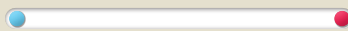




Air Cooled Packaged Units Technical Data

OPA 116, OPA 161, OPA 186, OPA 201



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

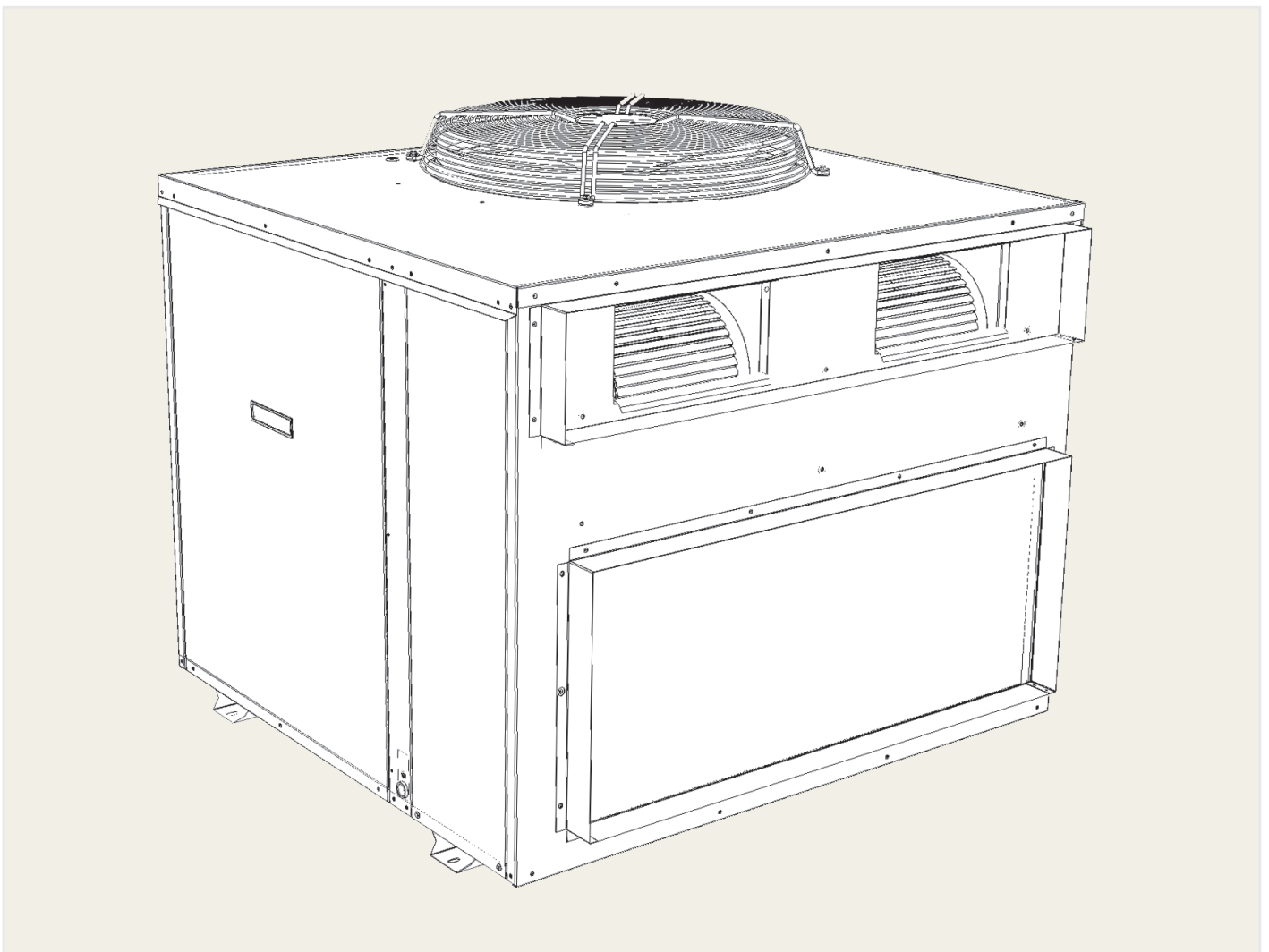


Reverse Cycle (heat pump) packaged roof top A/C

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)

Easy Access

These packaged outdoor units are typically installed on a rooftop, where maintenance access is relatively easy during operating hours.

