

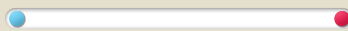


## Air Cooled Packaged Units Technical Data

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OPA 116, OPA 161, OPA 186, OPA 201

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Cooling Capacity  
11.4kW - 20.0kW

Heating Capacity  
11.6kW - 19.0kW

# Air cooled packaged units

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# Air cooled packaged units

OPA 116, 161, 186, 201

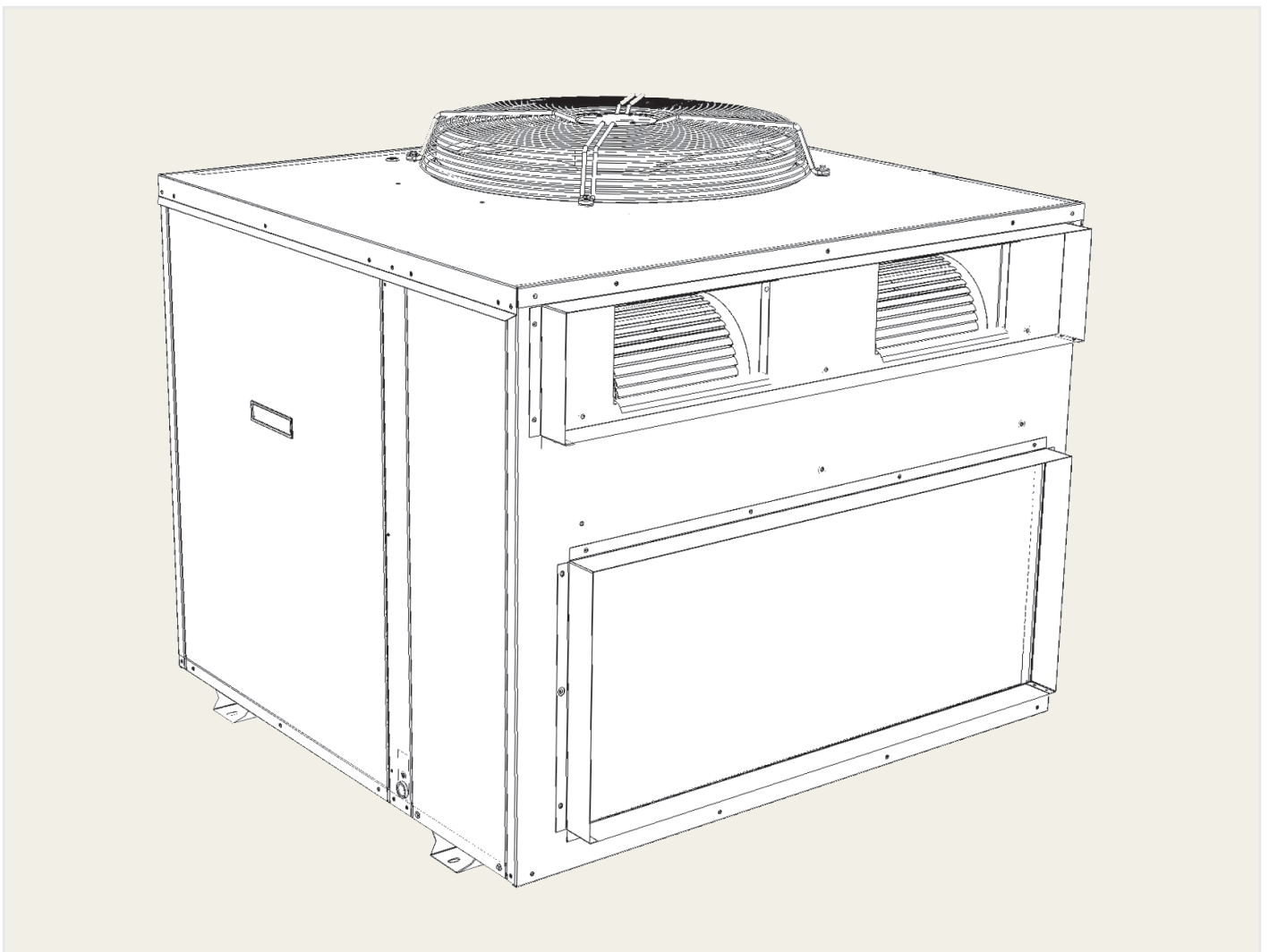


Reverse Cycle (heat pump) packaged roof top A/C

Complies with AS/NZS 3823 specified conditions

Designed and tested to operate at 50°C ambient in cooling and -15°C ambient in heating

