

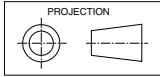
OSA 460RKTGV (Digital c/w UC7 Controller)

Reverse Cycle R410A Split System Outdoor Unit

Installation & Maintenance

Dimensions (mm)

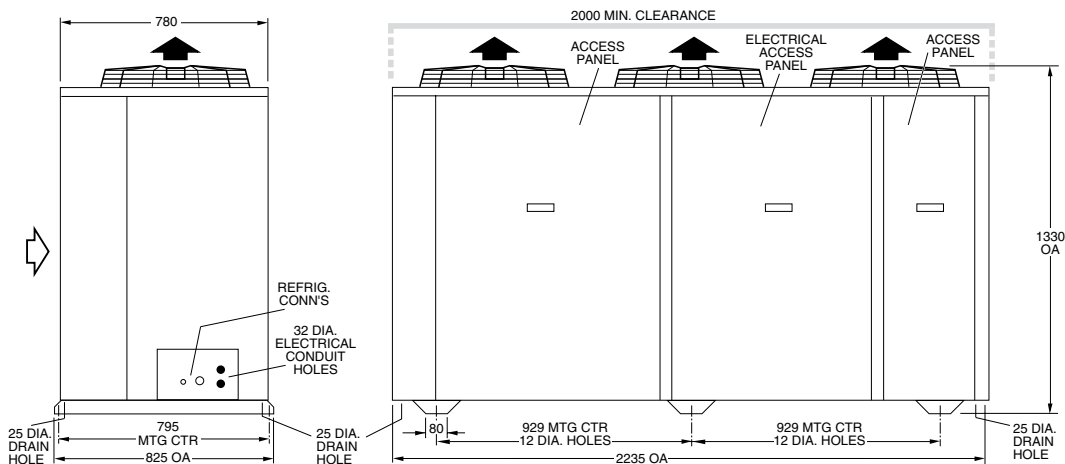
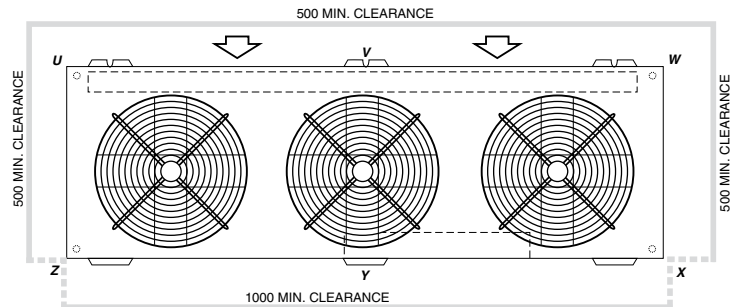
OSA 460RKTGV



Not to Scale

Net Weight 331 kg

CORNER LOADS (kg)					
U	V	W	X	Y	Z
51	51	51	59	60	59



GENERAL

This OSA 460RKTG Outdoor Unit must be installed in accordance with all national and local safety codes.

Options

1. Anti-vibration mounts (rubber).
2. Drain connection adaptors - right angle.
3. Signal Input for Controller 0-10V (ref p.2).

INSTALLATION

Positioning

Refer to dimension diagram below for minimum clearances. Fasten the unit down to a firm flat horizontal base using the six 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.

Drain

Four drain holes are provided in the base of the unit to release condensate and/or rain water. Drain connection adaptors (25/13) are available as an optional extra.

Coil Protection

A coil protection guard is available as an optional extra.

REFRIGERATION PIPING

General

The OSA 460 is shipped with a holding charge of refrigerant. The matched indoor unit is shipped with a holding charge of nitrogen. OSA 460 units have brazed pipe connections.

Recommended Pipe Sizes

Suction pipe : 35 mm OD
Liquid pipe : 16 mm OD

Line Lengths

The standard unit is suitable for a line length up to 50 m. For line lengths between 50 m and 90 m, refer to **temperzone's Split Systems Installation Guide** (refer www.temperzone.biz/Technical Support). Refer also to *Oil Charge* overleaf.

Maximum line length when extended is 90m.

Height Separation Limits

Outdoor Unit above Indoor Unit : 20 m
Outdoor Unit below Indoor Unit : 20 m

Vertical Risers

If the outdoor unit is to be installed above the indoor unit, then the suction riser should be trapped at the bottom of the vertical rise and then again at 8 m (maximum) intervals. This is to ensure oil return to the compressor. The trap to be a 'swan neck' curve in the pipe, with no change in the pipe size.

