OPA 242RKTB-P (c/w EC Plug fan)

Packaged Reverse Cycle R410A Air Cooled Air Conditioner

Installation & Maintenance

GENERAL
This OPA 242RKTB-P unit must be installed in accordance with all national and local safety codes.

CONFIGURATIONS
The OPA 242RKTB-P is supplied in one of two standard configurations :
1. Horizontal supply/return air with box mounting channel (RKTBH-P), or
2. Downward supply air with box mounting channel (RKTBU-P).

REFRIGERATION SYSTEM
General
The OPA 242 has two independent refrigeration circuits and two compressors to provide the flexibility and economy of two stage operation, i.e. utilising one or two circuits as conditions vary, plus the advantage of staggered starting.

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

Compressors
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).

ECONOMISER (Option)
If the outdoor air heat content or temperature 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. The compressor will then operate to provide more cooling if required.

INSTALLATION

Unpacking
Units configured with Downward supply air and mounting rails, have their spigots shipped loose inside the return air cavity.

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 box mounting channel.

When the unit is being installed on a roof it is recommended that the unit is installed on a substantial structure with vibration isolating 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 Downward 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 (see figure 3).

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

The control transformer 240V primary voltage is used for countries with 230-240V power supply. For countries with supply voltages 200-220V, change the primary voltage on the transformer to 208V.

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.

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 determined, the fan speed can be controlled as follows:
1. *ON/OFF*
   a.) Connect 24V a.c. control signal to either 'LOW 24', 'MED 24V' or 'HIGH 24V', and 'COM 24V',
   or
   b) Wire a N/O control relay contact (or switch) between 'FAN 10V' and '0–10V'.
2. *Variable Speed*
   Apply an external variable 0–10V DC control voltage to '0–10V' terminal. Connect 0V reference to 'FAN GND'.

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 the shipping block beneath the compressors have been removed and that the compressors are secure on their mounts.
3. Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
4. Indoor Air fan: Link terminals 'FAN 10V' to '0–10V'. Adjust the 'POT' to deliver your maximum design air flow. Remove link 'FAN 10V' to '0–10V' when fan speed has been set.
5. Check that all fan motors are free running.
6. Check condensate drain for free drainage.
7. Check that the air filters (if fitted) have been correctly installed and are clean.
8. Check air diffuser dampers are open if appropriate.

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. The compressor fitted is 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.
3. Check the supply voltage between each phase and neutral.
4. Measure the current draw on each phase to the compressor motor and measure the current draw of each fan motor. Check all readings against the specified values in the wiring diagram.
5. Fit gauges and measure the suction and discharge pressures of both refrigeration circuits.
6. Check that the outdoor air fan motors are running smoothly.
7. Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
8. Check the supply air flow at each outlet.
9. Check the tightness of all electrical connections and sign the check label.

10.Touch up any outdoor unit paintwork damage to prevent corrosion.

SETTING SUPPLY AIR FLOW

Consult OPA 242 Technical Data pamphlet 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.

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 air 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

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 fans and motor mountings.
3. Check suction and discharge operating pressures.
4. Replace indoor 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. Check and remove as necessary any lint and dust accumulation from outdoor coil fins. In corrosive environments, the checking and cleaning frequency should be increased.
7. Touch up any paintwork damage to prevent corrosion.

