

**Ducted Split System  
Air Conditioner**

**Technical Data**  
**ISD 230K / OSA 230RKTH**



**R410A**



**Optional  
SAT Controller**

**Extra Long Life  
Epoxy Coated Outdoor Coil**

**Nominal Cooling Capacity  
23 kW**

# ISD 230K / OSA 230RKTH DUCTED SPLIT SYSTEM AIR CONDITIONER

## GENERAL

The ISD indoor unit, together with its associated OSA outdoor unit, provides a reverse cycle (heat pump) split system air conditioner designed and developed to comply with AS/NZS 3823 specified conditions. The system has been tested and proven for cooling operation in outdoor temperatures up to 50°C.

## APPLICATIONS

These units have been specifically developed for air conditioning of light commercial and residential premises, e.g. offices, motels, shops and homes.

## Air Flow Selection

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 (for reference 2.3 m/s is marked on the graph below).

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

**Refrigerant R410A.** Each complete system uses refrigerant R410A which is deemed to have zero ozone depletion potential.

**Efficient.** The outdoor 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. The 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, insulated compartment to minimise noise. The indoor unit is also insulated for noise attenuation.

**Slimline.** The compact up-right design of the outdoor unit requires only a 150 mm gap on the coil side where installation is against a wall. Its slimline cabinet is particularly practical where there is restricted space, e.g. side access pathways, balconies, narrow ledges, etc. Vertical discharge grilles are available to deflect prevailing winds and reduce clearances. The unit is free standing, but can be fitted on a wall using the optional wall mounting brackets.

**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 (grey) for all weather protection (IP 45). 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 plastic drain tray for complete corrosion resistance.

**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 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 non-specific fault indicator is included for interface to external systems.

## OPTIONAL EQUIPMENT

Outdoor Unit:

1. Vertical discharge grille (2 required).
2. Anti-vibration mounts (rubber)
3. Drain connection - right angle

Indoor Unit:

1. Filter box - integrated return air spigot and washable polypropylene net filter.
2. **temperzone** SAT Controller.

3. Spring Mounting Kit.
4. Supply and return air plenums.
5. Safety drain tray.

## 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.
5. Frost protection on cooling cycle.
6. Sensor fault indication.
7. 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 PIPING

The standard unit allows for a line length up to 30 m. For line lengths between 30 m and 60 m, refer to **temperzone's Split Systems Installation Guide** (refer [www.temperzone.biz/Technical Support](http://www.temperzone.biz/Technical Support)).

Maximum line length when extended is 60m.

Max. height separations between units are:  
Outdoor unit above indoor unit : 20 m  
Outdoor unit below indoor unit : 20 m.

The OSA 230 is shipped from the factory with a charge of HFC-410A (R410A) refrigerant sufficient for a 10 m line length. Liquid and suction service valves are provided. Accurator expansion devices control the flow of refrigerant. The matched indoor unit is shipped with a holding charge of nitrogen. Both units have brazed pipe connections.

## WIRING

The electrical supply required (including voltage fluctuation limits) is: 3 phase 342-436 V a.c. 50 Hz with neutral and earth.

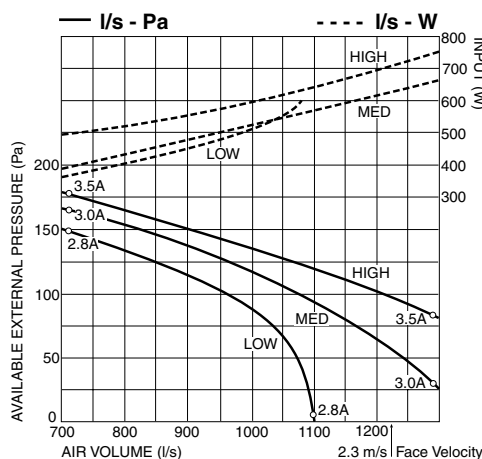
The compressor crankcase heater requires a 24 hour power supply. A control panel, located in the outdoor unit, is fully wired ready to accept the main power supply.

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

## AIR HANDLING

**Note:** Airflows are for a dry coil. Reduce airflow by 5% in high moisture removal conditions. In a free blow application, beware of exceeding indoor fan motor's full load amp limit.

As filters are optional, the fan air flows given are for units installed without filters.



