OPA 1370RKTMG01-PZ (Digital c/w Plug fan and Economiser)

Packaged Reverse Cycle R410A Air Cooled Air Conditioner

Installation & Maintenance

GENERAL
This OPA 1370RKTMG Outdoor Unit must be installed in accordance with all national and local safety codes.

OPTION
1. TZT-100 Room Temperature Controller (field fitted).
2. Viking Controller for Economiser with enthalpy control (factory fitted).

REFRIGERATION SYSTEM
General
The OPA 1370 has four independent refrigeration circuits and four compressors to provide the flexibility and economy of four stage operation, i.e. utilising one to four circuits as conditions vary, plus the advantage of staggered starting.

Each refrigeration system has been charged with HFC-410A (R410A) refrigerant; refer wiring diagram specification table for amount. Tapping points are provided to measure discharge and suction operating pressures.

Compressors
The compressors are directional scroll type. One of the four compressors is digital scroll type. This has a variable capacity ability that enables closer control of room temperature.

The compressor lubricant is polyol ester oil (POE). Note, this oil absorbs moisture quickly if exposed to open air. On commissioning, the compressors must be checked for correct rotation (refer Start Up Procedure). A time delay prevents simultaneous starting of the compressors.

ECONOMISER
The economiser fresh air intake cowl with water separator is supplied separately and is best fitted after the OPA is mounted on it's platform. Fitting instructions are supplied with the cowl.

Controls may be supplied by others. If the outdoor air temperature or heat content preferably, is below that of the return air the fresh air damper opens and the return air damper closes to provide the first stage of cooling. A spill air facility in the building may be necessary for when the return air damper is closed. The fresh air damper should return to minimum setting and the return air damper open before compressors are allowed to operate to provide further cooling.

INSTALLATION

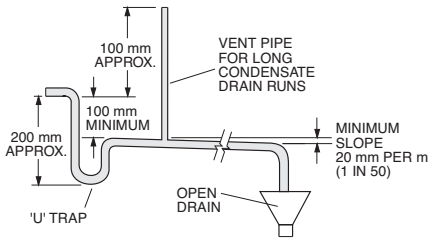
Positioning
Refer to dimension diagrams for minimum clearances. If multiple units are to be placed side-by-side then allow at least 2 m between coil faces.

Mounting
The unit should be fastened to a firm flat horizontal base using the holes supplied in the mounting channels.

When the unit is being installed on a roof it is recommended that the unit is installed on a substantial structure with anti-vibration mounts or pads.

Flexible duct connections are recommended between the supply and return ducts and the unit.

Condensate Drain
The condensate drain should be 'U' trapped outside the unit. The trap should have a vertical height of at least 100 mm. The drain should have a slope of at least 1 in 50 and must not be piped to a level above the unit drain pipe.



Electrical Requirements
Electrical work must be done by a qualified electrician. The outdoor unit must be wired directly from a distribution board by means of a circuit breaker or H.R.C. fuse, and a mains isolator provided - preferably close to the unit.
Note: DO NOT USE REWIRABLE FUSES.

The OPA 1370 is provided with a 24V AC control circuit for a thermostat, on/off switch and/or time clock.

Standard units are suitable for use with thermostats with either manual Heat/Cool selection or automatic changeover subject to the contact ratings of the thermostats.

The system is set up for the compressors to be controlled variably by:
1. TZT-100 Controller (via RS485 modbus),
2. 0-10V dc command via BMS modbus, or
3. 0-10V dc command via a client supplied external controller.

If option 1 is chosen, then disconnect or remove the Signal Input for Controller 0-10V.

If a TZT-100 Controller is used then variable capacity control is automatically included and no additional wiring is required.

A 24 hour power supply to the control circuit is required, otherwise the warranty is void.

SETTING SUPPLY AIR FLOW
Consult OPA 1370 Technical Data pamphlet at www.temperzone.biz for details of airflow/ duct static pressure, if required.

If the indoor air returning to the unit 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 Handling graph in Technical Data pamphlet).

High humidity levels can occur in tropical or subtropical conditions, and/or when heavily moisture laden fresh air is introduced. Select a fan speed that avoids water carry-over problems.