(OPA 186 & 201 available with digital scroll compressor option)



# Air cooled packaged units

## OPA 116, 161, 186, 201



## Applications

Specifically developed for AC of commercial premises  
i.e. offices, motels/ hotels, restaurants and retail outlets

## AIR FLOW SELECTION

If air returning to the indoor coil is regularly expected to be above 50% relative humidity then the coil face velocity should not exceed 2.5m/s (refer air flow graph page 8)

Consideration must be given to selecting an airflow and coil face velocity that avoids water carry - over problems i.e. in high humidity (tropical/subtropical) conditions or when heavily moisture laden fresh air is introduced

Applications using complete or high proportion of fresh air should be discussed with a Temperzone sales engineer to establish the correct selection of unit

## FEATURES

### Refrigerant R410A

R410A used which has zero ozone depletion potential

### Efficiency

Incorporates high efficiency scroll compressor and high efficiency EC motor indoor air fan

Heat exchange coils incorporate inner grooved (rifled) tube for superior heat transfer

### Performance

Forward curved fan with EC motor for ease of commissioning and adjusting airflows for air balancing

The EC motor can be controlled using a 0-10VDC signal (supplied by others) or by setting up for a High / Medium / Low speed arrangement

A variable speed head pressure control is used, ensuring the condenser airflow is

suited to the pressures within the refrigerant circuit. This also allows for reliable operation in Cooling Mode at ambients below 20°C, and Heating mode above 15°C

### Quiet

Generous use of insulation ensures a quiet unit. The compressor is enclosed in an acoustically insulated compartment to minimise noise

### Insulation

Closed cell foam insulation is used in the indoor air section to ensure no particles enter the air stream. The insulation is foil faced & meets fire test standards AS1530.3 (1999) & BS 476 parts 6 & 7

### Durable

The cabinet and drain tray are constructed from high grade galvanized steel-polyester powdered coated (Grey) for all weather protection (IP44). External fasteners are stainless steel.

Heat exchange coils are aluminium corrugated plate fins on mechanically expanded rifled copper tube.

Outdoor & indoor coil fins are epoxy coated for extra protection in corrosive environments i.e. salt laden sea air

### User friendly

The optional TZT-100 has been designed to maintain a high level of comfort. Emphasis has been placed on providing controls that are easy to use

Use of the auto & timer functions allows you to "set & forget"  
(refer [www.temperzone.biz](http://www.temperzone.biz))

### Self Diagnosis

Outdoor unit controller (UC7) has a display to indicate faults & running conditions. A common fault indicator is included for interface to external systems

# Air cooled packaged units

## OPA 116, 161, 186, 201



### SAFETY FEATURES

1. HP and loss of refrigerant protection
2. Anti rapid cycle timer and internal overload for compressor protection
3. Circuit breaker protected control circuits
4. Automatic de-ice cycle provides de-ice control during heating cycle under low ambient conditions
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. 24V control circuit

### REFRIGERATION SYSTEM

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

Factory charged with HFC-410A (R410A) refrigerant. Accurator expansion devices for precise control the flow of refrigerant

### WIRING

The electrical supply required is 3 phase 342-436V ac 50Hz with neutral & earth

The compressor crankcase heater requires a 24hr power supply

The unit's control panel is fully wired ready to accept the main power supply. Each system conforms with emission standards EN 55014-1, EN 60335-1 and EN 60335-2-40.

### OPA 186/201 DIGITAL VERSIONS

#### Digital Scroll Compressor

'Digital' systems include a 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. Supply air temperature control is also possible using BMS or other controls.