## ELECTRICAL

|                             |              |
|-----------------------------|--------------|
| E.E.R. (cooling)            | 3.31         |
| Indoor Fan Full Load Amps   | 3.4          |
| Running Amps (Total System) | 16 / 11 / 11 |
| Recommended External Fuse   | 40 A         |

## 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<br>Indoor Unit / Outdoor Unit | 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. |
| ISD 230K / OSA 230RK                 | HIGH       | 1200    | 15                 | 21      | 22.5  | 17.8  | 22.2  | 17.8  | 21.6  | 17.5  | 20.6  | 16.9  | 19.2  | 16.0  | 17.5  | 14.7  |
|                                      |            |         | 17                 | 23      | 23.7  | 17.4  | 23.4  | 17.4  | 22.8  | 17.1  | 21.8  | 16.6  | 20.4  | 15.7  | 18.7  | 14.6  |
|                                      |            |         | 19                 | 27      | 24.9  | 19.9  | 24.6  | 19.9  | 24.0  | 19.7  | 23.0  | 19.1  | 21.6  | 18.2  | 19.9  | 16.9  |
|                                      |            |         | 21                 | 31      | 26.1  | 23.6  | 25.8  | 23.6  | 25.2  | 23.3  | 24.2  | 22.7  | 22.8  | 21.7  | 21.1  | 20.3  |

#### 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 |

### PIPE LENGTH CAPACITY LOSS

ON COOLING CYCLE DUE TO PRESSURE DROP

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

| Pipe Size (mm) |         | Equivalent Line Pipe Length (m) |       |       |       |       | Additional Pipe Length to allow per Bend |       |
|----------------|---------|---------------------------------|-------|-------|-------|-------|--|-------|
| Liquid         | Suction | 5                               | 10    | 15    | 20    | 30    | Suction Pipe Size OD                     | 22 mm |
| 13             | 22      | 0.7 %                           | 2.1 % | 3.4 % | 4.7 % | 6.1 % | Long 90° Radius (2 x pipe dia.)          | 0.5 m |

### HEATING CAPACITY (kW)

G = Gross Heating Capacity kW, based on nominal air flow of 1200 l/s.  
 N = Net Heating Capacity kW allowing for average defrost.  
 ○ = Nominal Capacity (kW)

| MODELS<br>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 230K / OSA 230RK                 | 15                                | 15.1   | 13.6 | 16.4 | 14.8 | 17.5 | 15.8 | 18.6 | 16.4 | 19.8 | 16.7 | 21.2 | 19.1 | 22.6 | 22.4 | 23.7 | 23.7 |
|                                      | 20                                | 14.8   | 13.4 | 16.1 | 14.5 | 17.2 | 15.5 | 18.3 | 16.1 | 19.4 | 16.4 | 20.8 | 18.7 | 22.2 | 21.9 | 23.3 | 23.3 |
|                                      | 25                                | 14.3   | 12.9 | 15.5 | 13.9 | 16.5 | 14.9 | 17.6 | 15.5 | 18.7 | 15.8 | 20.1 | 18.1 | 21.3 | 21.1 | 22.4 | 22.4 |

### 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

| 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 |     |     |     |     |     |
| LOW       | 1060         | 69        | 64                          | 64  | 69  | 64  | 64  | 59  |
| MED       | 1150         | 71        | 67                          | 65  | 70  | 67  | 61  | 56  |
| HIGH      | 1200         | 72        | 68                          | 67  | 70  | 68  | 60  | 55  |