Piping

1. Use clean sealed refrigeration grade piping and accessories designed specifically for R410A.
2. Cut pipe with a pipe cutter ONLY.
3. Use long radius bends (2x pipe dia.).
4. Insulate the suction (gas) line and seal all insulation joints.
5. Bi-flow type filter dryer may be fitted in the liquid line.
6. Include a process point on the interconnecting pipework.
7. Ensure open pipe ends are sealed until the final connection is made.

8. Immediately before removing brazed pipe connection's seal, reduce holding charge between connection points and service valves to atmospheric pressure.
Warning: Failure to do so may cause injury.

Charging

The unit is supplied with a 1 kg holding charge of refrigerant HFC-410A (R410A). Add 13 kg of HFC-410A to complete the base charge, then add 105 g per metre of pipework between indoor and outdoor units.

Procedure:

1. Evacuate Indoor Unit and interconnecting pipework to a pressure of 500 microns and hold for 15 mins.
2. Add refrigerant via the Schraeder connection on the smaller of the Outdoor Unit's two service valve extension pipes.
3. Open the service valve at the Outdoor Unit to allow refrigerant to flow throughout the system.
4. Leak check all brazed and fitted joints.

IMPORTANT :

Step 8 of the 'Start Up Procedure' requires you to check that the superheat on the suction line (where it enters the Outdoor Unit) is between 3°C – 5°C on cooling cycle with an indoor air temperature in the range 21° – 27°C and outdoor air temperature in the range 24° – 35°C. If the conditions of the day do not allow this, use the heating cycle (on a reverse cycle unit) or other heat source to raise the indoor air temperature to about 24°C and blank off the outdoor coil to raise the head pressure to 400 psig (2760 kPag). Alter charge up or down to establish correct superheat.

WARNING:

This unit is designed for use ONLY with the refrigerant HFC-410A (R410A). The use of other refrigerants is NOT authorised or approved by the manufacturer and may cause operational problems such as poor performance and efficiency, loss of capacity, degradation of materials and refrigerant leaks. **The use of flammable or explosive materials as a refrigerant creates the additional risks of fire and explosion which may result in property damage, personal injury or death.**

Oil Charge

For line lengths in excess of 30 m, Emkarate RL22CF polyolester oil (or similar) must be added to the refrigerant at the rate of 30 ml/m of suction piping.

Note: This oil absorbs moisture quickly if exposed to open air. Do not use mineral oil.

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 Outdoor Unit.

Note: DO NOT USE REWIRABLE FUSES.

The OSA 460 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.

The matched ISF indoor unit is supplied with a 25m coil sensor lead that must be connected as per the wiring diagram.

The system is set up for the compressor to be controlled variably by:

1. TZT-100 Controller (via modbus),
2. 0-10V dc command via BMS modbus, or
3. 0-10V dc command via a client supplied external controller.

If option 3 is chosen, then the optional Signal Input for Controller 0-10V is required (temperzone Part No. 201-000-386).

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

Note: The TZT-100 Controller can automatically switch the indoor fan off during de-ice, if selected, therefore no additional wiring is required to achieve this result.

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

SYSTEM 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 for correct rotation of the compressor. If rotation is incorrect the compressor will not pump and will draw minimal current. To correct motor rotation, change the phasing at the main power terminal.
4. Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
5. Check that the air filters, if any, have been correctly installed.
6. 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 the supply voltage.
3. 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.

4. Fit gauges and measure the suction and discharge pressures.
Important: Gauges must be designed specifically for use with R410A.
5. Test the operation of the high pressure safety control by switching off the outdoor unit's fan.
6. Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
7. Check that the air flow over the outdoor unit's coil is adequate and that the fan is running smoothly.
8. Check the superheat - refer charging procedure.
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 and 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.

MAINTENANCE

Weekly For First Four Weeks

1. Check indoor unit 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 that fan motors are free running.
4. Check suction and discharge operating pressures.

Pipe Length Capacity Loss

On Cooling Cycle Due to Pressure Drop

Note : Loss percentages are approximations only, due to piping variations. No allowance made for vertical piping.

Pipe Size (mm)		Equivalent Line Pipe Length (m)			
Liquid	Suction	10	20	30	40
16	35	1 %	2 %	3 %	4 %

Additional Pipe Length to allow per Bend	
Suction Pipe Size OD	35 mm
Long 90° Radius (i.e. 2 x pipe dia.)	0.76 m

-
5. Replace indoor unit air filters (if fitted).
 6. Check condensate drain for free drainage.