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



SYSTEM PROTECTION 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

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. | 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 |
| | 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 | | 12.6 | 11.9 | 13.3 | 11.8 | 14.1 | 11.9 | 14.8 | 12.6 | 15.5 | 14.2 | 16.2 | 16.2 | 16.9 | 16.9 | 17.7 | 17.7 |
| | 20 | | 12.4 | 11.7 | 13.2 | 11.6 | 13.9 | 11.8 | 14.6 | 12.5 | 15.3 | 14.0 | 16.0 | 16.0 | 16.8 | 16.8 | 17.5 | 17.5 |
| | 25 | | 12.0 | 11.4 | 12.8 | 11.3 | 13.5 | 11.5 | 14.2 | 12.2 | 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

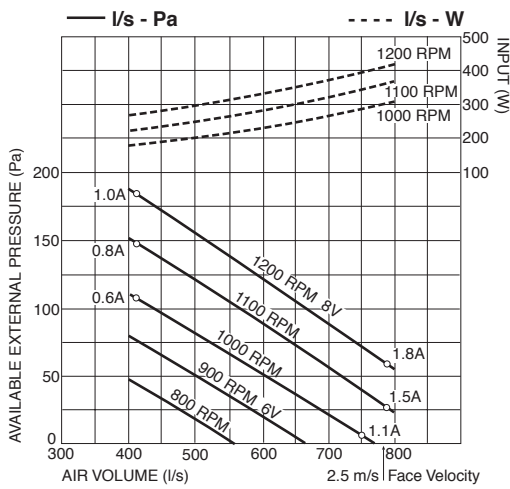
Performance Data



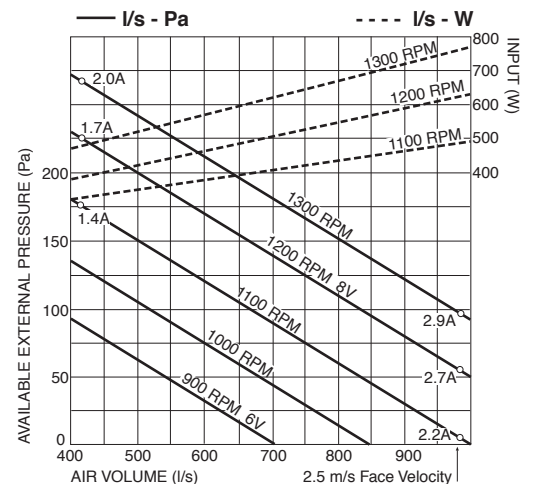
AIR HANDLING

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.

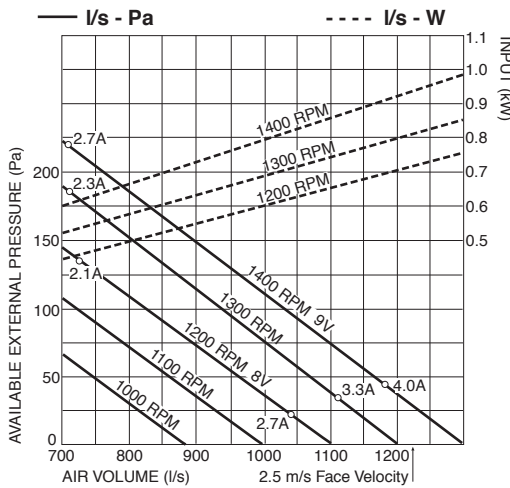
OPA 116



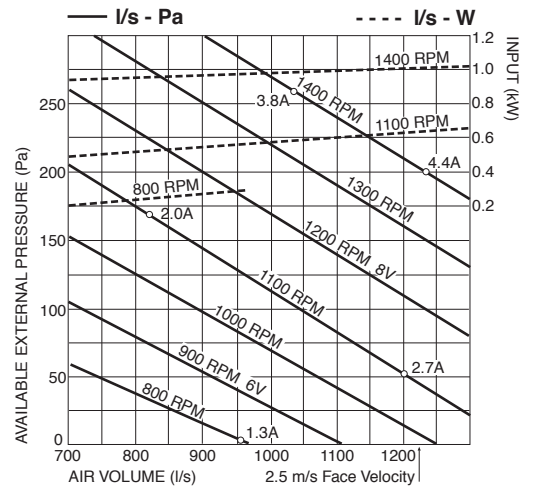
OPA 161



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 μ 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)