#### Outdoor Unit

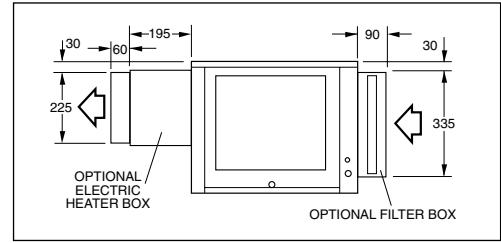
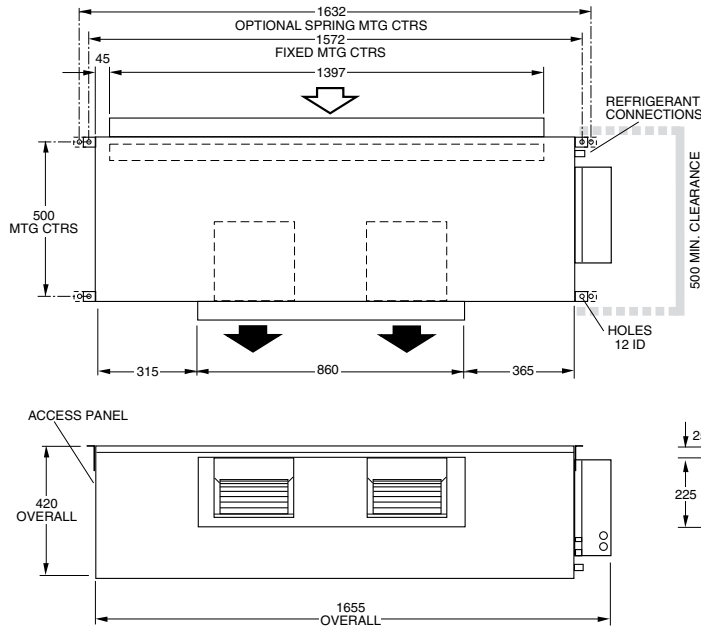
| MODEL   | FAN SPEED | SWL dB(A) | OCTAVE BAND FREQ. Hz  |     |     |     |     |     | SPL @ 3 m dB(A) | OCTAVE BAND FREQ. Hz     |     |     |     |     |     |
|---------|-----------|-----------|-----------------------|-----|-----|-----|-----|-----|-----------------|--------------------------|-----|-----|-----|-----|-----|
|         |           |           | 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 230 | LOW       | 70        | 70                    | 75  | 69  | 62  | 55  | 48  | 54              | 54                       | 59  | 53  | 46  | 39  | 32  |
|         | MED       | 72        | 74                    | 77  | 70  | 65  | 58  | 51  | 56              | 58                       | 61  | 54  | 49  | 40  | 35  |

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

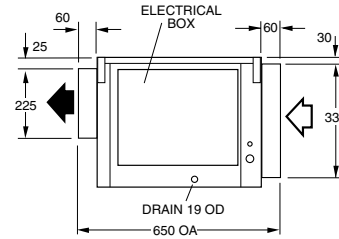
## DIMENSIONS (mm)

Not to Scale

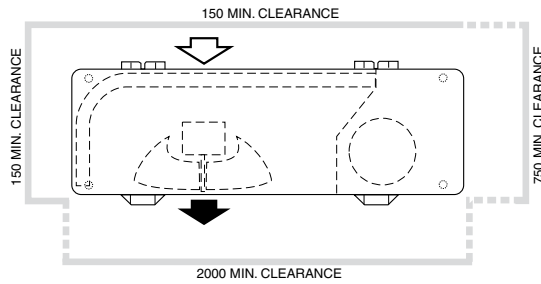
### ISD 230K Indoor Unit



Net Weight 74 kg  
Shipping Weight 83 kg



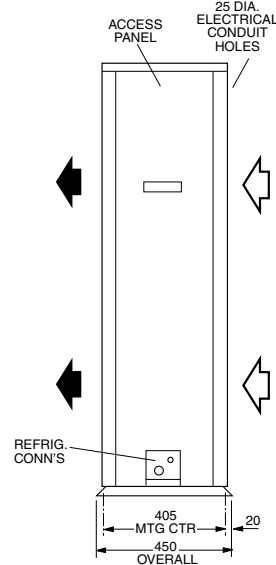
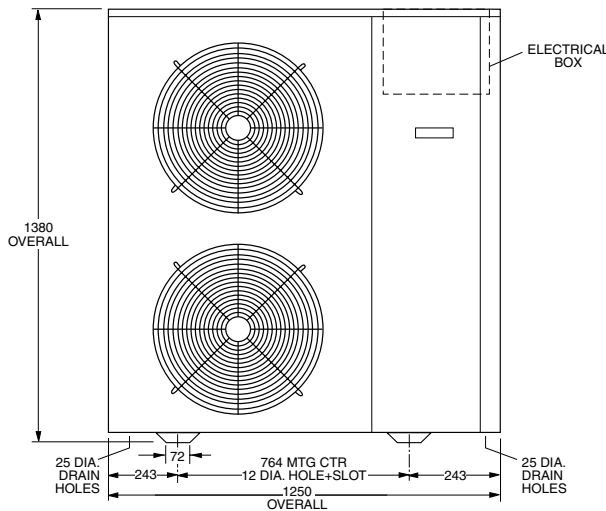
### OSA 230RKT Outdoor Unit



#### Note

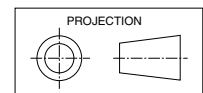
Materials and specifications are subject to change without notice due to the manufacturer's ongoing research and development programme.

Net Weight 179 kg  
Shipping Weight 183 kg



#### Recommended Pipe Line Sizes

Liquid: 13 mm OD  
Suction: 22 mm OD



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