Yearly

1. Check all refrigerant piping for chafing and vibration.
2. Check air supply at all diffusers.
3. Check for excessive noise and vibration and correct as necessary.
4. Check for insulation and duct damage and repair as necessary.
5. Remove lint and dust accumulation from outdoor coil fins.
6. Touch up all 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.

OUTDOOR UNIT: — OSA 460
WITH INDOOR UNIT

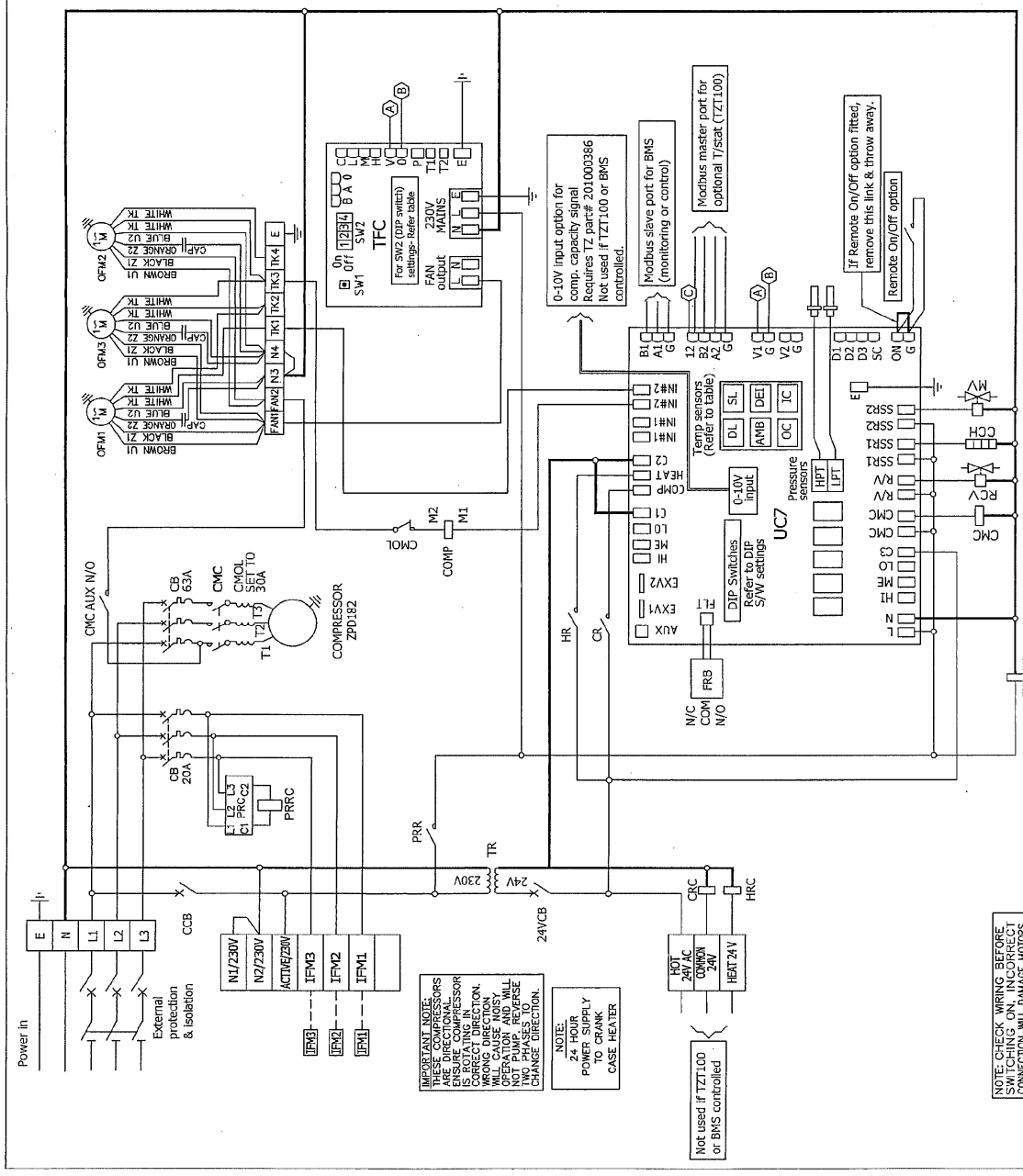
CAPACITIES — NET to AS/NZS 3823	
COOLING —	kW 44.73
HEATING — REVERSE CYCLE	kW 45.85
ELECTRICAL INPUT	
COOLING —	kW 15.2
HEATING — REVERSE CYCLE	kW 12.67
E.E.R. (COOLING)	kW/kW 2.943
ELECTRICAL	
SUPPLY REQUIRED 3Ph 342~436V ~ 50Hz INCLUDING VOLTAGE FLUCTUATION LIMITS	
COMPRESSOR (3PH) RUN AMPS RATED CONDITIONS A/Ph	24
INDOOR FAN MOTOR ISF 450	A/Ph 2.5 x3
INDOOR FAN MOTOR (FPH) FULL LOAD AMPS	N/A
INDOOR MOTOR CAPACITOR	A 1.7 x3
RUNNING AMPS (TOTAL)	MFD 8 x 3
RECOMMENDED EXTERNAL PROTECTION	A 28/24/29
COMPRESSOR TYPE: SCROLL	A/Ph 63
OIL TYPE: POLYOLESTER	
WEIGHT—NETT OSA 460	331 kg
REFRIGERANT — HCFC (R410A)	
UNIT HOLDING CHARGE 1 kg	
BASE CHARGE UNIT 14kg PLUS 105grams PER METRE LINE LENGTH BASED ON LIQUID LINE Ø16 mm & GAS LINE Ø35 mm	

