

OPA 161RKTYH (c/w EC motor)

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)

SAT-2 Controller 24V kit – for stepped fan speed control.

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.

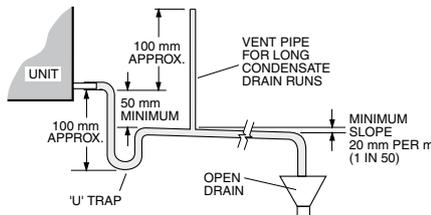
When the unit is being installed on a roof it is recommended that the unit is installed on a substantial structure with vibration isolating springs beneath the unit. These springs are not supplied with the unit.

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 or H.R.C. fuse, and a mains isolator provided - preferably close to the unit.

Note: DO NOT USE REWIRABLE FUSES.

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.

Refer to separate pamphlet for approved thermostats, or contact the manufacturer's nearest sales office.

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

INDOOR FAN SPEED

The indoor fan speed can be 'Stepped' or 'Continuously Variable'. The choice is made using Switch 1 of 'DIP1' on the EC Motor Controller. Switches 1 to 5 on 'DIP2' determine the minimum and maximum fan speeds.

The same 'Minimum rpm' and 'Maximum rpm' settings apply to 'Stepped' and 'Continuously Variable'.

The default settings for DIP1 and DIP2 are highlighted on the Wiring Schematic.

1. *Stepped (DIP1 switch 1 = OFF)*
Connecting the 24V AC power from the unit's 'HOT 24V' terminal to one (and only one at a time) of the 'LOW 24V' / 'MED 24V' / 'HIGH 24V' terminals, selects the 'LOW' (Min. rpm), 'HIGH' (Max. rpm), or 'MED' (mid-way between) fan speed. The transitions between speeds are smooth.
2. *Continuously Variable (DIP1 switch 1=ON)*
When using this method a temperzone Analog Signal Isolator (No. 201-000-129) must be fitted and connected as shown in the wiring schematic. 24V AC or DC power from the external (BMS) controller should be provided to the '24V' and '0V' input terminals of the Signal Isolator board.
A voltage below 2V DC applied across the '0V' and the '0-10V' input terminals (labelled 'From BMS Controller' in the wiring schematic) of the Signal Isolator

will stop the indoor fan. A control voltage of slightly more than 2V will cause the fan to run at the 'Min. rpm' speed. A 10V DC signal will run the fan at the 'Max. rpm' speed. Control voltages between these two limits can be used to achieve any desired speed between 'Min.' and 'Max.' rpm.

Do not use switch combinations marked with 'DO NOT USE' in the Speed Selection table.

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. Bypass the crankcase heater thermostat (CCHT) for this period only.
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. Ensure the crankcase heater thermostat has been reconnected.
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. Test the operation of the high pressure safety control by switching off 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.

OUTDOOR UNIT CONTROLLER (OUC)

The Outdoor Unit Controller (OUC) 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. The OUC also has features which protect against icing or overheating of coils, rapid cycling of the compressor and loss of refrigerant charge.

If the outdoor unit fans take some time to begin rotating when the system is powered on, or they don't appear to be rotating appropriately while the compressor is running, consult the OUC label on the electrical box. If necessary, refer to **temperzone** for further diagnostic information.

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.

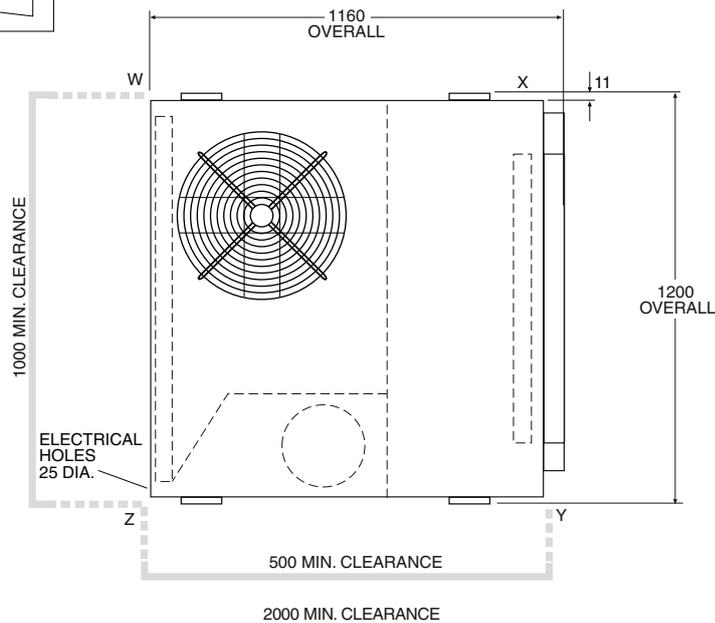
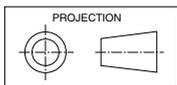
NOTE

The manufacturer reserves the right to change specifications at any time without notice or obligation. Certified dimensions available on request.