INDOOR FAN SPEED
The fan speed is continuously variable via the 0-10V DC control signal applied between terminals 'FAN GND' and '0–10V'.

Once the maximum design air flow has been set, a variable fan speed can be controlled as follows by applying an external variable 0–10V DC control voltage to '0–10V' terminal. Connect 0V reference to 'FAN GND'.

CHECK TESTS
1. Check that all the shipping bolts on the back of the compressor frame have been removed and that the compressor is secure on its mounts.
2. Check by hand that all fan motors can turn freely.
3. Check that the air filters have been correctly installed, if fitted.
4. Check air diffuser dampers are open if appropriate.
5. Check that the thermostat, or external 24V controller, is correctly wired to the unit and is set at the desired temperature.
6. Check the tightness of all electrical connections.
7. Leave the thermostat, or external 24V controller, in the off position and close the mains isolating switch. (A four hour delay period is required to allow the crankcase heater to drive any liquid refrigerant out of the compressor oil.)
8. Check the supply voltage between each phase and neutral.

START UP PROCEDURE
After the four hour delay for the crankcase heater has expired, use the supplied Commissioning Sheet (Form NS 228) to record results when completing the following 'Start-up' procedure. A *UC6 Service Interface* tool is supplied to read, pressures, superheat and its set-point, compressor amps etc.

1. Select a sensible Fan speed (or Auto Fan mode), operating cycle (cool or heat), and room temperature set point, depending on the time of year, such that the compressor will start and run at a high capacity.
2. Turn ON the thermostat / external controller. Wait for the compressor to

start. Measure the current for each phase feeding into the compressor's. Compare against the compressor amps specified on the unit's wiring diagram.
3. Compressors fitted are directional. Check for correct rotation. If rotation is incorrect the compressor will not pump, be noisy, and will draw minimal current. To correct motor rotation, change the phasing at the main power terminal. If changing the phasing, check the indoor air fan then runs in the correct direction also.
4. Measure the current draw of each fan motor. Check all readings against the specified values in the wiring diagram.
5. Use the *UC6 Service Interface* tool to check operating pressures and status. If the *UC6 Service Interface* is not available, fit gauges and measure the suction and discharge pressures of both refrigeration circuits.
6. Check that the outdoor air fan motors are running smoothly and drawing less than the full load amps specified.
7. Check the indoor unit's fan belt tension after 20 mins of operation and adjust if necessary (refer Commissioning Sheet).
8. Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
9. Check the supply air flow at each outlet.
10. Touch up any outdoor unit paintwork damage to prevent corrosion.

UNIT CONTROLLER (UC6)

The Unit Controller provides system protection functions such as coil frost protection, de-icing, high head pressure and low suction pressure cut-out. It also protects against rapid cycling of the compressor and loss of refrigerant. The UC regulates the superheat of the refrigeration system by controlling the position of an Electronic Expansion Valve (EEV). Various methods of head pressure control (or limiting) are employed in temperzone units including in this particular unit, variation of compressor speed. The particular method used varies from model to model, but is handled by the Unit Controller. In combination, these features deliver optimised performance across a wide operating temperature range.

Refer to UC6 Controller label on the unit for operation & fault diagnostics information. Many operating status conditions can be determined, without gauges, simply by using the *UC6 Service Interface* graphical display supplied with the unit**.**

MAINTENANCE

Monthly

1. Check air filters, if fitted, and vacuum or wash clean as necessary.
2. Check condensate drain for free drainage.
3. Check compressor compartment for oil stains indicating refrigerant leaks.

Six Monthly

1. Check the tightness of electrical connections.
2. Check the tightness of all fans and motor mountings.
3. Check suction and discharge operating pressures. (Using the *UC6 Service Interface* avoids fitting and removing gauges with consequential refrigerant loss.)
5. Check condensate drain for free drainage.

Yearly

1. Check all refrigerant piping for chafing and vibration.
2. Check the operation of electric heaters, if fitted.
3. Check air supply at all diffusers.
4. Check for excessive noise and vibration and correct as necessary.
5. Check for insulation and duct damage and repair as necessary.
6. Remove lint and dust accumulation from outdoor coil fins.
7. Touch up any paintwork damage to prevent corrosion.

