

**Ducted Three Phase  
Packaged Air Conditioner**

**Technical Data**  
**OPA 101, 150, 180**



**Extra Long Life  
Epoxy Coated Outdoor Coil**

**Nominal Cooling Capacity  
10.0 kW – 18.5 kW**

# OPA 101, 150, 180 – DUCTED PACKAGED ROOF TOP AIR CONDITIONERS

## GENERAL

- OPA** - A general designation  
**OPA \*C** - Cooling only version  
**OPA \*R** - Reverse cycle version

This OPA Series is a range of three phase packaged roof top air conditioners 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, offices, motels, shops, food outlets and restaurants.

### 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.** Each unit incorporates a high efficiency scroll compressor. 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. 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 compressor is isolated in a built-in compartment to minimise noise. Generous use of insulation also ensures a quiet unit.

**Insulation.** Closed cell foam insulation has been used in the indoor air section 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.

**Durable.** The cabinet is constructed from high grade galvanised steel - polyester powder coated for all weather protection. External fasteners are stainless steel. The units include a polyester powder coated drain tray. Heat exchange coils comprise aluminium corrugated plate fins on mechanically expanded rifled copper tube. The outdoor coil fins are epoxy coated for extra protection in corrosive environments, e.g. salt laden sea air.

**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. (Note: OPA \*R only).

## STANDARD EQUIPMENT

Indoor Air Section:

1. Coil
2. Fan - forward curved centrifugal
3. Fan motor - multi-speed, direct drive
4. Drain tray - sloping, powder coated
5. Supply and return air spigots

Outdoor Air Section

1. Compressor
2. Coil
3. Fans - propeller
4. Fan motors - multi-speed, direct drive
5. Fan guard
6. High/low pressure switches
7. Accurator expansion device
8. Circuit breaker control

OPA \*R version also includes:

9. Reversing valve
10. Outdoor Unit Controller

## OPTIONAL EQUIPMENT

1. HAN-L6 Controller.
2. LP switch.
3. Fault indicating auxillary relay board.
4. Filter box - integrated return air spigot (galvanised steel finish) and washable filter (rated EU2).
5. Electric booster heat kit (internal)  
- 3.0 kW for OPA 101  
- 4.5 kW for OPA 150, 180  
Complete with heater safety cutout 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 (OPA \*R 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.

## COMPRESSOR

Each high efficiency scroll type compressor is hermetically sealed, quiet running and supported on rubber mounts to minimise vibration.

## REFRIGERATION SYSTEM

The OPA units are factory charged with HCFC-22 (R22) refrigerant.

## 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. The units control panel 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.

# 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. For fan motor heat loss refer to Air Handling graphs.

MODEL	INDOOR FAN		INDOOR COIL E.A.T.		OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B.											
	SPEED	AIR l/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.
OPA 101	HIGH	625	15	21	9.8	7.5	9.5	7.3	9.2	7.2	8.9	7.1	8.6	6.9	8.2	6.8
			17	23	10.4	7.4	10.1	7.3	9.8	7.2	9.5	7.1	9.2	6.9	8.9	6.8
			19	27	11.0	8.5	10.7	8.4	10.4	8.3	10.0	8.2	9.8	8.1	9.5	8.0
			21	31	11.7	9.6	11.4	9.5	11.1	9.4	10.7	9.3	10.4	9.2	10.1	9.1
OPA 150	HIGH	900	15	21	14.7	10.9	14.2	10.8	13.8	10.6	13.4	10.4	12.9	10.2	12.5	10.0
			17	23	15.5	10.8	15.1	10.6	14.6	10.5	14.1	10.3	13.7	10.1	13.2	9.9
			19	27	16.4	12.4	15.9	12.2	15.5	12.0	15.0	11.9	14.5	11.7	14.0	11.5
			21	31	17.3	13.9	16.8	13.7	16.3	13.6	15.9	13.4	15.4	13.2	14.9	13.1
OPA 180	HIGH	1100	15	21	18.0	14.0	17.4	13.7	16.9	13.5	16.4	13.3	15.9	13.0	15.3	12.8
			17	23	19.1	13.9	18.6	13.6	18.0	13.4	17.5	13.2	16.9	13.0	16.3	12.7
			19	27	20.2	15.9	19.6	15.7	19.1	15.5	18.5	15.3	17.9	15.1	17.3	14.9
			21	31	21.4	18.0	20.8	17.8	20.2	17.6	19.6	17.4	19.0	17.2	18.4	17.0

