

OSA 210RKTVG (Digital)

Reverse Cycle R410A Split System Outdoor Unit

Installation & Maintenance

GENERAL

This OSA 210RKTVG 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. Fault indicating auxillary relay board.

INSTALLATION

Positioning

Refer to dimension diagram below for minimum 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 210 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 210 units have one flare and one rotolock assembly. Two loose pipe extensions are supplied to enable a choice of exit – side or rear; both require brazing.

Recommended Pipe Sizes

Suction pipe : 22 mm OD
Liquid pipe : 13 mm OD

Line Lengths

Maximum extended line length is 50 m.
Refer also to *Oil Charge* overleaf.

Height Separation Limits

Outdoor Unit above Indoor Unit : 18 m
Outdoor Unit below Indoor Unit : 18 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. Filter dryers are not required or recommended, however extreme care must be taken to keep the piping system dry.
6. Include a process point in the interconnecting pipework.
7. Ensure open pipe ends are sealed until the final connection is made.
8. **Caution:** To avoid damage to teflon seals, braze suction pipework to stub connection (supplied loose) **before** connecting to unit's valve.
9. Remove valve's dust cap and lubricate teflon seal with refrigeration oil prior to final assembly and connection.

Charging

The unit is supplied with 5.3 kg of refrigerant HFC-410A (R410A) which is sufficient for 10 m of pipework when connected to the ISD 210K indoor unit. Add, or subtract, 60 g of HFC-410A per metre to suit the installed line length.

Procedure:

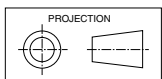
1. Evacuate Indoor Unit and interconnecting pipework to a pressure of 500 microns and hold for 15 mins.
2. Add refrigerant, if needed, via the Schraeder connection on the rotolock and flare pipe assemblies.
3. Open the service valve at the Outdoor Unit to allow refrigerant to flow throughout the system.
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

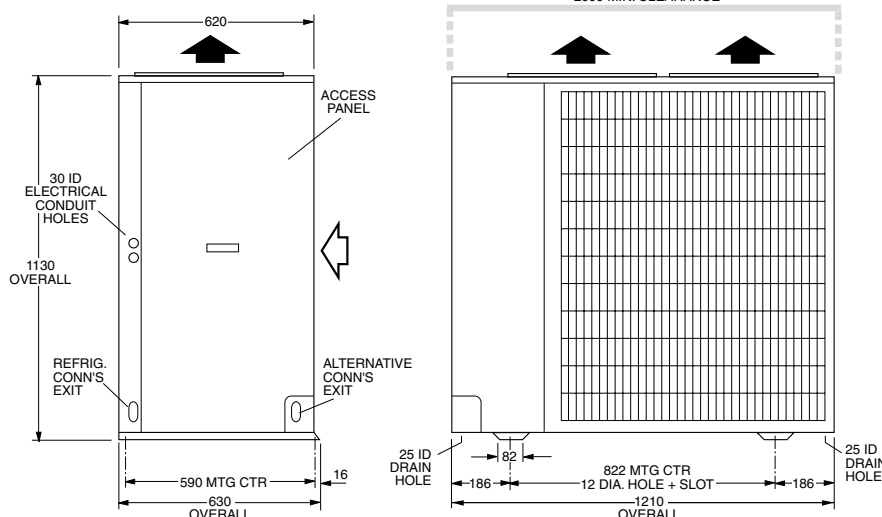
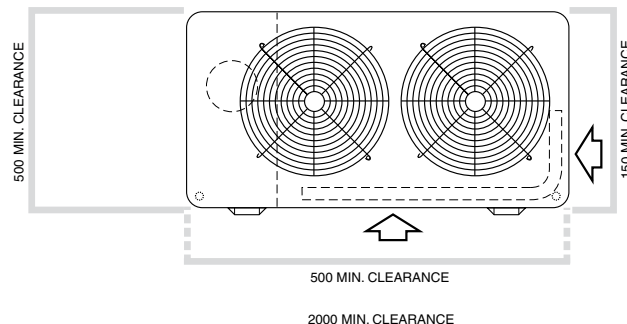
Dimensions (mm)

OSA 210RKTVG



Not to Scale

Net Weight 152 kg



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. 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.

