

OPA 161RKTY (c/w EC motor & UC7 Controller)

Packaged Reverse Cycle R410A Air Cooled Air Conditioner

Installation & Maintenance

GENERAL

This OPA 161 unit must be installed in accordance with all national and local safety codes.

OPTION (Field Fitted)

TZT-100 Room Temperature Controller

INSTALLATION

Positioning

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

Mounting

Fasten the unit down to a firm flat horizontal base using the four holes provided in the mounting rails.

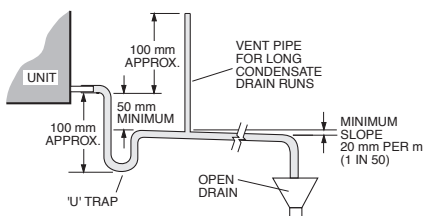
When the unit is being installed on a roof it is recommended that the unit is installed on a substantial structure with anti-vibration mounts or pads beneath the unit.

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 50 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.

For long condensate pipe runs, fit a vent pipe near the drain trap. The top of the vent pipe must be at least 100 mm above the OPA unit's drain tray.



REFRIGERATION SYSTEM

General

The refrigeration system has been charged with R410A refrigerant; refer wiring specification table for amount. Tapping points are provided to measure discharge and suction operating pressures. Beware of high system pressures; use correct gauges.

Compressor

The compressor is directional scroll type. The compressor lubricant is polyol ester oil (POE). Note, this oil absorbs moisture quickly if exposed to open air. On commissioning, the compressor must be checked for correct rotation (refer Start Up Procedure).

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 and a mains isolator provided - preferably close to the unit.

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.

To connect alternative thermostats (non-communicating contact switching types), refer figure 2 for wiring diagram.

A 24 hour power supply to the crankcase heaters is required, otherwise the warranty is void.

INDOOR FAN SPEED

The Indoor fan can be switched ON through the thermostat by selecting High, Medium or Low fan speed, or via BMS. This can be done without starting the compressor.

1. Check the operation of the indoor fan for noise and vibration.
2. Check if the High speed airflow is to specification.
3. Check if the Low speed is sufficiently low yet without risk of frost on the indoor coil.
4. Refer wiring diagram for the factory default setting of the maximum fan speed and the fan speed range High – Low.
5. If either High speed or Low speed need adjusting, use the UC7 Controller board to adjust the indoor fan speed:-
 - i. Ensure the compressor is off and the thermostat or BMS does not request for the compressor to start.
 - ii. Press and hold down the SW3 push button on the UC7 circuit board until the display shows the letter 'H', then release the push button.
 - iii. The indoor fan will start and run at the 'High' speed setting (factory default setting is 7.5V). The display will show the value ('7.5') and the indoor fan will run at the selected speed.
 - iv. Each following press on the SW3 push button increases the indoor fan control voltage in steps of 0.5V, up to a maximum of 10.0V. Pressing the push button again when value 10.0 is

shown returns the fan control voltage down to the minimum value for 'High' fan speed (3.0V).

- v. When the desired setting for high fan speed is selected then wait for 30 seconds. The controller will save the selected value in its memory and return to normal operation.
- vi. To adjust the indoor fan 'Low' speed repeat the above procedure but wait until the display shows the letter 'L' before releasing the push button. The factory default value for low speed is 5.5V.

If the air returning to the indoor 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.

CHECK TESTS

1. Leave the remote switch 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.
2. Check that all fan motors are free running.
3. Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
4. Check that the air filters, if any, have been correctly installed.
5. Check any supply air diffuser dampers are open.

START UP PROCEDURE

Use the supplied Commissioning Sheet to help you complete the following procedure:

1. Switch on the unit after the four hour delay period for the crankcase heater has expired.
2. Check for correct rotation of the compressor. 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.
3. Check the supply voltage.
4. Measure the current draw on the compressor motor and on each fan motor. Check all readings against the specified values - particularly the indoor fan amps if the unit is installed in a free blow application.

5. Fit R410A compatible gauges and measure the suction and discharge pressures.
6. In cooling mode, test the operation of the high pressure safety control by safely disconnecting the outdoor air fan.
7. Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
8. Check that the motors are running smoothly.
9. Check the supply air flow at each outlet.
10. Touch up any outdoor unit paintwork damage to prevent corrosion.

UNIT CONTROLLER (UC7)

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(s) and loss of refrigerant. Various methods of head pressure control (or limiting) are employed in temperzone units. The particular method used varies from model to model, but is also handled by the Unit Controller. In combination, these features deliver optimised performance across a wide operating temperature range.

