

# OSA 298RKTB

## Reverse Cycle R410A Split System Outdoor Unit

## Installation & Maintenance

### GENERAL

The OSA 298RKTB outdoor unit is a twin system that provides the facility for capacity control (staging) or staggered starting.

Alternatively, the OSA outdoor unit can be connected to two indoor units of half capacity, controlled by a single thermostat. Four indoor units of one quarter capacity, i.e. two pairs connected in tandem, is also an option. In either case, refer to **temperzone** engineering for wiring details.

This OSA 298RKTB 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.

### Combinations

- One OSA 298RKTB with one ISD 298KB
- One OSA 298RKTB with one ISD 298KBGD
- One OSA 298RKTB with two ISD 140K
- One OSA 298RKTB with four ISD 80K

### INSTALLATION

#### Positioning

Refer to dimension diagram below for minimum clearances. Position the unit so that prevailing winds do not blow onto the exhaust to slow the fan, and one unit does not exhaust toward the inlet of another unit. The optional vertical discharge grilles can be used to deflect prevailing winds and reduce clearances.

Fasten the unit down to a firm flat horizontal base using the four holes provided in the mounting rails. To avoid transfer of vibration, mount the unit on the optional rubber mounts available from **temperzone**.

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 or rubber mounts (optional extra) beneath the unit. These items are not supplied with the unit.

### Drain

Install the unit with a positive fall to the rear to ensure condensate and/or rain water drains away freely through the drain holes provided. Drain connection adaptors (25/13) are available as an optional extra.

### REFRIGERATION PIPING

#### General

The OSA 298 is shipped with a holding charge of refrigerant. The matched indoor unit is shipped with a holding charge of nitrogen. OSA 298 units have brazed pipe connections.

#### Recommended Pipe Sizes

- Suction pipe (x2) : 22 mm OD
- Liquid pipe (x2) : 13 mm OD

#### Line Lengths

The standard unit allows for a line length up to 30 m. For line lengths between 30 m and 90 m, refer to **temperzone's Split Systems Installation Guide** (refer [www.temperzone.biz/Technical Support](http://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

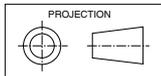
1. Use clean sealed refrigeration grade piping and accessories designed specifically for R410A.
  2. Cut pipe with a pipe cutter ONLY.
  3. Use long radius bends (2x pipe dia.).
  4. Insulate the suction (gas) line and seal all insulation joints.
  5. Bi-flow type filter dryer may be fitted in the liquid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

#### Important

Do not connect System 1 to System 2.