Note: The TZT-701 Controller can automatically switch the indoor fan off during de-ice, if selected, therefore no additional wiring is required to achieve this result.

Disconnect the crankcase heater if the total line length is less than 8 m. For lengths over 8 m, 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.

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 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 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.

This pamphlet replaces the previous issue no. 2984 dated 09/08.
Wiring revision A; CCH requirement.

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

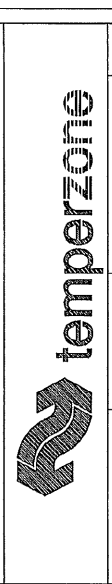
OUTDOOR UNIT :- OSA 210RKTGVA
 WITH INDOOR UNIT
 CAPACITIES - NET to AS/NZS 3823
 COOLING - kW 20.8
 HEATING - REVERSE CYCLE kW 20.05
 ELECTRICAL INPUT @ 3PH 400V ~ 50Hz
 COOLING - kW 6.817
 HEATING - REVERSE CYCLE kW 5.5
 E.E.R. (COOLING) kW/kw 3.051
 ELECTRICAL
 SUPPLY REQ. 3PH 342-436V ~ 50Hz INCL. VOL.T. FLUCTUATION LIMITS
 COMPRESSOR (3PH) RUN AMPS RATED CONDITIONS A 11

INDOOR FAN MOTOR (1PH) FULL LOAD AMPS A 3.4
 INDOR FAN MOTOR CAPACITOR MFD 15
 OUTDOOR FAN MOTOR (1PH) FULL LOAD AMPS A 0.8 X 2
 OUTDOOR FAN MOTOR CAPACITOR MFD 6 X 2
 RUNNING AMPS (TOTAL) 14/11/11
 REC. EXTERNAL FUSE SIZE A 25
 REC. EXTERNAL FUSE SIZE WITH OPT'L ELECT. HEAT A 32
 WEIGHT - NET OSA 210RKTGVA 152 Kg
 REFRIGERANT - R410A
 UNIT PRECHARGE (10 METRE LINE LENGTH) 5.3 Kg
 BASE CHARGE UNIT 4.7 Kg PLUS 60 grams PER METRE. LINE LENGTH
 BASED ON Ø12.7 OD LIQUID LINE & Ø22 OD GAS LINE