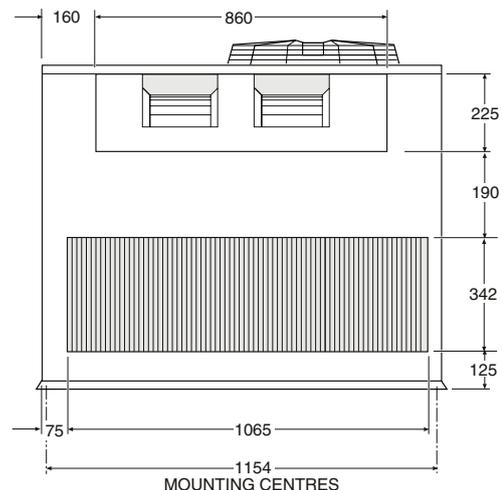
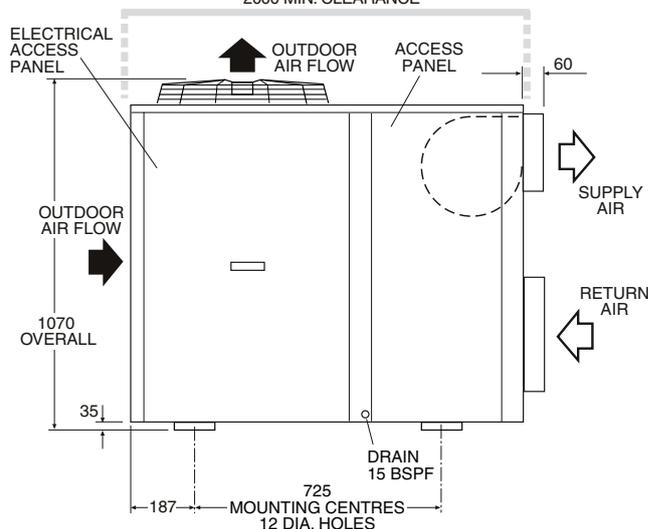
Dimensions (mm)

OPA 161RKTYH

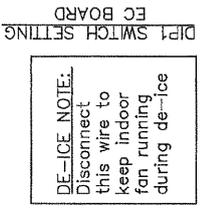
Not to Scale



POINT LOADS (kg)				WEIGHT (kg)
W	X	Y	Z	
37	60	60	68	225



DE-ICE NOTE:
Disconnect this wire to keep indoor fan running during de-ice



EC-BOARD SPEED SELECTION - DIP SWITCH 2 (DIP2)
SWITCH 1 OFF OFF OFF OFF
SWITCH 2 OFF ON OFF OFF
SWITCH 3 ON ON ON ON
SWITCH 4 OFF OFF OFF OFF
SWITCH 5 OFF OFF OFF OFF
Max (rpm) 1350 1300 1300 1100
Min. (rpm) 1050 1000 500 800