### 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

## 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

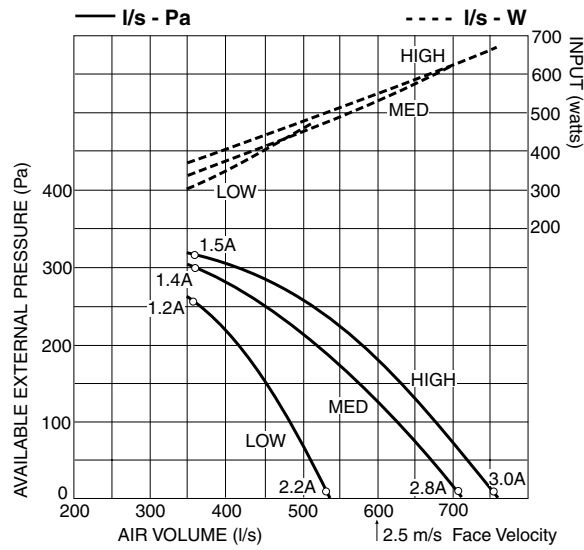
MODEL	INDOOR ENTERING AIR TEMP. °C D.B.	OUTDOOR COIL ENTERING AIR TEMPERATURE (E.A.T.) °C D.B.															
		-5		-3		-1		1		3		5		7		9	
		G	N	G	N	G	N	G	N	G	N	G	N	G	N	G	N
OPA 101R	15	6.9	6.0	7.5	6.4	8.0	6.6	8.5	6.7	9.0	6.8	9.7	7.5	10.3	8.0	10.8	10.8
	20	6.8	5.9	7.3	6.3	7.8	6.5	8.3	6.6	8.8	6.7	9.5	6.9	10.1	7.9	10.6	10.6
	25	6.5	5.7	7.1	6.1	7.5	6.2	8.0	6.3	8.5	6.4	9.1	6.7	9.7	7.6	10.2	10.2
OPA 150R	15	10.6	9.5	11.5	10.3	12.3	11.0	13.0	11.5	13.8	11.7	14.9	13.4	15.8	15.7	16.6	16.6
	20	10.4	9.4	11.2	10.1	12.0	10.8	12.8	11.3	13.6	11.5	14.6	13.1	15.5	15.3	16.3	16.3
	25	10.0	9.0	10.8	9.7	11.6	10.4	12.3	10.8	13.1	11.0	14.0	12.6	14.9	14.8	15.7	15.7
OPA 180R	15	12.8	11.6	13.9	12.5	14.9	13.4	15.8	13.9	16.8	14.2	18.0	16.2	19.2	19.0	20.1	20.1
	20	12.6	11.3	13.6	12.3	14.6	13.1	15.5	13.6	16.5	13.9	17.7	15.9	18.8	18.6	19.7	19.7
	25	12.1	10.9	13.1	11.8	14.0	12.6	14.9	13.1	15.8	13.4	17.0	15.3	18.1	17.9	19.0	19.0