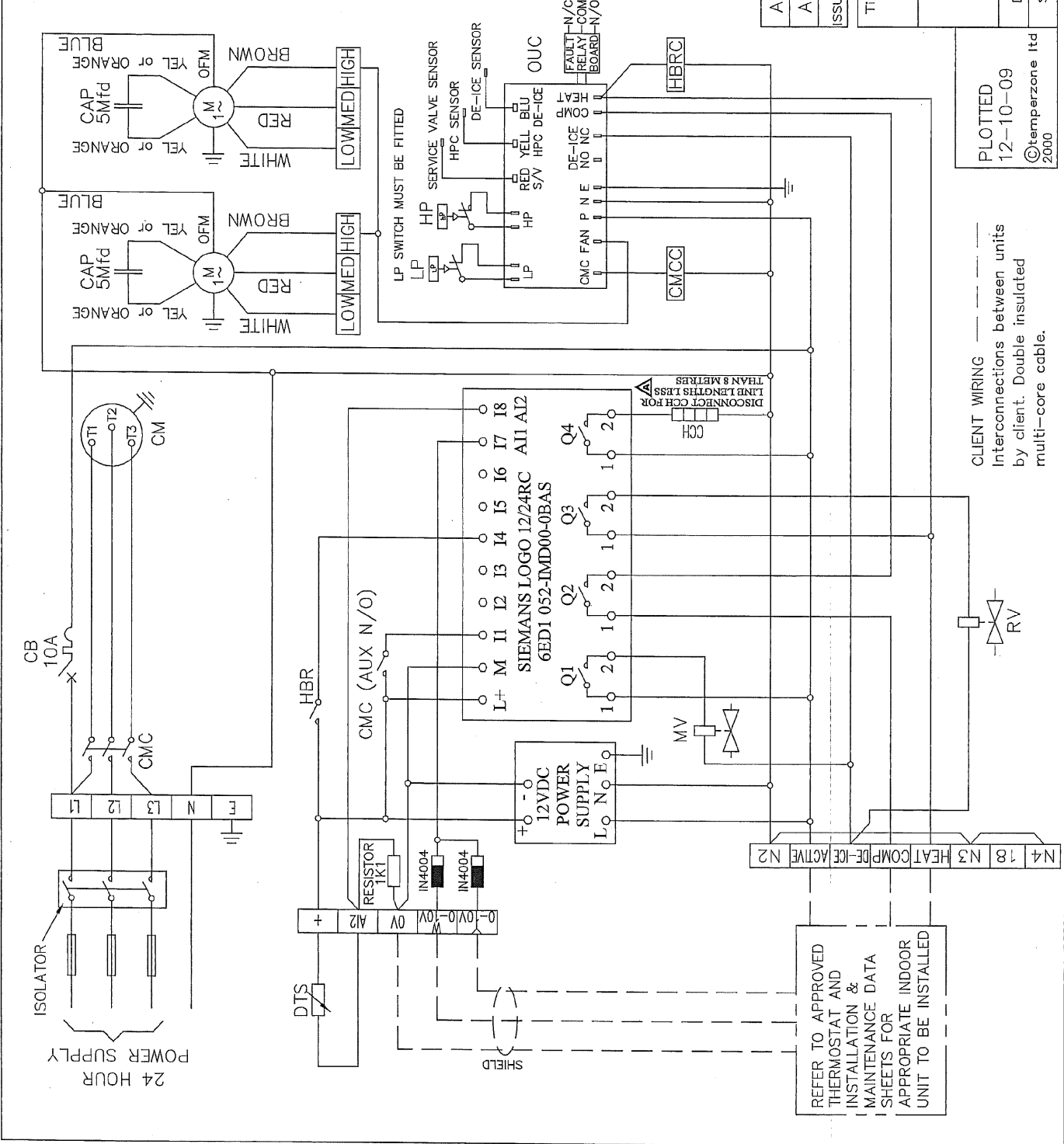
CAP	CAPACITOR	HBR	HEAT BOOST RELAY
CB	CIRCUIT BREAKER	HBRCL	HEAT BOOST RELAY COIL
CCH	CRANK CASE HEATER	HP	HI PRESSURE CONTROL
CM	COMPRESSOR MOTOR	LP	LOW PRESSURE CONTROL
CMC	COMPRESSOR MOTOR CONTACTOR	OFM	OUTDOOR FAN MOTOR
CMCC	COMPRESSOR MOTOR CONTACTOR COIL	OUC	OUTDOOR UNIT CONTROLLER
DTS	DISCHARGE TEMP. SENS.	MV	MODULATION VALVE
		RV	REVERSING VALVE

A	DATA REVISED, CCH NOTE ADDED.	W233612-10-09	SDH
A	210RKTG WAS 210RKTGH	W233612-10-09	SDH
ISSUE	MODIFICATION	EC/DATE	APRVD

Title OSA 210RKTGVA
 WIRING SCHEMATIC



Drawn	DMW	Date	24-09-07	Drawing No.	536-454-002	Rev.	A
Scale							



CLIENT WIRING
 Interconnections between units
 by client. Double insulated
 multi-core cable.

PLOTTED
 12-10-09
 ©temperzone ltd
 2000

REFER TO APPROVED
 THERMOSTAT AND
 INSTALLATION &
 MAINTENANCE DATA
 SHEETS FOR
 APPROPRIATE INDOOR
 UNIT TO BE INSTALLED