### Dimensions (mm)

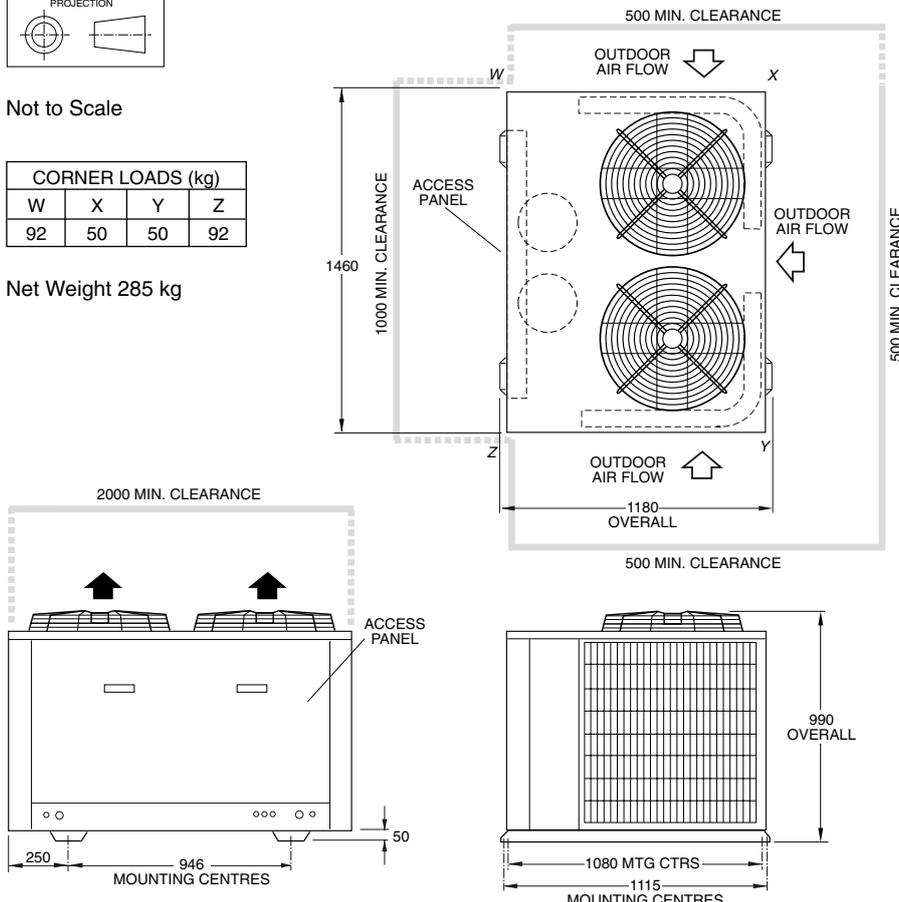
### OSA 298RKTB



Not to Scale

CORNER LOADS (kg)				
W	X	Y	Z	
92	50	50	92	

Net Weight 285 kg



## Charging

Each system is supplied with a 1 kg holding charge of refrigerant HFC-410A (R410A). Add additional HFC-410A to each system in order to complete the base charge; refer wiring diagram specification table for amount; then add 60 g of HFC-410A per metre to suit the installed line length.

### Procedure (per system):

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 valves.
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) should be added to the refrigerant at the rate of 13 ml/m of suction piping.

**Note:** 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.

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 **temperzone** for recommended thermostats.

It is recommended electricians run a spare wire between Outdoor Unit and Indoor Unit in case 'Indoor Fan Off During De-Ice' becomes a requirement. Leave this spare wire unconnected until required. (Not required when using **temperzone** SAT-1 Controller). Refer indoor unit's wiring diagram.

A 24 hour power supply is required to the unit. Disconnect the crankcase heater if the total line length is less than 8 m.

### 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. Bypass the crankcase heater thermostat (CCHT) for this period only.
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 tightness of electrical connections.
6. Check that the air filters, if any, have been correctly installed.
7. Check any supply air diffuser dampers are open.

### START UP PROCEDURE

Check each system independently first before running complete system. 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 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 condensate drain for free drainage and no leaks.
10. Check compressor compartment for oil stains indicating refrigerant leaks.
11. Check the supply air flow at each outlet.
12. 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 run efficiently on cooling cycle at outdoor ambient temperatures below 20°C, and heating cycle above 15°C. 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 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.
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.

## 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)					Additional Pipe Length to allow per Bend	
Liquid	Suction	5	10	15	20	30	Suction Pipe Size OD	22 mm
13	22	0.7 %	2.1 %	3.4 %	4.7 %	6.1 %	Long 90° Radius (2 x pipe dia.)	0.5 m

MODEL : OSA 298 RKTBV & ISD 298KB / ISD 299KB (14) ISD 299KB (34)

CAPACITIES - NET TO AS/NZS 3823	SW 298KB	ISD 299KB	ISD 299KB (34)
COOLING -	KW	29.87	29.87
HEATING - REVERSE CYCLE	KW	30.70	31.01
ELECTRICAL INPUT			
COOLING -	KW	9.75	9.75
HEATING - REVERSE CYCLE	KW	9.32	8.7
E.E.R. (COOLING)	KW/KW	3.06	3.063
ELECTRICAL			
SUPPLY REQUIRED 3Ph 342-436V ~ 50Hz			
INCLUDING VOLTAGE FLUCTUATION LIMITS			
COMPRESSOR (3Ph) RUN AMPS RATED CONDITIONS	A/Ph	14.8	15
INDOOR FAN MOTOR (1Ph) CAPACITORS	MFD	15 / 8	N/A
INDOOR FAN MOTOR (1Ph) FULL LOAD AMPS	A	3.44/1.89	N/A
INDOOR FAN MOTOR (3Ph) FULL LOAD AMPS	A/Ph	N/A	2.6
OUTDOOR FAN MOTOR (1Ph) FULL LOAD AMPS	A	1.7 X 2	
OUTDOOR MOTOR CAPACITOR	MFD	B X 2	
RUNNING AMPS (TOTAL)	A/Ph	22/14.7/15/19.3/16.5/17.3	
RECOMMENDED EXTERNAL PROTECTION			
WEIGHT-NET	Kg	285	