#### 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-100 Controller.

### OPTIONAL EQUIPMENT

1. Anti-vibration mounts
2. TZT-100 room temperature controller

# Air cooled packaged units

## 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 fan curves.

See below for Indoor Air Flow Correction factors

Models	Indoor Fan		Indoor Coil E.A.T.		Outdoor Coil Entering Air Temperature °C D.B.											
	Speed	Air l/s	D.B. °C	W.B. °C	23		27		31		35		39		43	
					Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.
OPA 116	High	650	21	15	11.4	9.0	11.2	9.0	10.9	8.8	10.4	8.5	9.7	8.1	8.9	7.4
			23	17	12.0	8.8	11.8	8.8	11.5	8.6	11.0	8.4	10.3	7.9	9.5	7.4
			27	19	12.6	10.1	12.4	10.1	12.1	9.9	11.6	9.6	10.9	9.2	10.1	8.5
			31	21	13.2	11.9	13.0	11.9	12.7	11.8	12.2	11.4	11.5	10.9	10.7	10.2
OPA 161	High	815	21	15	16.0	12.7	15.8	12.6	15.4	12.4	14.6	12.0	13.7	11.3	12.5	10.5
			23	17	16.9	12.4	16.7	12.4	16.2	12.2	15.5	11.8	14.5	11.2	13.3	10.4
			27	19	17.7	14.2	17.5	14.2	17.1	14.0	16.3	13.6	15.4	12.9	14.2	12.0
			31	21	18.6	16.8	18.4	16.8	17.9	16.6	17.2	16.1	16.2	15.4	15.0	14.4
OPA 186	High	1000	21	15	18.2	14.4	18.0	14.4	17.5	14.1	16.6	13.6	15.6	12.9	14.2	11.9
			23	17	19.2	14.1	18.9	14.1	18.4	13.8	17.6	13.4	16.5	12.7	15.1	11.8
			27	19	20.1	16.1	19.9	16.1	19.4	15.9	18.6	15.4	17.5	14.7	16.1	13.7
			31	21	21.1	19.1	20.9	19.1	20.3	18.9	19.5	18.3	18.4	17.5	17.1	16.4
OPA 201	High	1100	21	15	19.8	15.2	19.5	15.2	18.9	14.9	18.1	14.4	16.9	13.6	15.4	12.6
			23	17	20.8	14.9	20.6	14.9	20.6	14.9	19.1	14.1	18.0	13.5	16.4	12.5
			27	19	21.8	17.1	21.6	17.1	21.1	16.8	20.0	16.3	19.0	15.5	17.5	14.5
			31	21	23.0	20.2	22.7	20.2	22.1	19.9	21.2	19.3	20.0	18.5	18.6	17.3

### 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 cooled packaged units

## 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).

Models	Indoor Entering Air Temp. °C		Outdoor coil entering air temperature °C D.B.															
	D.B.		-5		-3		-1		1		3		5		7		9	
Indoor Unit	D.B.		G	N	G	N	G	N	G	N	G	N	G	N	G	N	G	N
Outdoor Unit			G	N	G	N	G	N	G	N	G	N	G	N	G	N	G	N
OPA 116	15		7.5	6.8	8.2	7.3	8.7	7.8	8.7	8.0	9.8	8.4	10.6	10.1	11.3	11.3	11.8	11.8
	20		7.4	6.7	8.0	7.2	8.6	7.6	9.1	7.8	9.7	8.3	10.4	9.9	11.0	11.0	11.6	11.6
	25		7.1	6.4	7.7	6.9	8.2	7.3	8.8	7.5	9.3	8.0	10.4	9.9	10.6	10.6	11.2	11.2
OPA 161	15		9.7	8.7	10.5	9.5	11.2	10.0	12.0	10.3	12.7	10.8	13.6	12.9	14.5	14.5	15.2	15.2
	20		9.5	8.6	10.3	9.3	11.0	9.8	11.7	10.1	12.4	10.6	13.4	12.7	14.2	14.2	14.9	14.9
	25		9.2	8.3	9.9	8.9	10.6	9.4	11.3	9.7	12.0	10.2	12.9	12.1	13.7	13.7	14.4	14.4
OPA 186	15		11.3	10.2	12.3	11.0	13.1	11.7	14.0	12.0	14.8	12.7	15.9	15.1	16.9	16.9	17.8	17.8
	20		11.1	10.0	12.0	10.8	12.9	11.4	13.7	11.8	14.5	12.4	15.6	14.8	16.6	16.6	17.4	17.4
	25		10.7	9.6	11.6	10.4	12.4	11.0	13.2	11.3	14.0	12.0	15.0	14.1	16.0	16.0	16.8	16.8
OPA 201	15		14.3	13.7	15.1	13.5	15.9	13.7	16.7	16.7	17.6	17.6	18.4	18.4	19.2	19.2	20.0	20.0
	20		14.1	13.5	14.9	13.3	15.7	15.7	16.5	16.5	17.4	17.4	18.2	18.2	19.0	19.0	19.8	19.8
	25		13.6	13.1	14.5	13.0	15.3	14.5	16.1	16.1	16.9	16.9	17.7	17.7	18.5	18.5	19.3	19.3