# PERFORMANCE DATA

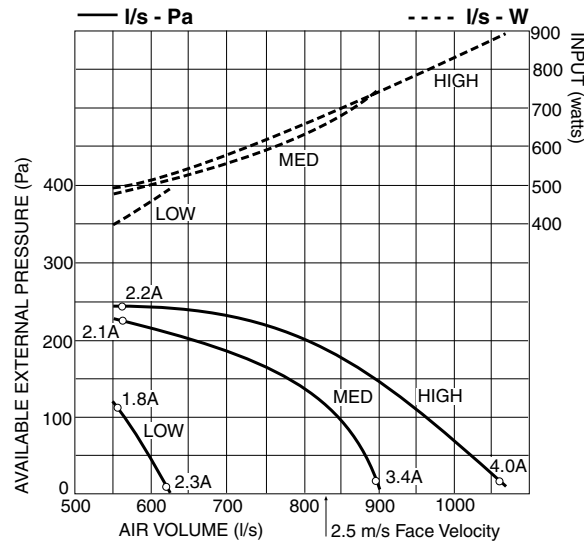
# AIR HANDLING

**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.

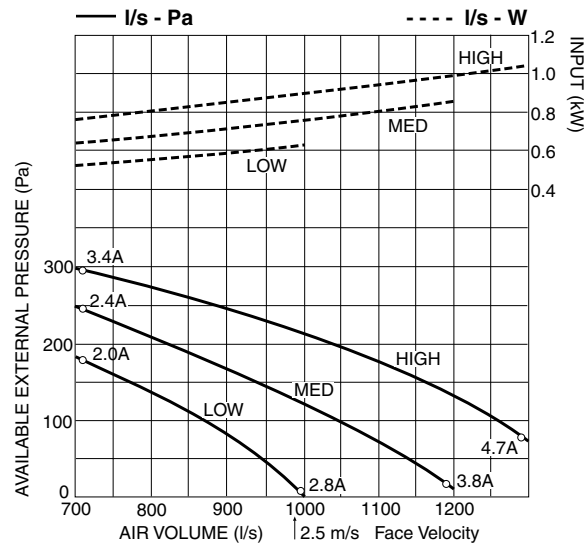
## OPA 101



## OPA 150



## OPA 180



## PERFORMANCE DATA

### SOUND LEVELS

#### Radiated

#### Sound Power Levels (SWL)

Measured in decibels re 1 picowatt, at nominal airflow.

MODEL	OUTDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS (SWL) dB					
OPA 101	LOW	68	77	71	65	62	56	48
	MED	69	77	71	66	64	57	49
OPA 150	MED	70	75	71	68	64	60	53
	HIGH	71	77	72	69	66	61	55
OPA 180	MED	77	78	75	73	72	70	64
	HIGH	78	78	77	73	73	71	65

#### Sound Pressure Levels (SPL)

Measured in decibels re 20 µPa, at nominal airflow.

MODEL	OUTDOOR FAN SPEED	SPL @ 3 m dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
			SOUND PRESSURE LEVELS (SPL) dB					
OPA 101	LOW	52	61	55	50	46	40	32
	MED	53	61	55	56	48	41	33
OPA 150	MED	54	59	55	52	48	44	37
	HIGH	55	61	56	53	50	45	39
OPA 180	MED	61	62	59	58	56	54	48
	HIGH	62	62	61	58	57	55	49

#### 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.

#### Supply Air Outlet

MODEL	INDOOR 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					
OPA 101	LOW	580	69	68	69	66	64	61	59
	MED	620	73	71	72	69	68	65	63
	HIGH	630	74	72	72	70	69	66	64
OPA 150	LOW	590	63	64	62	59	58	56	52
	HIGH	940	73	72	69	68	69	66	64
OPA 180	LOW	920	70	71	68	66	65	62	59
	HIGH	1230	77	75	73	72	73	70	67

## SPECIFICATIONS

Model		OPA 101	OPA 150	OPA 180
Cooling Capacity *1	kW	10.0	15.0	18.5
Heating Capacity *2 (OPA*R)	kW	10.1	15.5	18.8
E.E.R. (Cooling)		2.55	2.68	2.83
Air Flow *3	l/s	625	900	1100
Power Source *4		3 phase 342-436 V a.c. 50 Hz		
Indoor Fan Full Load Amps	A	5.7	5.7	6.3
Running Amps (Total System)	A/ph.	8.6 / 5.7 / 5.5	12 / 8 / 8	14 / 8 / 9
Recommended External Fuse	A/ph.	25	25	25
Finish		tan polyester powder coat		
Net Weight	kg	150	186	215
Shipping Weight (approx.)	kg	190	226	255