EACH SYSTEM HAS A HOLDING CHARGE OF 1kg  
 BASE CHARGE PER ISD 298KB SYSTEM 4.1kg + 60grams PER METRE LINE LENGTH  
 FOR ISD 299KB SYSTEM (3ø INDOOR FAN) ADD 0.5kg  
 BASED ON ø12.7 OD LIQUID LINE & ø22 OD GAS LINE

CAP CAPACITOR	HP	HIGH PRESSURE SWITCH
CB CIRCUIT BREAKER	IFC	INDOOR FAN CONTACTOR
CCH CRANKCASE HEATER	IFCC	INDOOR FAN CONTACTOR COIL
CCHT CRANKCASE HEATER 7° T/STAT	IFM	INDOOR FAN MOTOR
CLT COMPRESSOR LOW LIMIT T/STAT	LP	LOW PRESSURE SWITCH
CM COMPRESSOR MOTOR	OFM	OUTDOOR FAN MOTOR
CMC COMPRESSOR CONTACTOR	OUC	OUTDOOR UNIT CONTROLLER
CMCC COMPRESSOR CONTACTOR COIL	PRC	PHASE ROTATION RELAY
CMCL COMPRESSOR OVERLOAD	PRR	PHASE ROTATION RELAY
CR COMPRESSOR RELAY 24 V CONTROL	PRRC	PHASE ROTATION RELAY COIL
CRC COMPRESSOR RELAY COIL 24V RCV	RCV	REVERSE CYCLE VALVE
DO TIME DELAY 30 SEC, DELAY ON MAKE	RCV	REVERSE CYCLE VALVE
DR DE-ICE RELAY	(Z)	DE-ICE INHIBIT LEAD
DRC DE-ICE RELAY COIL		
F INDOOR FAN CONTROL		
FR INDOOR FAN CONTROL RELAY		
FRC INDOOR FAN CONTROL RELAY COIL		
HR HEATING RELAY		
HRC HEATING RELAY COIL		