# Air cooled packaged units

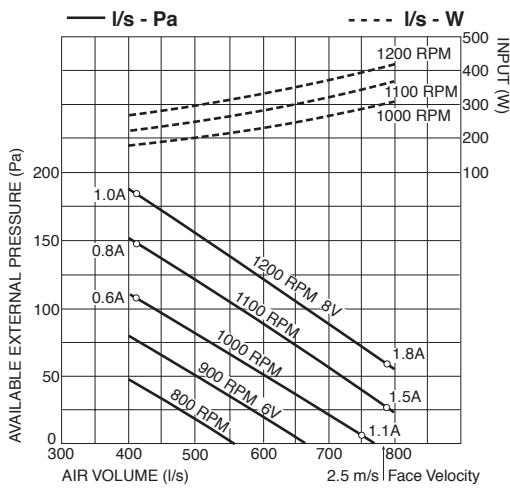
## Performance Data



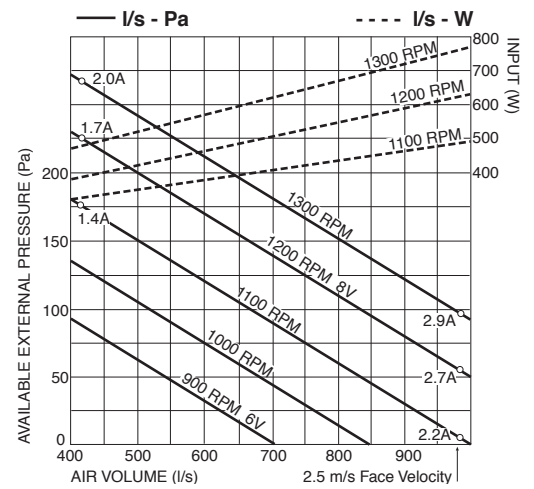
### AIR HANDLING

**Note:** Airflows are for a dry coil. Reduce airflow by 5% in high moisture removal conditions. In a free blow or low resistance application, beware of exceeding indoor fan motor's full load amp limit (refer back page). Air flows given are for units installed without filters.

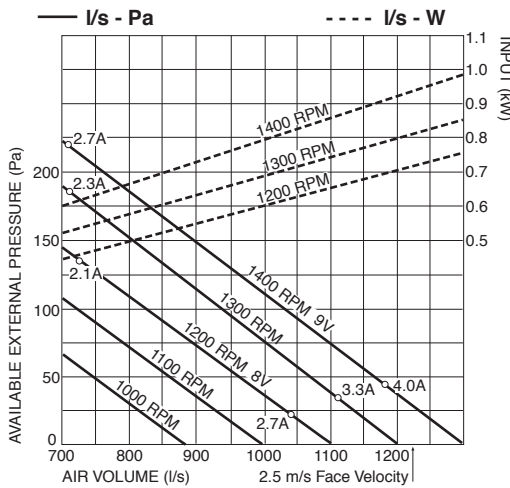
#### OPA 116



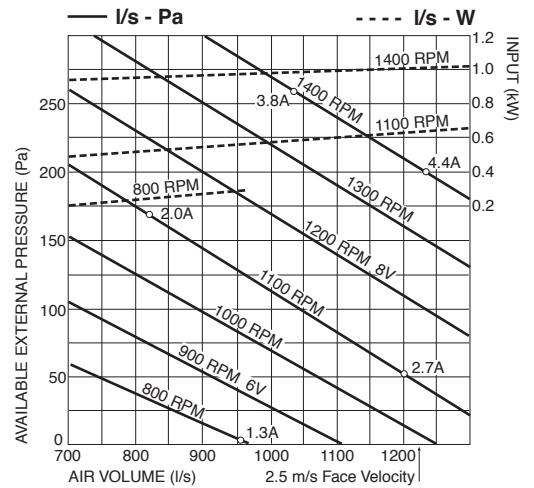
#### OPA 161



#### OPA 186



#### OPA 201





# Air cooled packaged units

## Performance Data



### SOUND LEVELS

#### Sound Power Levels (SWL) - Radiated

Measured in decibels re 1 picowatt, at nominal airflow.