As a result of the UC's control of these inter-related functions, the outdoor fans may take some time to start rotating after each compressor start. They may also run on when the compressor stops. The fans will stop during a de-ice cycle. The speed will vary either smoothly, or in steps, in order to protect against excessively low or high head pressure.

Refer to UC7 Controller label on the unit or www.temperzone.biz for operation & fault diagnostics information; model search 'UC7'.

MAINTENANCE

Weekly For First Four Weeks

1. Check indoor 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.
4. Check tightness of electrical connections.

Six Monthly

1. Check the tightness of all fan and motor mountings.

2. Check tightness of electrical connections.
3. Check suction and discharge operating pressures.
4. Replace indoor unit air filters (if fitted).
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 outdoor unit paintwork damage to prevent corrosion.

NOTE

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

Fig.1 Dimensions (mm)

OPA 161RKTY

Not to Scale

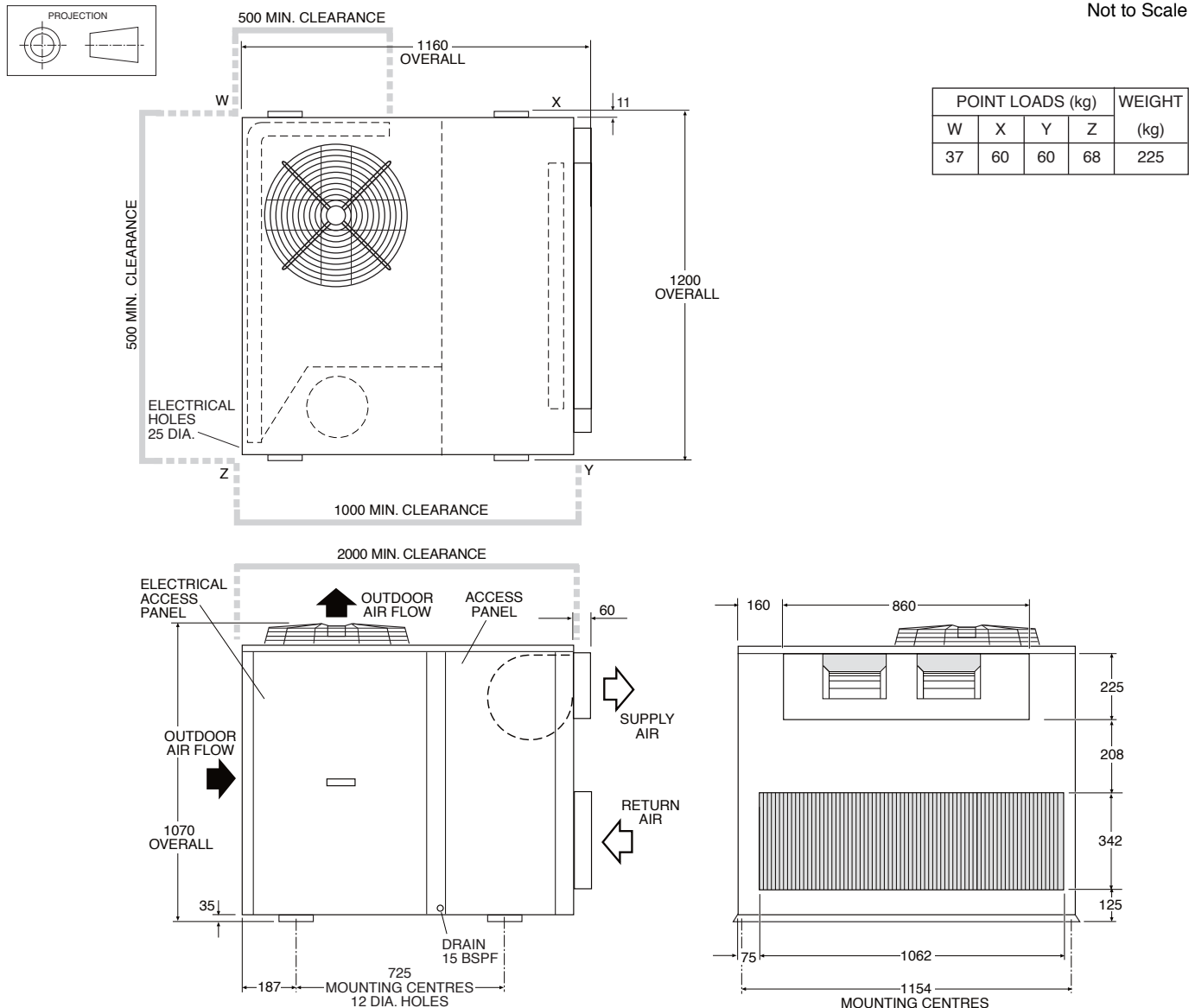
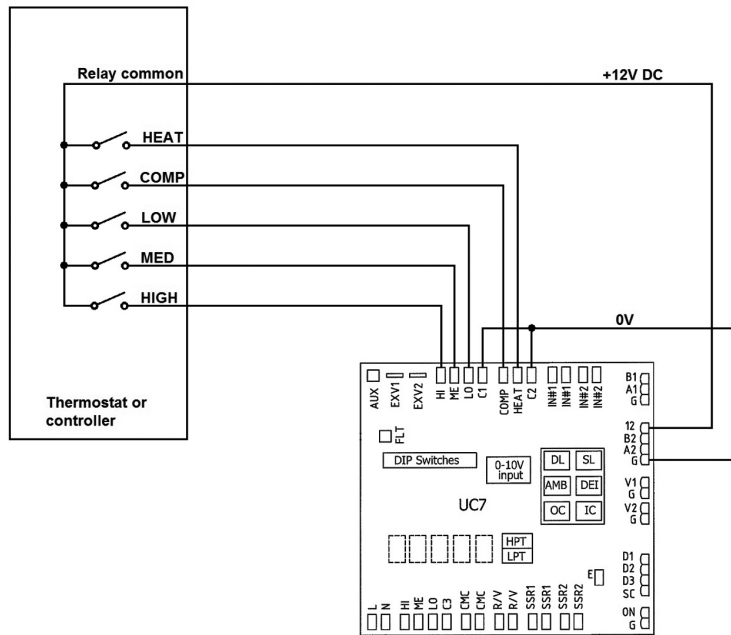
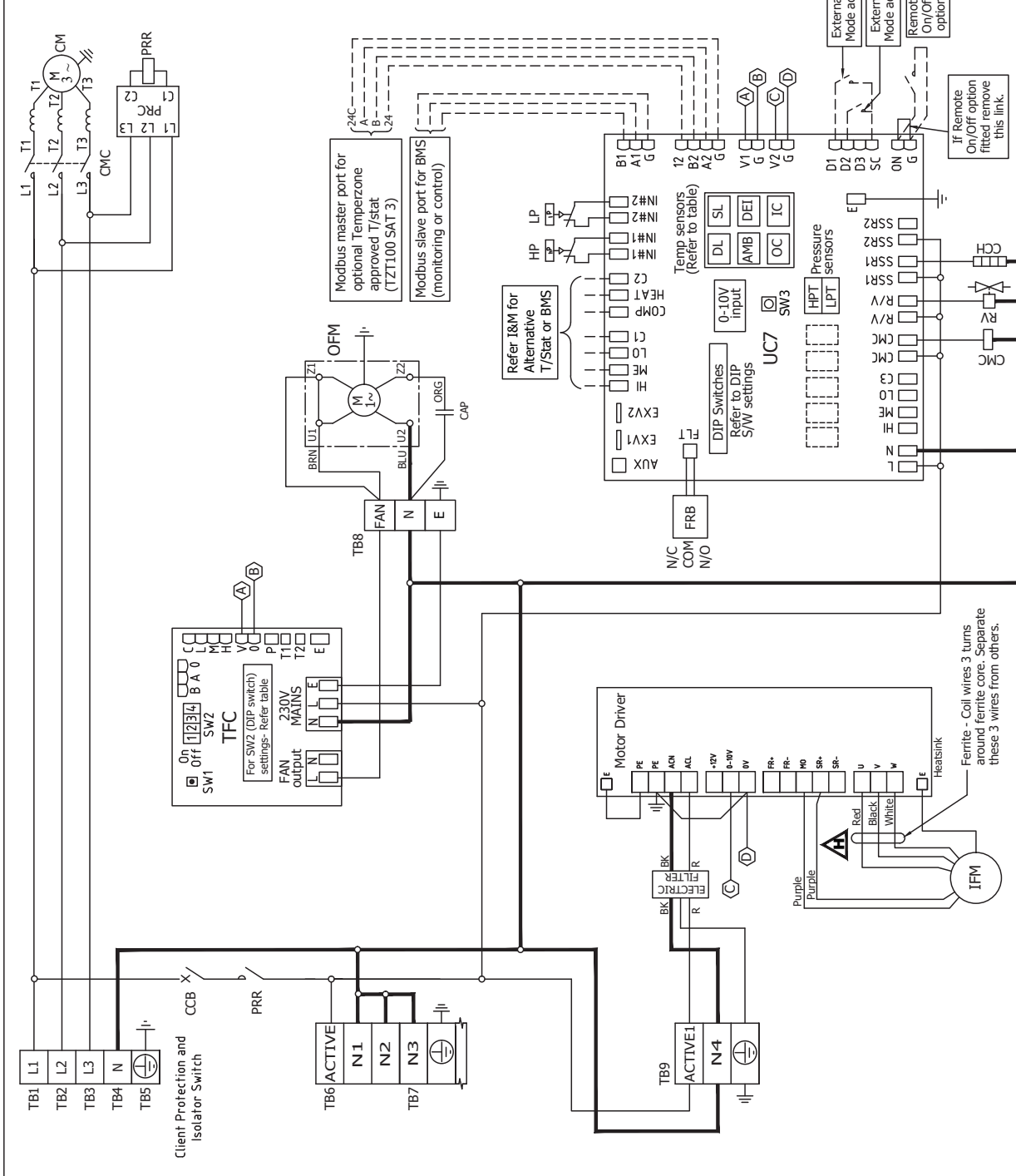