CAP CAPACITOR	HP HIGH PRESSURE SWITCH
CB CIRCUIT BREAKER	HR HEATING RELAY
CCH CRANKCASE HEATER	HRC HEATING RELAY COIL
CCHT CRANKCASE HEATER T/STAT	HPT HIGH PRESSURE TRANSDUCER
CM COMPRESSOR MOTOR	IFC INDOOR FAN CONTACTOR
CMC COMPRESSOR CONTACTOR	IFCC INDOOR FAN CONTACTOR COIL
CMCL COMPRESSOR OVERLOAD	IFM INDOOR FAN MOTOR
CR COOL RELAY CONTACTOR	IFOL INDOOR FAN OVERLOAD
CRC COOL RELAY COIL	LIT LIQUID INJECTION SOLENOID COIL
OUC OUTDOOR UNIT CONTROLLER	LPC LOW PRESSURE TRANSDUCER
PRC PHASE ROTATION CONTROL	OFM OUTDOOR FAN MOTOR
PRR PHASE ROTATION RELAY	PRC PHASE ROTATION RELAY
PRRC PHASE ROTATION RELAY COIL	PRRC PHASE ROTATION RELAY COIL
RCV REVERSE CYCLE VALVE	R RESISTOR
SNUB SNUBBER P/N 201 000 007	

TEMPERATURE SENSOR		
SENSOR	COLOR	QTY
DL DISCHARGE	RED	1
SL SUCTION	BLUE	1
AMB AMBIENT	BLACK	1
DEL DE-ICE	BLUE	1
OC O/D COIL	YELLOW	1
IC I/D COIL	YELLOW	1

This OSA 460RKTGV TO MATCH ISF450
WIRING SCHEMATIC

Drawn BES	Date 21-01-14	Drawing No.	Revision
Scale	Aprvd [Signature]	291-010-318-ENG	



DIGITAL SYSTEM
UC7 DIP SWITCH SETTINGS

DIP SWITCH NO.	ON	OFF
1	ON	OFF
2	ON	OFF
3	ON	OFF
4	ON	OFF
5	ON	OFF
6	ON	OFF
7	ON	OFF
8	ON	OFF
9	ON	OFF
10	ON	OFF
11	ON	OFF
12	ON	OFF
13	ON	OFF
14	ON	OFF
15	ON	OFF
16	ON	OFF

TFC DIP SWITCH SETTINGS

DIP SWITCH NO.	ON/OFF
1	ON/OFF
2	ON/OFF
3	ON/OFF
4	ON/OFF

NOTE: CHECK WIRING BEFORE SWITCHING ON. INCORRECT SWITCHING WILL DAMAGE MOTORS. CLIENT WIRING INTERCONNECTIONS BETWEEN UNITS BY client. Double insulated multi-core cable.

NOTE: TRANSFORMER 240V PRIMARY VOLTAGE IS USED FOR CONTROL. TRANSFORMER 240V PRIMARY VOLTAGE IS USED FOR POWER SUPPLY TO THE COMPRESSOR. TRANSFORMER 240V PRIMARY VOLTAGE IS USED FOR POWER SUPPLY TO THE FAN MOTORS. TRANSFORMER 240V PRIMARY VOLTAGE IS USED FOR POWER SUPPLY TO THE FAN MOTORS. TRANSFORMER 240V PRIMARY VOLTAGE IS USED FOR POWER SUPPLY TO THE FAN MOTORS.