Models	OUTDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
			SOUND POWER LEVELS (SWL) dB					
OPA 116	HIGH	71	81	67	68	67	61	51
OPA 161	HIGH	71	81	67	68	67	61	51
OPA 186	HIGH	75	81	75	73	71	66	58
OPA 201	HIGH	75	81	75	73	71	66	58

#### Sound Pressure Levels (SPL)

Measured in decibels re 20  $\mu$ Pa, at nominal airflow.

Models	OUTDOOR FAN SPEED	SPL dB(A) @3m	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
			SOUND PRESSURE LEVELS (SPL) dB					
OPA 116	HIGH	55	65	51	52	51	45	35
OPA 161	HIGH	55	65	51	52	51	45	35
OPA 186	HIGH	59	65	59	57	55	51	44
OPA 201	HIGH	59	65	59	57	55	51	44

#### Sound Power Levels (SWL) - Supply Air Outlet

**Test Conditions:** BS 848 PT2 1985.

Direct method of measurement (reverberant room).

Installation Type A (free inlet and outlet).

Measured in decibels re 1 picowatt.

Models	AIR FLOW l/s	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
			SOUND POWER LEVELS (SWL) dB					
OPA 116	450	62	58	60	60	57	53	50
	550	65	61	63	63	60	56	53
	650	68	64	66	65	63	59	56
OPA 161	700	65	61	63	63	60	56	53
	760	68	64	66	65	63	59	56
	815	70	66	68	67	66	62	59
OPA 186	850	66	61	55	50	45	40	52
	925	68	68	81	67	63	60	54
	1000	71	83	70	67	63	59	52
OPA 201	580	73	76	69	68	67	66	63
	1030	77	80	74	72	72	70	68
	1450	81	81	76	75	76	74	72

