OD):	- Suction - Liquid	28 16	28 16	28 16	28 16	35 16	35 16
Finish:	- Indoor Unit	zinc galvanised steel					
	- Outdoor Unit	tan polyester powder coat					
Weights (net/shipping) (kg):	- Indoor Unit	120 / 145	120 / 145	120 / 145	120 / 145	145 / 175	145 / 175
	- Outdoor Unit	226 / 266	242 / 282	244 / 284	226 / 266	287 / 327	287 / 327

Notes:

- *1 Nominal Cooling Capacity 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 Nominal Heating Capacity (reverse cycle units only)
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 Power Levels (SWL) are measured at nominal cooling capacity conditions stated above.
- *5 Voltage fluctuation limits 342–462 V.
- *6 Tandem compressor (single circuit) model - enables staging and low start-up current.

FILTERS - PRESSURE DROP



temperzone limited

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