NOTE

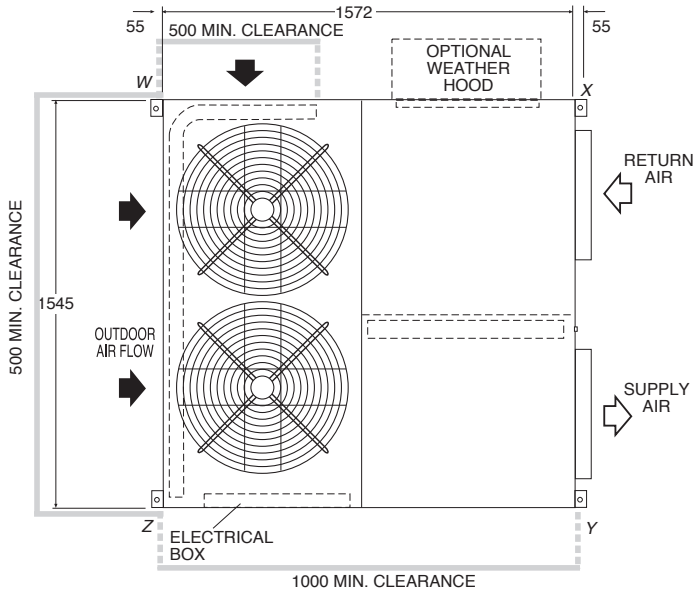
The manufacturer reserves the right to make changes in specifications at any time without notice or obligation. Certified data is available on request.

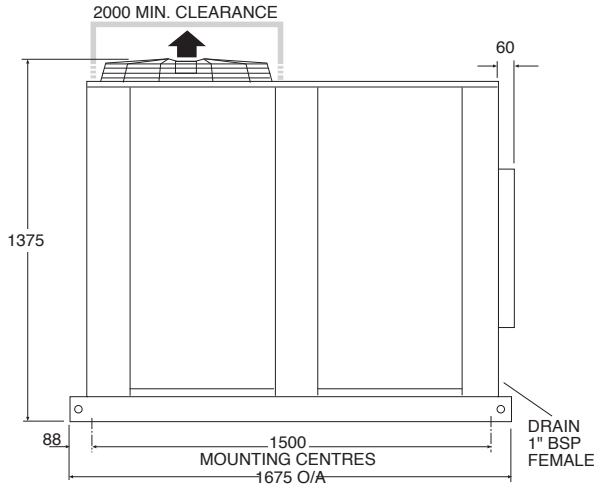
This pamphlet replaces the previous issue no. 3738 dated 04/18. Dimension added betw. spigots. Wiring revision E.

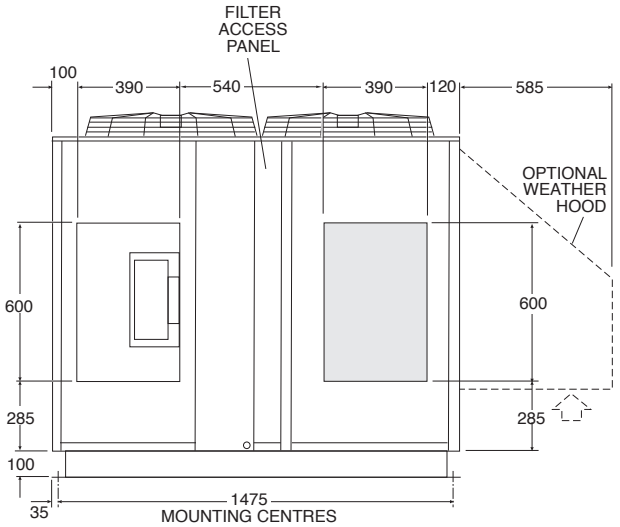
DIMENSIONS (mm)

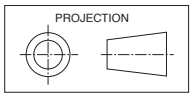
OPA 242RKTB-P

Fig. 1 OPA 242RKTBH-P – Horizontal Supply & Return Air









Not to Scale

POINT LOADS (kg)			
W	X	Y	Z
89	98	107	149

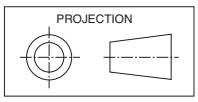
Net Weight 443 kg

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

DIMENSIONS (mm)

OPA 242RKTB-P

Fig. 2 OPA 242RKTBU-P – Downward Supply & Return Air



Not to Scale

Note:
Supply and return air spigots are shipped loose inside the return air cavity.