# Air cooled packaged units

## Dimensions (mm)

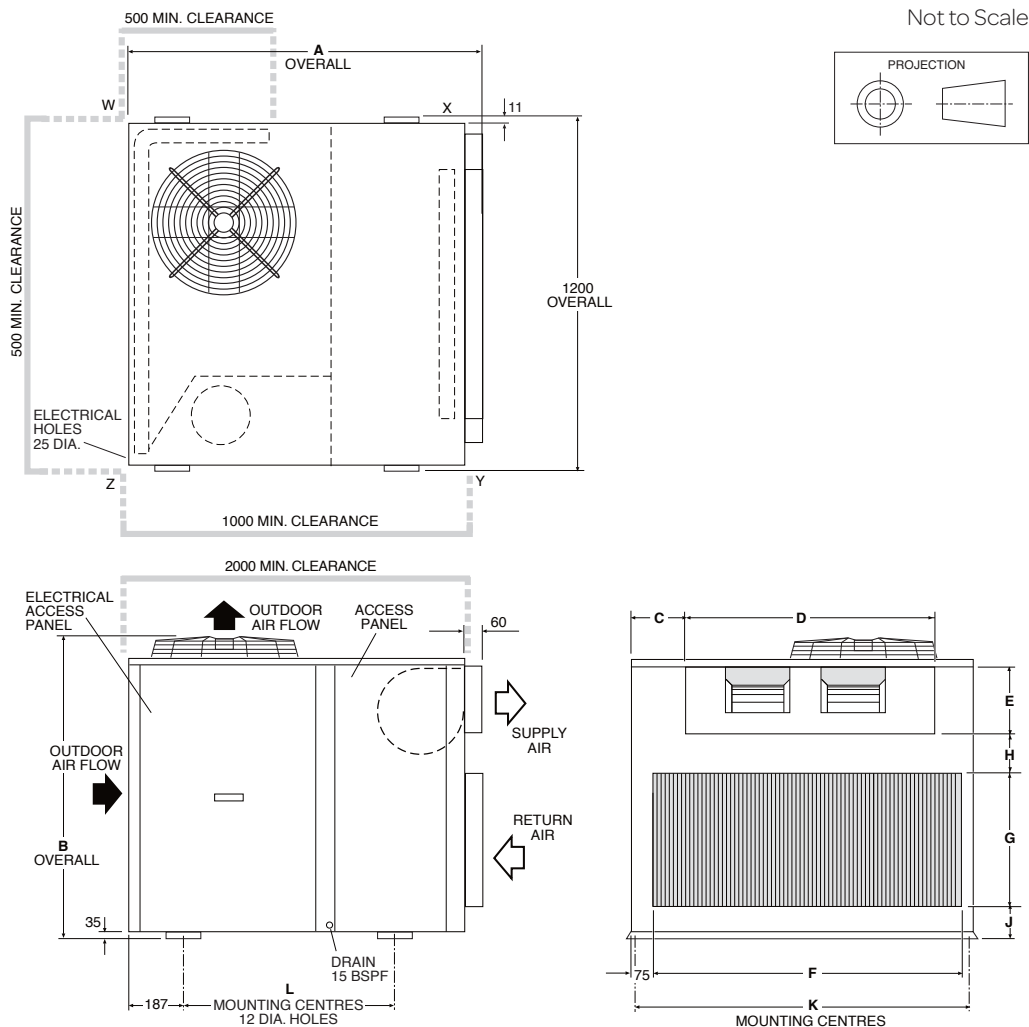


Model	A	B	C	D	E	F	G	H	J	K	L
OPA 116	1110	915	73	1038	185	1052	273	207	120	1154	675
OPA 161	1160	1070	160	860	225	1062	342	208	125	1154	725
OPA 186	1160	1070	45	1095	195	1032	440	203	65	1158	725
OPA 201	1230	1175	95	1032	255	1032	440	206	65	1158	800

### POINT LOAD (kg)

Model	W	X	Y	Z
OPA 116	25	57	42	69
OPA 161	37	60	60	68
OPA 186	46	55	72	61
OPA 201	50	60	88	72

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



# Air cooled packaged units

## Specifications



Model	OPA 116	OPA 161	OPA 186* <sup>5</sup>	OPA 201* <sup>5</sup>
<b>System</b>				
Cooling Capacity * <sup>1</sup> kW	11.6	16.1	18.6	20.0
Net Cooling Capacity (MEPS) * <sup>1</sup> kW	11.33	15.55	18.16	20.3
EER / AEER (cooling)	3.35 / 3.33	3.24 / 3.23	3.30 / 3.28	3.20 / 3.19
Heating Capacity * <sup>2</sup> kW	10.8	14.4	16.7 (16.2)	19.0 (18.1)
COP / ACOP (heating)	3.58 / 3.56	3.52 / 3.50	3.52 / 3.50	3.55 / 3.53
Air Flow * <sup>3</sup> l/s	650	815	1000	1100
Power Source * <sup>4</sup>	3 phase 342–436 V a.c. 50 Hz			
Indoor Fan Maximum Current A	5	5	5	8
Running Amps (Total System) A/ph.	9 / 5 / 5	11 / 7 / 7	12 / 8 / 8	13 / 9 / 8
Max. Running Amps (Total) A/ph.	10 / 7 / 7	15 / 11 / 11	15 / 10 / 10	17 / 12 / 12
Controller	UC7			
<b>Finish</b>				
Outdoor Unit	grey polyester powder coat			
<b>Weight kg</b>				
Net Weight	193	225	235	270
Shipping Weight (approx.)	229	266	276	325

### Notes:

\*<sup>1</sup> 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.

Subtract indoor fan power to calculate Net Capacity.

\*<sup>2</sup> Heating Capacity 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.

\*<sup>3</sup> Supply air flow at Nominal Cooling Capacity conditions stated above.

\*<sup>4</sup> Power source includes voltage limits.

\*<sup>5</sup> Digital compressor version available for OPA 186 and 201.

( ) Variation in brackets.

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