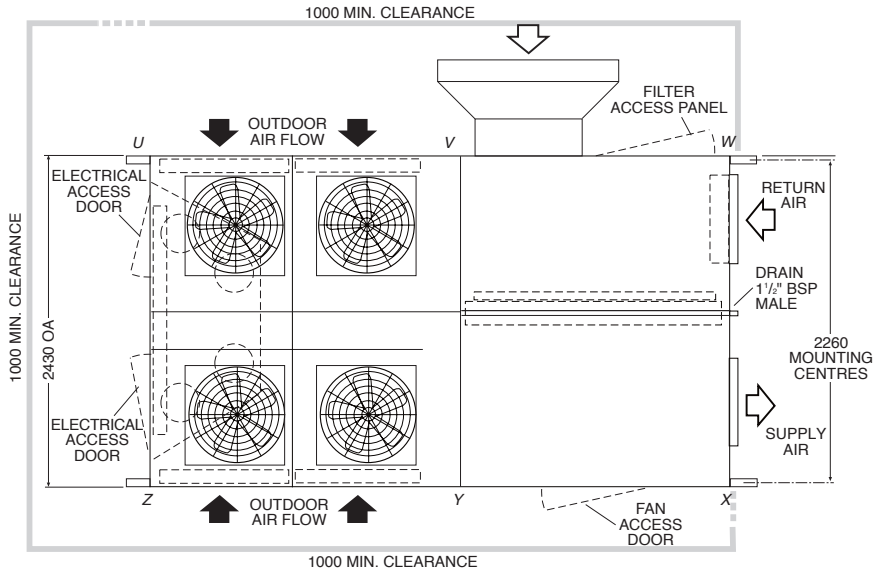
NOTE

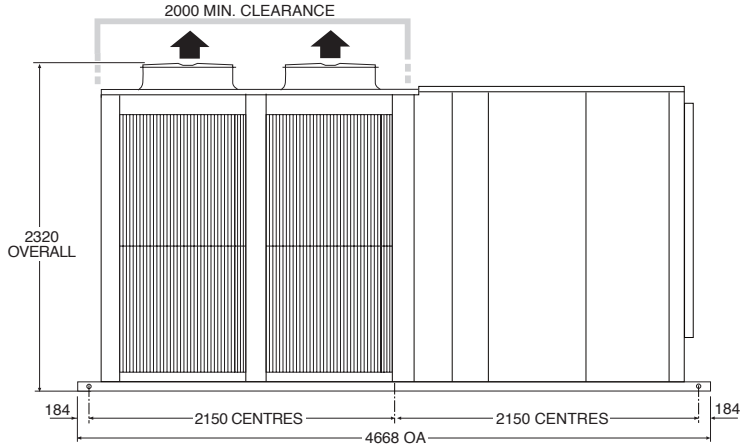
The manufacturer reserves the right to make changes in specifications at any time without notice or obligation. Certified data is available on request.

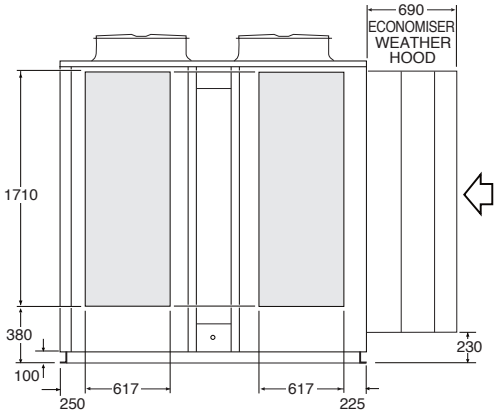
DIMENSIONS (mm)