### 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 units only) at AS/NZS 3823 conditions:

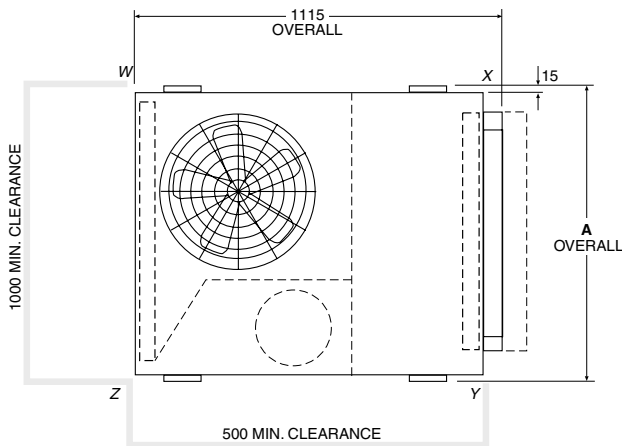
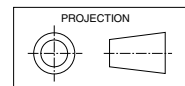
Indoor Entering Air Temp. 21°C D.B.;  
Outdoor Entering Air Temp. 7°C D.B., 6°C W.B.

\*3 Supply air flow at Nominal Cooling Capacity conditions stated above.

\*4 Power source includes voltage limits.

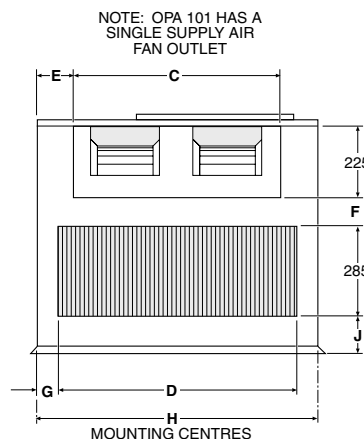
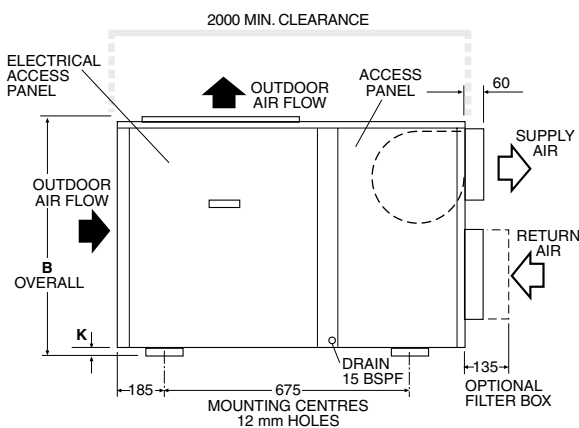
## DIMENSIONS (mm)

Not to Scale



MODEL	A	B	C	D	E	F	G	H	J	K
OPA 101	930	755	400	765	250	100	85	913	105	25
OPA 150	1200	810	860	1065	160	150	75	1185	120	35
OPA 180	1200	1020	860	1065	160	255	75	1185	120	35

MODEL	POINT LOADS (kg)			
	W	X	Y	Z
OPA 101	37	34	38	41
OPA 150	36	43	57	50
OPA 180	46	50	62	57



### NOTE

The manufacturer reserves the right to make changes in specifications at any time without notice or obligation. Certified data is available on request.



### 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

#### WELLINGTON

Ph. 0-4-569 3262  
Fax 0-4-566 6249

#### CHRISTCHURCH

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

#### SYDNEY

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

#### ADELAIDE

Ph. (08) 8333-1833  
Fax (08) 8333-1844

#### SINGAPORE

Ph. SNG 6733 4292  
Fax SNG 6235 7180

#### MELBOURNE

Ph. (03) 9551-7422  
Fax (03) 9551-8550

#### BRISBANE

Ph. (07) 3399-2544  
Fax (07) 3399-2577

#### NEWCASTLE

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



#### PERTH

Ph. (08) 9314-3844  
Fax (08) 9314-3855

#### TOWNSVILLE

Ph. (07) 4773-9566  
Fax (07) 4773-9166

#### HOBART

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

Available from