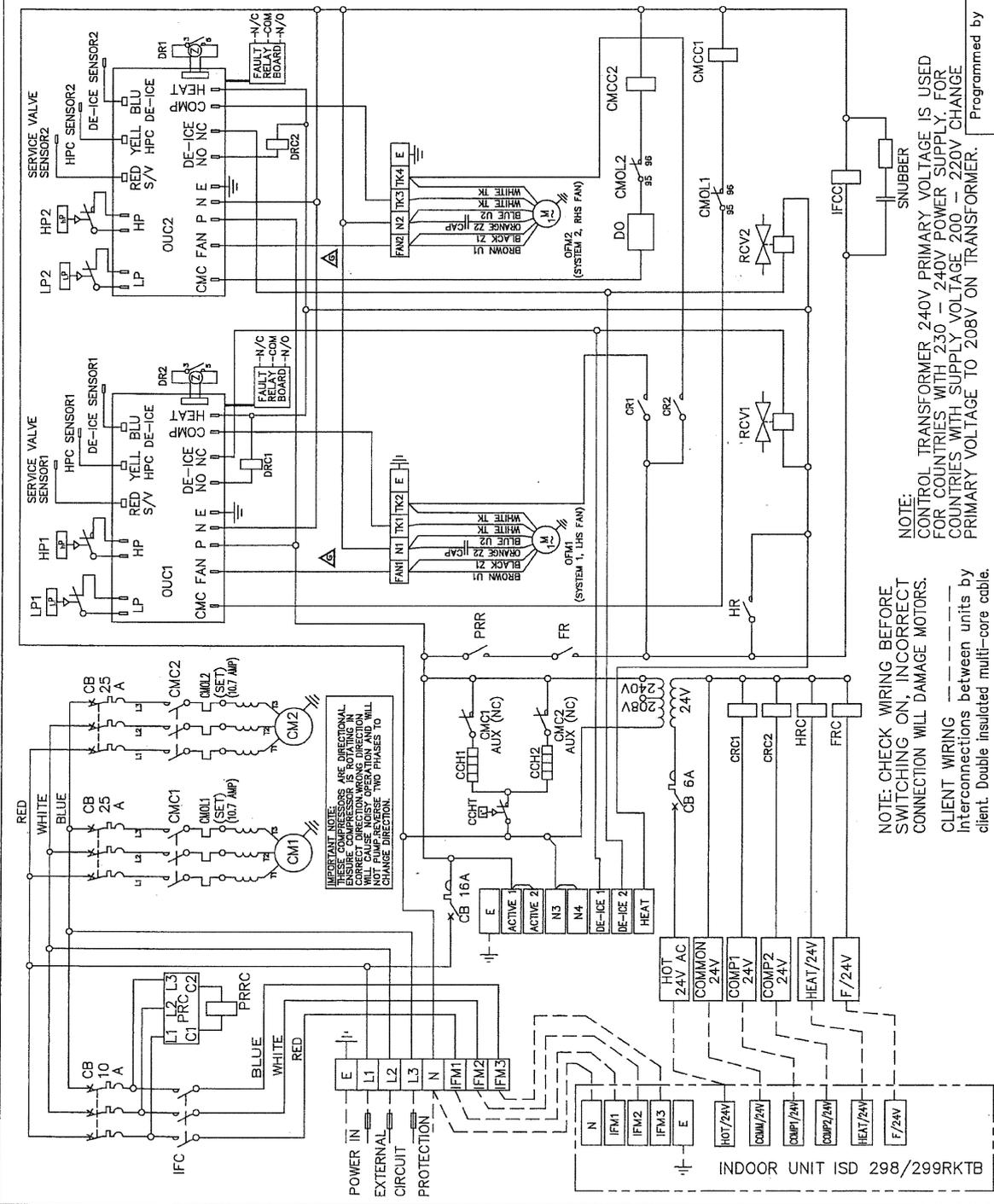
Consult Outdoor Unit Controller label for further details, or refer to Temperzone for fault diagnosis information.

Sensor Locations  
 Red to service valve pipe pocket.  
 Yellow to coil return bend pocket.  
 Blue to bottom of coil in fins.

**R410A**

Title  
**OSA 298RKTBV**  
**WIRING SCHEMATIC**

Scale  
 Drawn KTT  
 Date 29-08-08  
 Revision  
 526-544-002  
 G



**IMPORTANT NOTE:**  
 THESE COMPRESSORS ARE DIRECTIONAL. IF THE CORRECT DIRECTION WIRING DIRECTION WILL CAUSE NOISY OPERATION AND WILL CHANGE DIRECTION.  
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**NOTE:**  
 CONTROL TRANSFORMER 240V PRIMARY VOLTAGE IS USED FOR COUNTRIES WITH 230 - 240V POWER SUPPLY. FOR COUNTRIES WITH SUPPLY VOLTAGE 200 - 220V CHANGE PRIMARY VOLTAGE TO 208V ON TRANSFORMER.

**NOTE:** CHECK WIRING BEFORE SWITCHING ON, INCORRECT CONNECTION WILL DAMAGE MOTORS.  
 CLIENT WIRING interconnections between units by client. Double insulated multi-core cable.

ISSUE	MODIFICATION	EC/N	DATE	APRVD	DRG SIZE	No.	DESCRIPTION	Mat'l	FINISH No.	ASSY No.
G	WIRE FROM FAN 1 TO FAN 2 REMOVED	N2877	29-09-11	ROD						
F	ADD LIQUID LINE & GAS LINE PIPE DETAILS	N2796	30-05-11	ROD						
E	DATA UPDATE: 29.87/30.70/9.75/9.32/3.06/4.1 WERE 30.045/30.87/9.84/8.41/3.053/3.5	N2674	12-02-11	D.A.B						
D	T/STAT ADDED	N2727	24-01-11	ROD						

Plotted  
 29-09-11  
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Programmed by

This pamphlet replaces the previous  
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Max. line length; Charging.