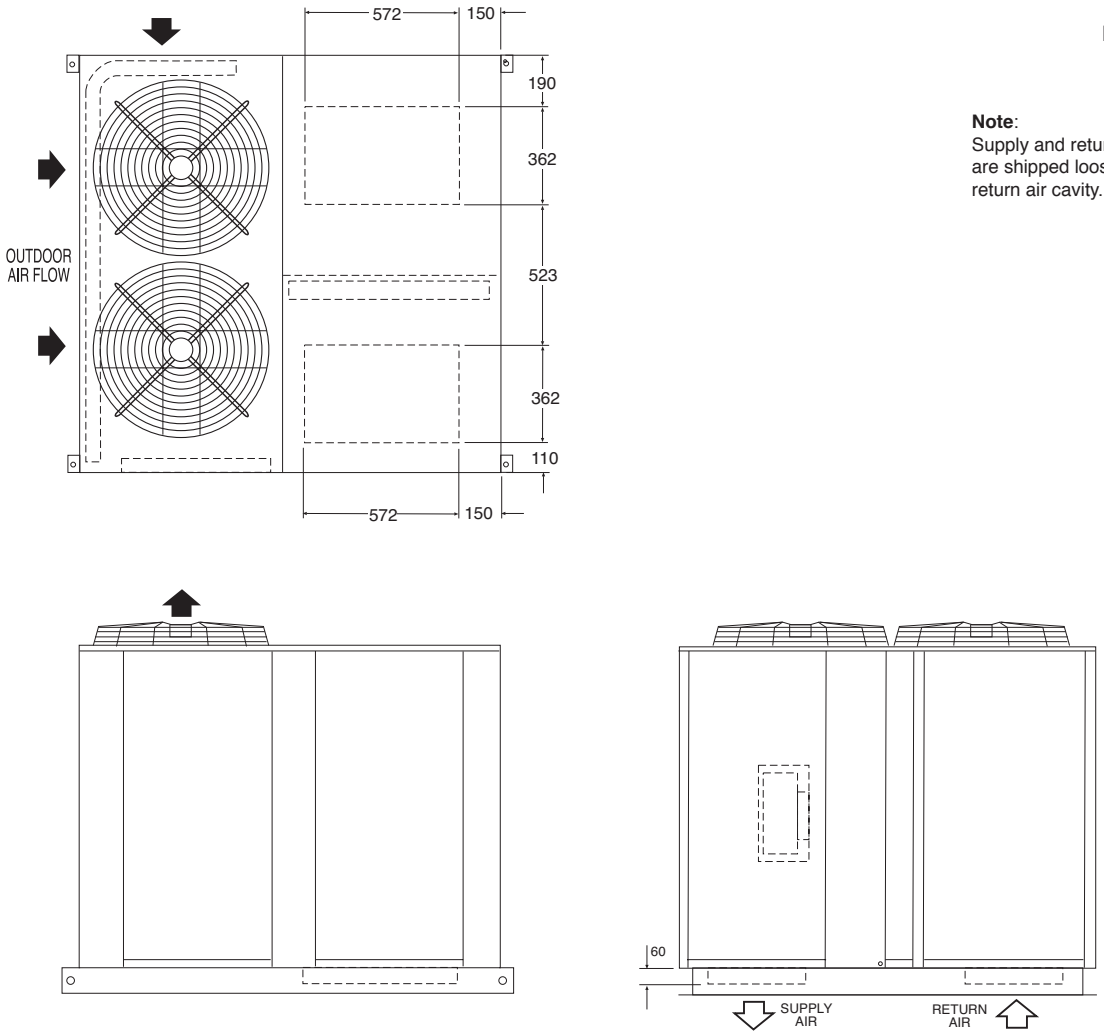
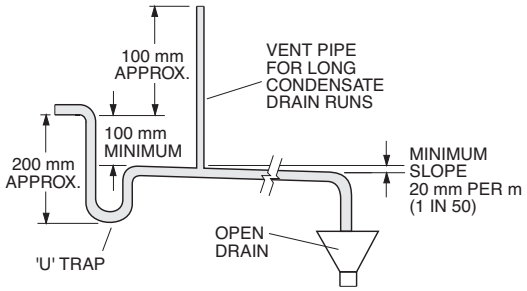
