

OSA 950RKTBGV (Digital c/w UC6 Controller)

Reverse Cycle R410A Split System Outdoor Unit

Installation & Maintenance

GENERAL

The OSA 950RKTBGV outdoor unit is a twin system that provides the facility for capacity control (staging) or staggered starting. One of the two compressors is digital, permitting a further stage of capacity variability.

This OSA 950RKTBGV Outdoor Unit must be installed in accordance with all national and local safety codes.

Option

TZT-100 Room Temperature Controller

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.

Coil Protection

A coil protection guard is available as an optional extra.

REFRIGERATION PIPING

General

The OSA 950 is shipped with a refrigerant charge sufficient for a 10 m line length. The matched indoor unit is shipped with a holding charge of nitrogen. OSA 950 units have brazed pipe connections.

Recommended Pipe Sizes

Suction pipe (x2): 35 mm OD
Liquid pipe (x2): 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

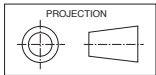
Outdoor Unit above Indoor Unit : 20 m
Outdoor Unit below Indoor Unit : 20 m

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.

Dimensions (mm)

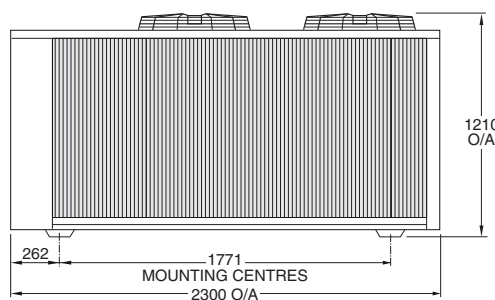
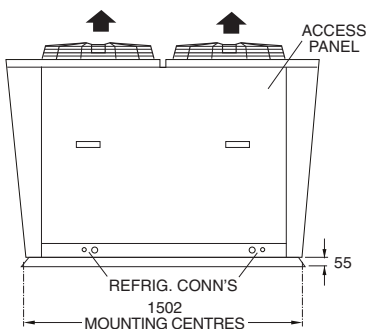
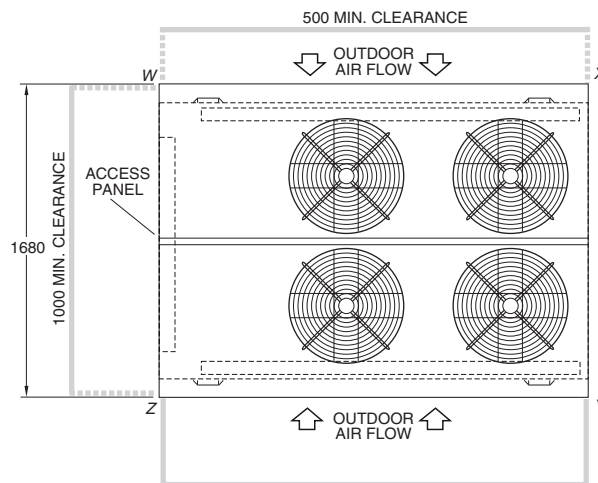
OSA 950RKTBGV



Not to Scale

Net Weight 589 kg

CORNER LOADS (kg)			
W	X	Y	Z
185	109	109	186



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.

Important

Do not connect System 1 to System 2.

Charging

The unit is supplied with sufficient refrigerant HFC-410A (R410A) for 10 m of pipework between the indoor and outdoor units; refer wiring diagram specification table for amount. Add 170 g per metre per system above 10 m.

Procedure (per system):

1. Evacuate Indoor Unit and interconnecting pipework to a pressure of 500 microns and hold for 15 mins.

- Add refrigerant via the Schraeder connection on the smaller of the Outdoor Unit's two service valve extension pipes.
- Open the service valve at the Outdoor Unit to allow refrigerant to flow throughout the system.
- 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 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 950 is provided with a 24V AC control circuit for a thermostat, on/off switch and/or time clock.

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.

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

- 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.
- Check that all fan motors are free running.
- 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.
- Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
- Check that the air filters, if any, have been correctly installed.
- Check any supply air diffuser dampers are open.

START UP PROCEDURE

Check each system independently first before running complete system. After the four hour delay for the crankcase heater has expired, use the supplied Commissioning Sheet (Form NS 217) to record results when completing the following 'Start-up' procedure. The supplied *UC6 Service Interface display* should be used to read, pressures, superheat and its set-point, compressor amps etc.

- Select a sensible Fan speed (or Auto Fan mode), operating cycle (cool or heat), and room temperature set point, depending on the time of year, such that the compressor will start and run at a high capacity.
- Turn ON the thermostat / External controller. Wait for the compressor to start and reach a stable speed. Measure the current for each phase feeding into the compressor's. Compare against the compressor amps specified on the unit's wiring diagram.
- 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.
- Measure the current draw of each fan motor. Check all readings against the specified values in the wiring diagram.
- Use the *UC6 Service Interface display* supplied to read operating pressures and status.
Alternatively, fit gauges and measure the suction and discharge pressures of both refrigeration circuits.
Important: Gauges must be designed specifically for use with R410A.
- Check that the outdoor air fan motors are running smoothly and drawing less than the full load amps specified.
- Check the superheat - refer charging procedure.