CHECK WIRING BEFORE SWITCHING ON, INCORRECT CONNECTION WILL DAMAGE MOTORS

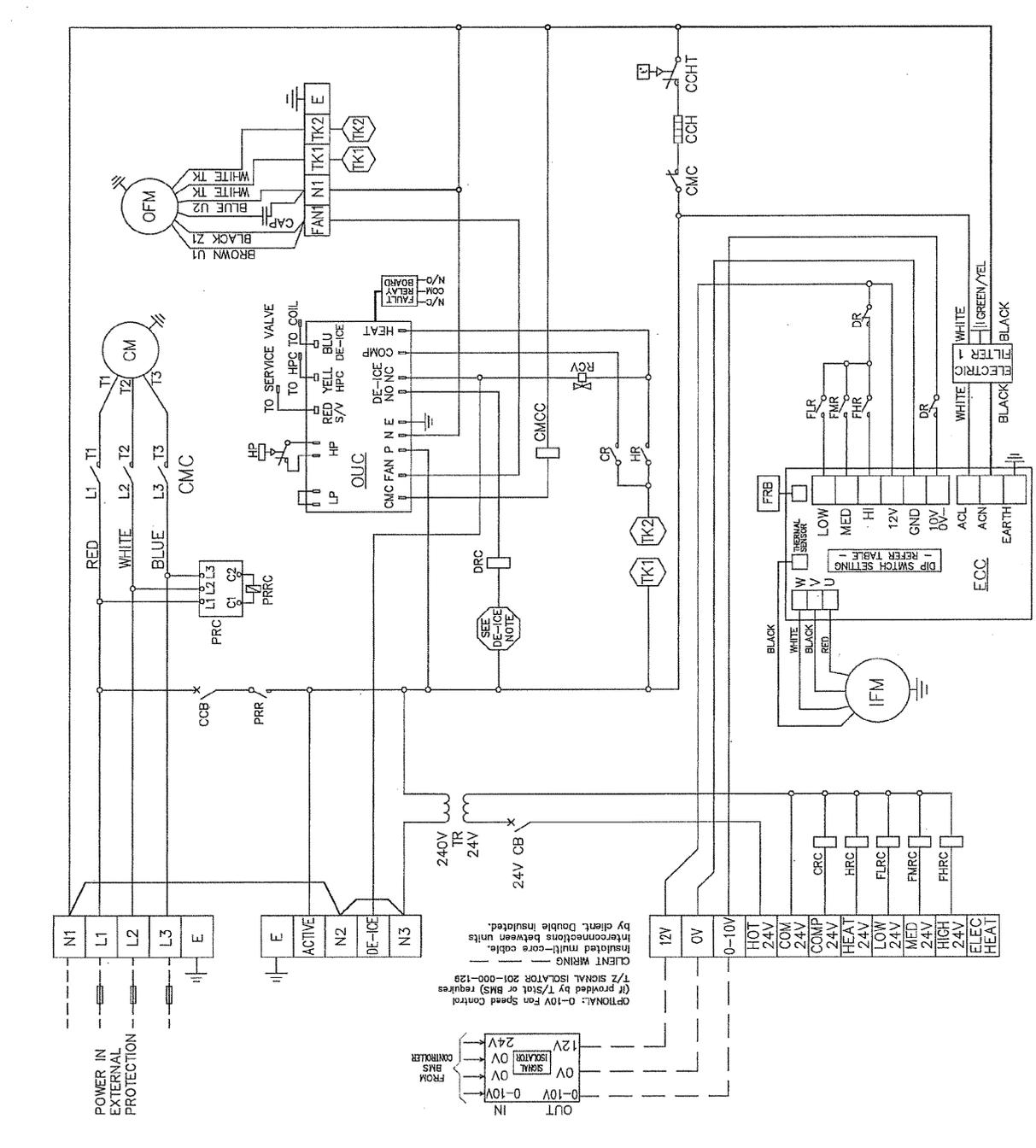
CAP	CAPACITOR	FHRC	FAN HIGH SPEED RELAY COIL
CB	CIRCUIT BREAKER	FMRC	FAN MEDIUM SPEED RELAY COIL
CCB	CONTROL CIRCUIT BREAKER	FLRC	FAN LOW SPEED RELAY COIL
CGH	CRANKCASE HEATER	HR	HEAT RELAY
CGHT	CRANKCASE HTR. T/STAT	HRC	HEAT RELAY COIL
CM	COMPRESSOR MOTOR	IFM	INDOOR FAN MOTOR
CMC	COMP CONTACTOR	OFM	OUTDOOR FAN MOTOR
CMCC	COMP CONTACTOR COIL	PRC	PHASE ROTATION CONTROL
CR	COMPRESSOR RELAY	PRR	PHASE ROTATION RELAY
CRC	COMPRESSOR RELAY COIL	PRRC	PHASE ROTATION RELAY COIL
DR	DE-ICE RELAY	RCV	REVERSE CYCLE VALVE
DRC	DE-ICE RELAY COIL	RCBO	RESIDUAL CURRENT CIRCUIT BREAKER
FBR	FAULT RELAY BOARD	SDR	SHUT DOWN RELAY
FHR	FAN HIGH SPEED RELAY	SDRC	SHUT DOWN RELAY COIL
FMR	FAN MEDIUM SPEED RELAY	SPS	SINGLE PHASE SOCKET
FLR	FAN LOW SPEED RELAY	TR	TRANSFORMER

CAPACITIES - NET to AS/NZS 3623	
COOLING	KVA 15.65
HEATING - REVERSE CYCLE	KVA 14.39
ELECTRICAL INPUT	
COOLING	KVA 4.8
HEATING - REVERSE CYCLE	KVA 3.95
E.F.R. (COOLING)	KVA 3.24
A.E.E.R.	KVA 3.23
ELECTRICAL	
SUPPLY REQUIRED 3Ph 342-436V ~ 50Hz	
INCLUDING VOLTAGE FLUCTUATION LIMITS	
COMPRESSOR (3Ph) RUN AMPS RATED CONDITIONS	A/Ph 7.2
COMPRESSOR OIL TYPE	P.O.E
INDOOR FAN MOTOR FULL LOAD AMPS	A 5
OFM OUTDOOR FAN MOTOR CAPACITOR	MFD B
OFM OUTDOOR FAN MOTOR (IPR) FULL LOAD AMPS	A 1.7
RUNNING AMPS (TOTAL)	A/Ph 11.7/27.2
MAX RUNNING AMPS (TOTAL)	A/Ph 15/11/11
CCB CONTROL CIRCUIT BREAKER	A 10
24VCB 24 VOLT CIRCUIT BREAKER	A 2
WEIGHT-NETT	Kg 225
REFRIGERANT - R410A	Kg 4.65

OPA 161 RKTYH WIRING SCHEMATIC



Title
Scale
Drawing No.
Revision



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REFER TO WEBSITE www.temperzone.biz FOR UP TO DATE INFORMATION

B	Set Dip 1, Switch No.3 to the "OFF" Position/Speed Selection Table Mod N311312-09-12	J.S.L.
A	PRR MOVED FROM TK1-ACTIVE TO CCB TO ACTIVE	A.F.C
ISSUE	MODIFICATION	ECN
	DATE	APRVD

This pamphlet replaces the previous
issue no. 3679 dated 09/12.
Wiring revision B.