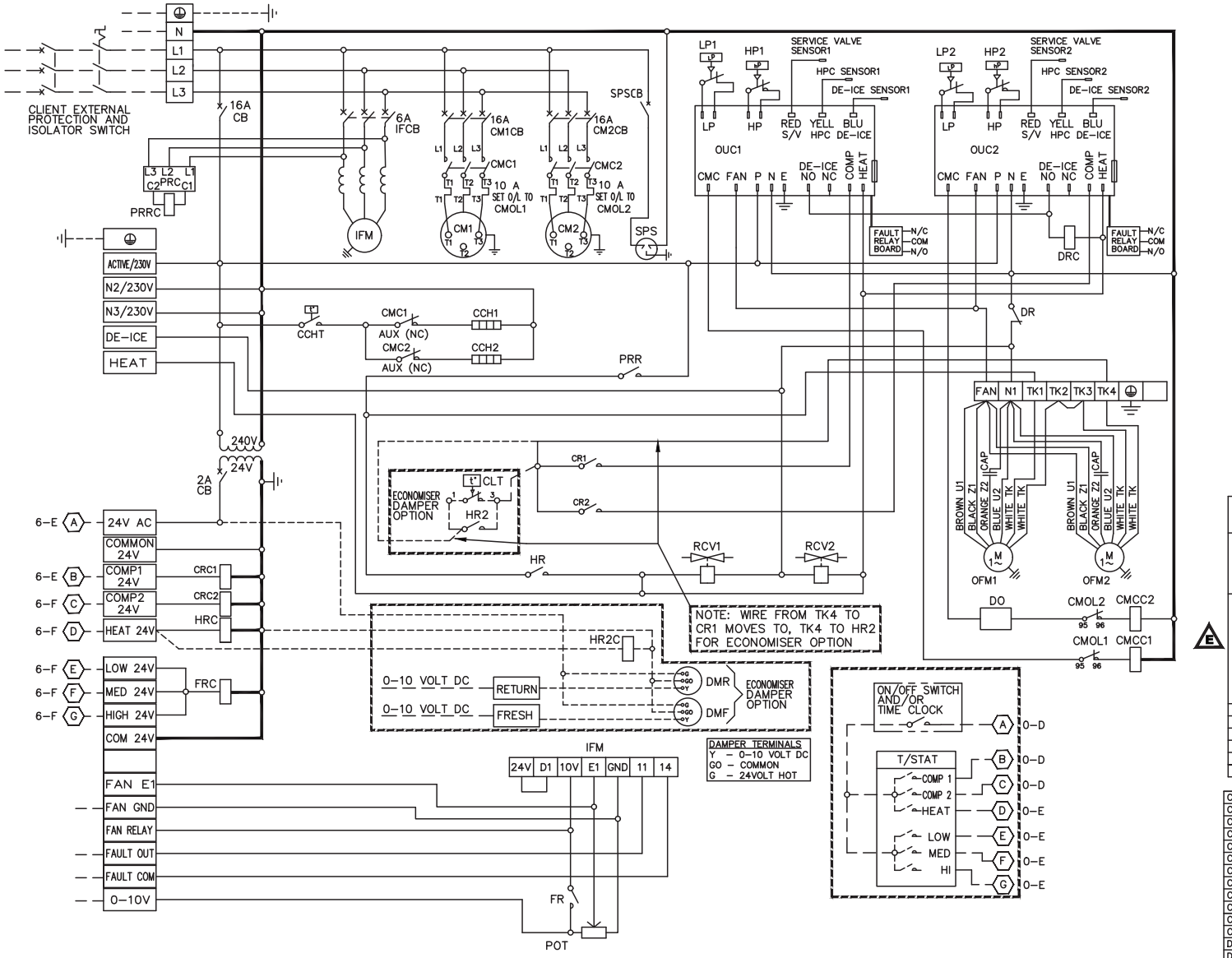