- Check the indoor unit's fan belt tension after 20 mins of operation and adjust if necessary (refer Commissioning Sheet).
- Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
- Check the supply air flow at each outlet.
- Touch up any outdoor unit paintwork damage to prevent corrosion.

UNIT CONTROLLER (UC6)

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 and loss of refrigerant. The UC regulates the superheat of the refrigeration system by controlling the position of an Electronic Expansion Valve (EEV).

Refer to UC6 Controller label on the unit for operation & fault diagnostics information. Many operating status conditions can be determined, without gauges, simply by using a *UC6 Service Interface* display.

MAINTENANCE

Weekly For First Four Weeks

- Check air filters, if fitted, and vacuum or wash clean as necessary.
- Check condensate drain for free drainage.
- Check compressor compartment for oil stains indicating refrigerant leaks.

Three Monthly (or every 1200 hrs of operation)

Check the indoor unit's fan belt tension and adjust if necessary.

Six Monthly

- Check the tightness of electrical connections.
- Check the tightness of fans and motor mountings.
- Check suction and discharge operating pressures. (Using a *UC6 Service Interface* avoids fitting and removing gauges with consequential refrigerant loss.)
- Replace indoor unit air filters (if fitted).
- Check condensate drain for free drainage.

Yearly

- Check all refrigerant piping for chafing and vibration.
- Check air supply at all diffusers.
- Check for excessive noise and vibration and correct as necessary.
- Check for insulation and duct damage and repair as necessary.
- Remove lint and dust accumulation from outdoor coil fins.
- Touch up all outdoor unit paintwork damage to prevent corrosion.