Fig. 2 Connecting Alternative Thermostats

This wiring diagram shows how to connect a thermostat or other controller using 12V DC control signals to the UC7.



Capacities - Net to AS/NZS 3823	OPA161RKTYH
Cooling - kW	15.55
Heating - Reverse Cycle kW	14.39
Electrical Input kW	4.8
Cooling - kW	3.95
Heating - Reverse Cycle E.E.R. (Cooling)	3.24
A.E.E.R. (Cooling)	3.23
Electrical Supply required 3Ph 380-415V ~ 50Hz	
Compressor type : Scroll	
Compressor (3Ph) run amps rated conditions	A/Ph 7.2
Oil type : Polyolester (P.O.E.)	
Indoor fan motor (1Ph) kW	0.9
Indoor fan motor (1Ph) Full load amps	A 5
Outdoor fan motor (1Ph) Full load amps	A 1.7 x 1
Outdoor motor capacitor	MFD 8
Running amps (Total)	A/Ph 11/7.2/7.2
Max running amps (Total)	A 15
Control circuit breaker	A 10
Unit Weight - Nett	Kg 225
Base charge unit	Kg 4.65



CAP Capacitor	LP	Low Pressure Control
CCB Control Circuit Breaker	OFM	Outdoor Fan Motor
CCH CrankCase Heater	PRC	Phase Rotation Control
CM Compressor Motor	PRR	Phase Rotation Relay
CMC Compressor Contactor	RV	Reversing Valve
FRB Fault Relay Board	TFC	Triac Fan Controller
HP High Pressure Control	UC7	Unit Controller 7
IFM Indoor Fan Motor		

UC7 Dip switch settings	
DIP switch 1, 4 & 6	On/Off ↑
2,3,5,7,8,9, 10,11,12,13,14,15 & 16	On
	Off

Fan Speed & Range Settings		
Min RPM	Max RPM	Max Volts (High)
825	1125	5.5
900	1200	6.0
975	1275	6.5
1050	1350	7.0
		7.5
		8.0
		8.5
		9.0

TFC SW2 (DIP S/W) settings	
DIP 1,2,3 & 4	On/Off
	Off

See UC7 Manual Refer Installation Instructions for DIP switch for Adjustment settings Shaded Area = Default Settings

Title	
OPA 161RKTYH	
C/W UC7 WIRING SCHEMATIC	
Drawn	J.S.L.
Drawn date	30-07-14
Aprvd	SR
temperzone ltd	291-000-758
Revision	H



External Quiet Mode activation
External Dry Mode activation
Remote On/Off option

If Remote On/Off option fitted remove this link.

Refer I&M for Alternative T/Stat or BMS

Modbus master port for optional Temperzone approved T/Stat (TZT100 SAT 3)

Modbus slave port for BMS (monitoring or control)

Temp sensors (Refer to table)

Pressure sensors

Visit: www.temperzone.biz for client wiring diagrams

Client wiring	-----
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Motor Driver	IM4171	12-06-19	D..J.S
Motor added	IM4048	22-06-18	N.N.M
ECC-1861 Changed To Motor Driver. Changed wire colour to red from white	IM4074	28-12-17	M.A.K.
MODIFICATION	ECN	DATE	APRVD