Fig. 3 Condensate Drain





REV	DESCRIPTION	ECN	DATE	ENG
E	Compressor run amps 9.3 was 9.3/8.8/8.7. Compressor direction note removed.	N4112	01-11-19	N.E.C.
D	Added fan relay to fan terminal block link	N4087	03-04-18	A.K.B
C	Move CCHT from neutral to active. Added Client protection CB and isolator switch.	N4055	08-12-17	A.K.B

CAPACITIES – NET to AS/NZS 3823			
COOLING –	kW	22.34	
HEATING – REVERSE CYCLE	kW	22.2	
ELECTRICAL INPUT			
COOLING –	kW	7.0	
HEATING – REVERSE CYCLE	kW	6.54	
E.E.R. (COOLING)	kW/kW	3.19	
A.E.E.R. (COOLING)	kW/kW	3.17	
ELECTRICAL			
SUPPLY REQUIRED 3Ph 380–415V ~ 50Hz INCLUDING VOLTAGE FLUCTUATION LIMITS			
COMPRESSOR (3Ph) RUN AMPS RATED CONDITIONS	A/Ph	9.3	
INDOOR FAN MOTOR (3Ph)	kW	1.4	
INDOOR FAN MOTOR (3Ph) FULL LOAD AMPS	A	1.9/Ph	
OUTDOOR FAN MOTOR (1Ph) FULL LOAD AMPS	A	2.6	
OUTDOOR MOTOR CAPACITOR	MFD	8.0	
RUNNING AMPS (TOTAL)	A	13.3/10.2/10.1	
MAXIMUM RUNNING AMPS (TOTAL)	A/Ph	17/14/13.4	
WEIGHT–NETT OPA 242RKTB	Kg	443	
REFRIGERANT – R410A	Kg/SYSTEM	3.30	
COMPRESSOR TYPE : SCROLL			
OIL TYPE : POLYOLESTER (P.O.E.)			

CAP	CAPACITOR	HR	HEATING RELAY
CB	CIRCUIT BREAKER	HR2	HEATING RELAY 2
CCH	CRANKCASE HEATER	HRC	HEATING RELAY COIL
CCHT	CRANKCASE HEATER T/STAT–CLOSED<7°	HR2C	HEATING RELAY 2 COIL
CLT	COMPRESSOR LOW LIMIT T'STAT	HP	HIGH PRESSURE SWITCH
CM	COMPRESSOR MOTOR	IFCB	INDOOR FAN CIRCUIT BREAKER
CMC	COMPRESSOR CONTACTOR	IFM	INDOOR FAN MOTOR
CMCB	COMPRESSOR CIRCUIT BREAKER	LP	LOW PRESSURE SWITCH
CMCC	COMPRESSOR CONTACTOR COIL	OFM	OUTDOOR FAN MOTOR
CMOL	COMPRESSOR OVERLOAD	OUC	OUTDOOR UNIT CONTROLLER
CR	COMPRESSOR RELAY 24 V CONTROL	POT	POTENTIOMETER
CRC	COMPRESSOR RELAY COIL 24V	PRC	PHASE ROTATION CONTROL
DMF	DAMPER MOTOR FRESH AIR	PRR	PHASE ROTATION RELAY
DMR	DAMPER MOTOR RETURN AIR	PRRC	PHASE ROTATION RELAY COIL
DO	TIME DELAY 30 SEC, DELAY ON MAKE	RCV	REVERSE CYCLE VALVE
DR	DE–ICE RELAY	SPSCB	SINGLE PHASE SOCKET CIRCUIT BREAKER
DRC	DE–ICE RELAY COIL	SPS	SINGLE PHASE SOCKET
F	INDOOR FAN CONTROL	TK	CIRCUIT FOR OVERLOAD IN OUTDOOR FAN MOTOR
FR	INDOOR FAN CONTROL RELAY		
FRC	INDOOR FAN CONTROL RELAY COIL	Ⓩ	DE–ICE INHIBIT LEAD

temperzone

Client Wiring – – – – – – –

Drawn: J.S.L | Date: 09-12-11

Apprvd: SR PCL

Title: OPA242RKTB-P
Electrical Wiring Schematic

Drawing No: 291-000-025
SHEET 1 OF 1

Rev: E