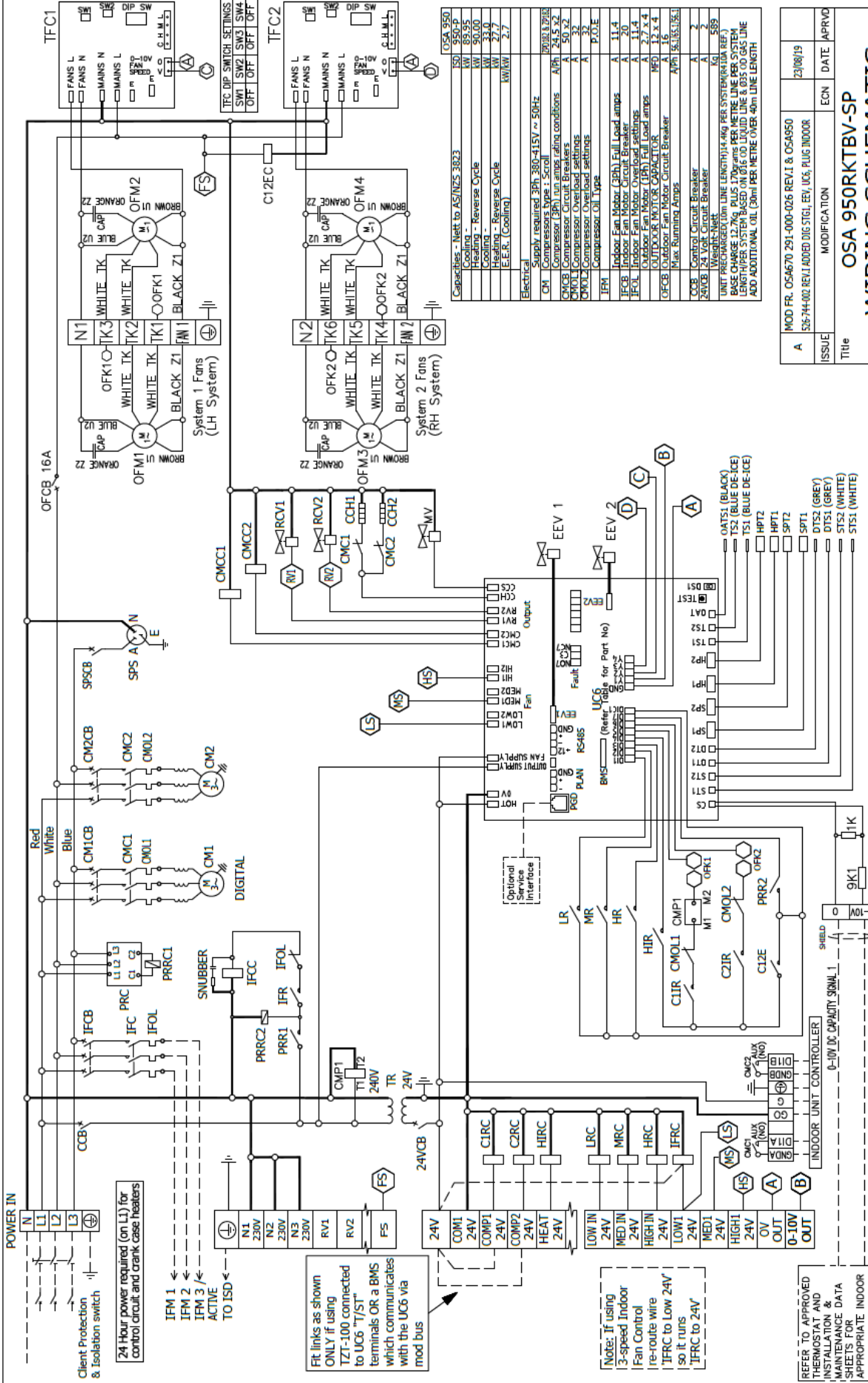
NOTE

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)		Performance Loss per additional 10m beyond first 5m.	Additional Pipe Length to allow per Suction Pipe Bend Long 90° Radius (2 x pipe dia.)
Liquid	Suction		
16	35	1.0 %	0.76 m
16	41	0.8 %	0.90 m



Capacities - Neft to AS/NZS 3823	
Cooling - kW	950-P
Heating - Reverse Cycle	85-95
Heating - Single Cycle	90-100
Heating - Reverse Cycle	21.9
E.E.R. (Cooling)	2.7
Electrical	
Supply required 3Ph 380-415V ~ 50Hz	OSA 950
Compressor Type : Scroll	380/3.7/35
Operating conditions	ALFA 24.4/22
CMCB Compressor Circuit Breaker	A 50.2
CMOL Compressor Overload	A 32
CMOL2 Compressor Overload	A 32
Compressor Oil Type	P.O.E
IFM Indoor Fan Motor (RH) Full Load amps	A 11.4
IFM Indoor Fan Motor Circuit Breaker	A 20
IFOL Indoor Fan Motor Overload	A 11.4
IFM Outdoor Fan Motor (RH) Full Load amps	A 2.7 x 4
IFM Outdoor Fan Motor Circuit Breaker	MED 1.2 x 4
OFM Outdoor Fan Motor Overload	A 16
Max Running Amps	APH 34/35/36
COB Control Circuit Breaker	A 2
24VCB 24 Volt Circuit Breaker	A 2
Weight-Net	kg 589
UNIT RECHARGE (ON LINE LENGTH) 14.46m PER SYSTEM (RATED REF)	
LINE OPERATING PRESSURE 15.5 BAR (ON LINE LENGTH)	
ADD ADDITIONAL OIL (30ml PER METRE OVER 40m LINE LENGTH)	

MOD FR. OSA670 291-000-026 REV1 & OSA950	23/08/19
526-74-02 REV1 ADD'D DIG STG1, EV, UC6, PUG INDOOR	
ISSUE	MODIFICATION
Title	OSA 950KTBMV-SP
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Client wiring	---
Visit	www.temperzone.biz for client wiring diagrams.

CM1Z Compressor 1 & 2 Enable	CMOL Compressor Overload	PRC Phase Rotation Control
C12EC Compressor 1 & 2 Enable Coil	C12EC Compressor Input Relay	PRR Phase Rotation Relay
CB Circuit Breaker	CMC Compressor Motor	PRRC Phase Rotation Relay Coil
CCB Crankcase Heater	CMCB Compressor Motor Circuit Breaker	RCV Reverse Cycle Valve
CCH Electronic Expansion Valve	CMC Compressor Motor	SPSCB Single Phase Socket Circuit Breaker
CM Compressor Motor	CMC Compressor Motor	SPS Single Phase Socket
CMC Compressor Motor	CMC Compressor Motor	SPT Suction Pressure Transducer
CMCB Compressor Motor Circuit Breaker	CMC Compressor Motor	SST Suction Temperature Sensor
CMC Compressor Motor	CMC Compressor Motor	TFC Fan Speed Controller
CMC Compressor Motor	CMC Compressor Motor	TS Transistomer
CMC Compressor Motor	CMC Compressor Motor	TS Temperature Sensor (De-Ice)

REFER TO APPROVED THERMOSTAT AND WIRING SCHEMATIC SHEETS FOR APPROPRIATE INDOOR UNIT TO BE INSTALLED

Notes: If using 3-speed Indoor Fan Control re-route wire IFRC to Low 24V so it runs IFRC to 24V

FR links as shown ONLY if using T2T-100 connected to UC6 'T/S1' terminals OR a BMS which communicates with the UC6 via mod bus

24 Hour power required (on L1) for control circuit and crank case heaters

Client Protection & Isolation switch

POWER IN

INDOOR UNIT CONTROLLER

0-10V DC CAPACITY SIGNAL 1

SHIELD

9K1

1K

OPTIONAL INTERFACE

LR MR HR HIR

CLIR CMOL1 CMP1 MT M2 OFK1

C2IR CMOL2 PRR2 OFR2

C12E

CMCZ CCH1 CCH2

CMC1 CMOL1

CM2 CMOL2

SPS SPS

SPXB

OPTIONAL INTERFACE

LR MR HR HIR

CLIR CMOL1 CMP1 MT M2 OFK1

C2IR CMOL2 PRR2 OFR2

C12E

CMCZ CCH1 CCH2

CMC1 CMOL1

CM2 CMOL2

SPS SPS

SPXB