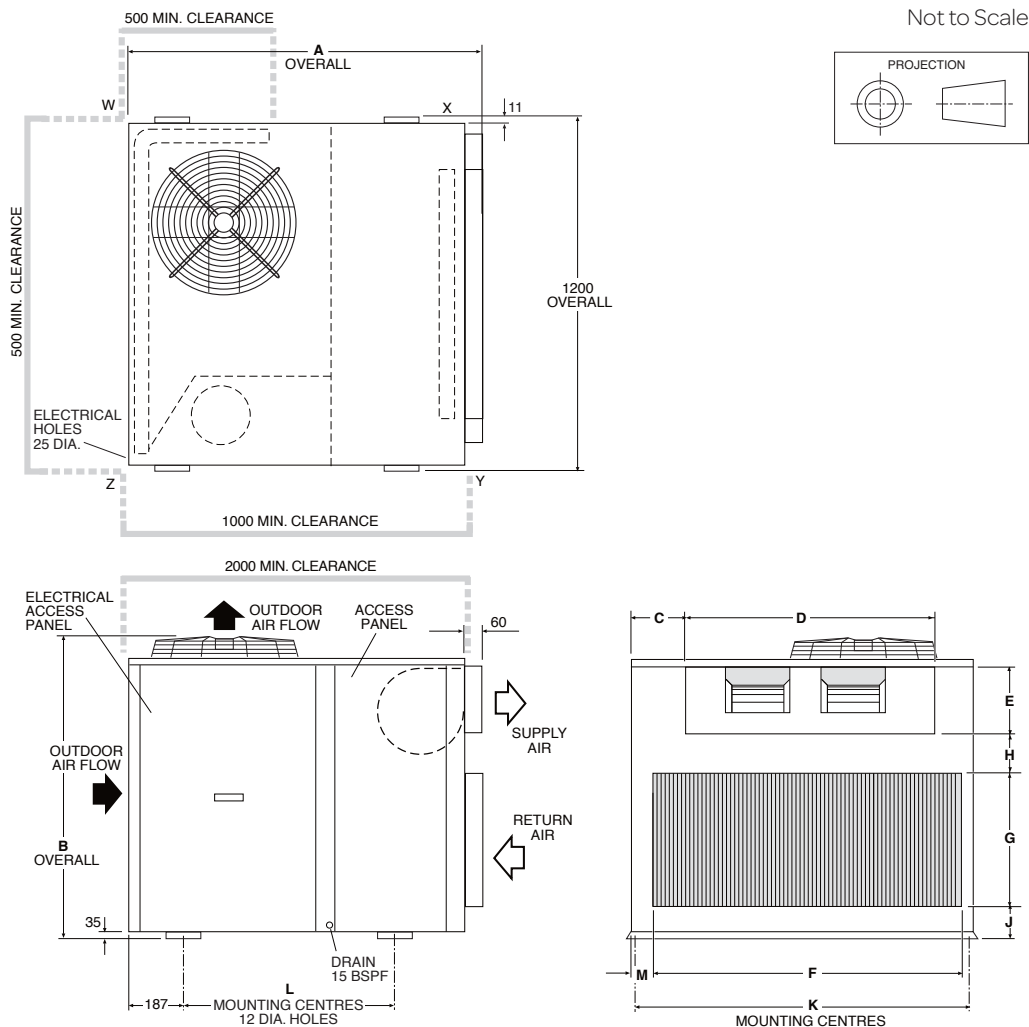


| Model | A | B | C | D | E | F | G | H | J | K | L | M |
|---------|------|------|-----|------|-----|------|-----|-----|-----|------|-----|----|
| OPA 116 | 1110 | 915 | 73 | 1038 | 185 | 1052 | 273 | 207 | 120 | 1154 | 675 | 80 |
| OPA 161 | 1160 | 1070 | 160 | 860 | 225 | 1062 | 342 | 208 | 125 | 1154 | 725 | 75 |
| OPA 186 | 1160 | 1070 | 45 | 1095 | 195 | 1032 | 440 | 203 | 100 | 1158 | 725 | 95 |
| OPA 201 | 1230 | 1175 | 95 | 1032 | 255 | 1032 | 440 | 206 | 100 | 1158 | 800 | 95 |

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 | OPA 186G | OPA 201 | OPA 201G |
|-----------------------------------|----------------------------|-----------|----------------|----------------|-------------|----------------|
| System | | | | | | |
| Cooling Capacity *1 kW | 11.6 | 16.1 | 18.6 | 18.2 | 20.0 | 20.0 |
| Net Cooling Capacity (MEPS) *1 kW | 11.33 | 15.55 | 18.2 | 17.6 | 19.5 | 19.7 |
| EER / AEER (cooling) | 3.35/3.33 | 3.24/3.23 | 3.30/3.28 | 3.17/3.15 | 3.20/3.19 | 3.14/3.13 |
| Heating Capacity *2 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 | 3.44/3.42 | 3.55/3.53 | 3.33/3.31 |
| Air Flow *3 l/s | 650 | 815 | 1000 | 1000 | 1100 | 1100 |
| Compressor Type | fixed speed | | | variable speed | fixed speed | variable speed |
| Power Source | 3 phase 400 V a.c. 50 Hz | | | | | |
| Indoor Fan Maximum Current A | 5 | 5 | 5 | 5 | 8 | 8 |
| Running Amps (Total System) A/ph. | 9/5/5 | 11/7/7 | 12/8/8 | 12.5/8/8 | 13/8/8 | 13/8.6/8.6 |
| Max. Running Amps (Total) A/ph. | 10/7/7 | 15/11/11 | 16.5/10.5/10.5 | 16/10.5/10.5 | 18/12/12 | 24/13/13 |
| Controller | UC7 | | | | | |
| Finish | | | | | | |
| Outdoor Unit | grey polyester powder coat | | | | | |
| Weight kg | | | | | | |
| Net Weight | 193 | 225 | 235 | 235 | 270 | 265 |
| Shipping Weight (approx.) | 229 | 266 | 276 | 276 | 325 | 320 |

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.

Subtract indoor fan power to calculate Net Capacity.

*2 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.

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

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