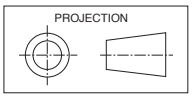
OPA 1370RKTMG-PZ

OPA 1370RKTMG01-PZ – Horizontal Supply & Return Air









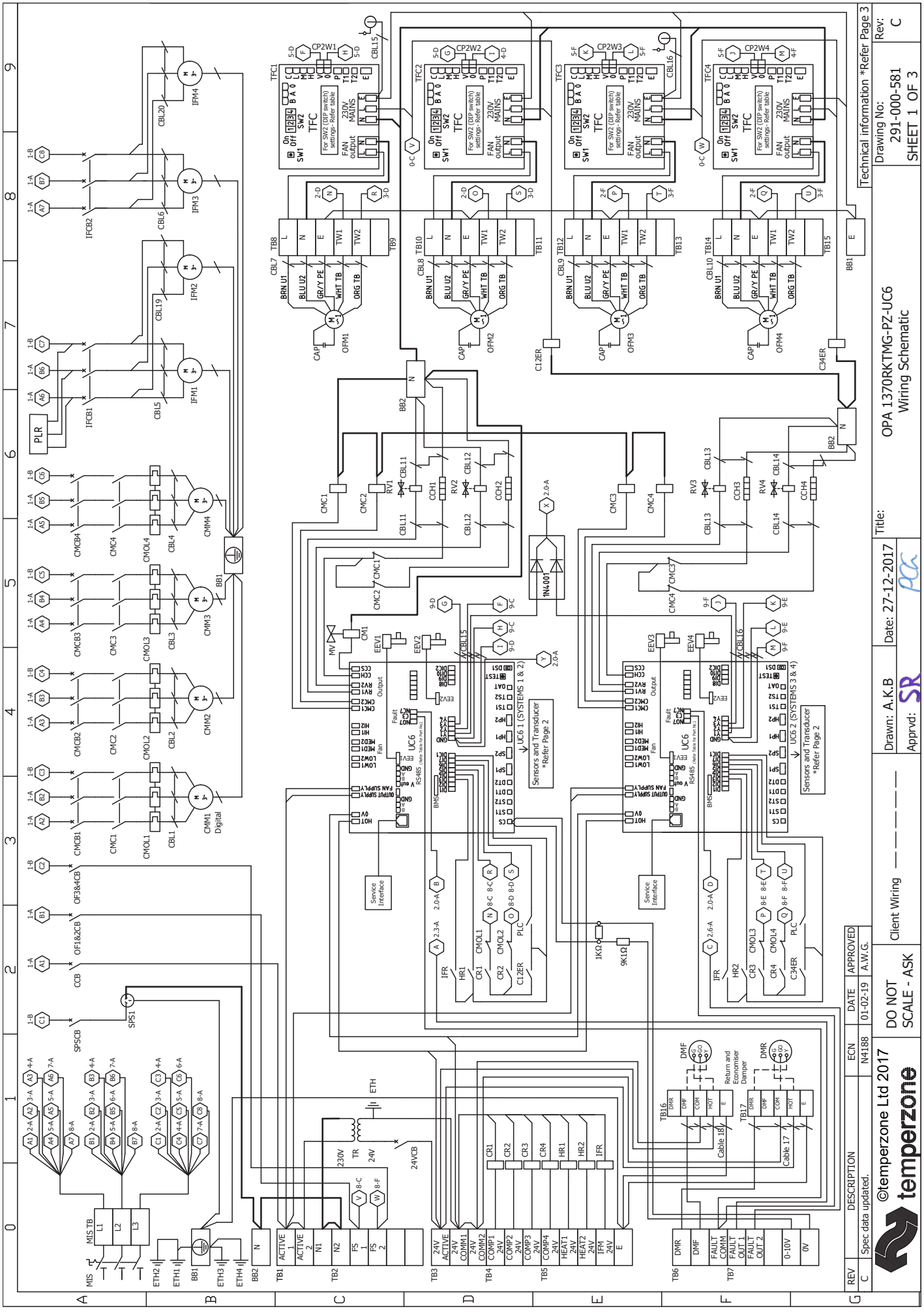
Not to Scale

POINT LOADS (kg)					
U	V	W	X	Y	Z
430	347	262	406	419	433

Net Weight 2297 kg

Note : A 2 m clearance is required above the exhaust air fans

OPA 1370RKTMG-P – Wiring Diagram Part 1, of 3



OPA 1370RKTMG-P – Wiring Diagram Part 2, of 3