HWP 225 (with UC7 Controller)

Ducted Water Cooled R410A Packaged Air Conditioner

Installation & Maintenance

GENERAL

HWP✳CEKT - Cooling only version c/w Electric heat
HWP✳RKT - Reverse cycle version
HWP - A general designation which applies to all versions

These HWP units must be installed in accordance with all national and local safety codes.

OPTIONS

The following items are available as optional extras:

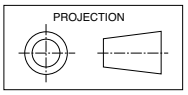
1. TZT-100 Room temperature controller.
2. Condensate Lift-Pump Kit.
3. Filter Box.

High pressure hoses (600 mm long) c/w fitting and spring mounts are supplied as standard.

AIR FILTRATION / FILTER BOX (Option)

As air filtration requirements vary, filters are not supplied with the unit. Filters should ideally be installed on the return air side of the unit, no closer than 500 mm from the back of the unit and easily accessible for cleaning. To maximise the efficiency of air flow, the return air filter should be twice the area of the HWP unit's return air spigot/s. If efficiency is less of a concern a Filter Box is available.

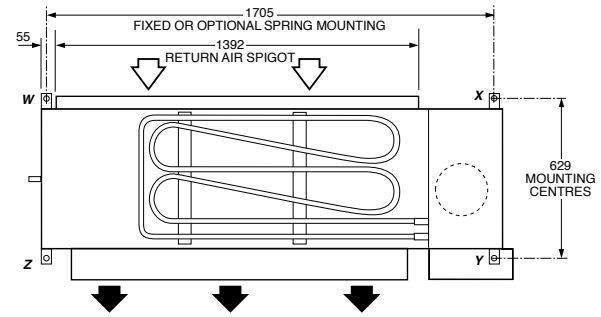
Fig. 1 Dimensions (mm)

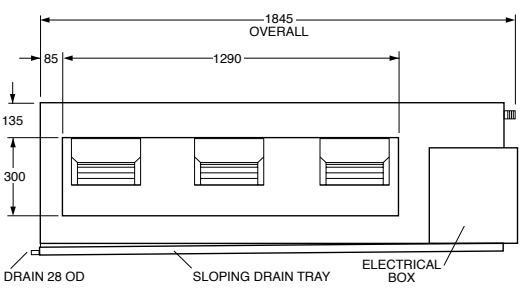


Not to scale

CORNER LOADS (kg)			
W	X	Y	Z
46	49	79	41

Net Weight 215 kg





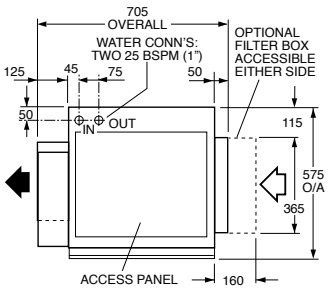


Fig. 2 Spring Mounting

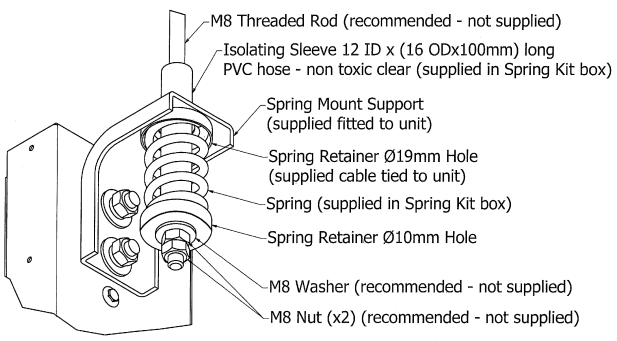
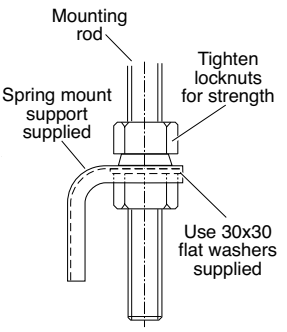


Fig. 3 Solid Mounting



The Filter Box is installed by unscrewing the return air spigot and replacing it with the Filter Box's filter-integrated spigot. The filter may be accessed from either side of this spigot. This box adds 90 mm to the overall depth of the unit.

INSTALLATION

Positioning & Mounting

HWP units are designed to be used with simple, short duct layouts. Units should be located as close to the space to be air conditioned as acoustic criteria allows; refer to Fig.4 for application considerations.

When determining the position of the air conditioner, allow adequate space around the unit to facilitate future servicing and maintenance. Ensure there is enough working space in front of the electrical access panel. Allow adequate clearance for the filter (optional) to be withdrawn to its full length.

Mount the unit using the spring mount system supplied (Fig.2). This system minimises transfer of vibration into the building structure.

If a more rigid installation can be tolerated, then suspend the unit from four threaded rods using flat washers (supplied) and locknuts (not supplied), as shown in Fig. 3.

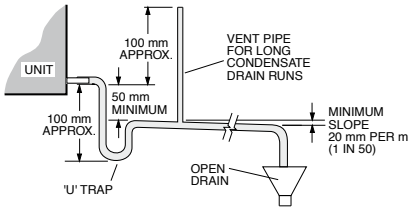
Mount the unit level as it comes with a sloping drain tray. This tray is reversible – but not if using the optional condensate lift-pump; then the drain exit can only be at the opposite end to the compressor.
If reversing the drain tray, remove and throw away pump bracket to allow the tray to fit.

The unit must be mounted with sufficient height for the condensate drain to be 'U' trapped outside the unit (see below). Alternatively fit a condensate lift-pump.

The drain line must not be piped to a level above the drain tray.

Condensate Drain

The drain line must be maintained at least 19 mm ID along its full length. A vent pipe is recommended for drain pipes longer than 4 m. Check drain by pouring water into the drain tray and ensuring that it clears. Failure to adhere to these instructions could cause flooding.



Water Supply & Return
The HWP unit's IN and OUT water connections are male pipe threaded (refer Fig. 1). The two **temperzone** 600 mm flexible high pressure water hoses supplied have female pipe threaded connections at each end. Maximum water pressure for each hose is 1720 kPa (250 psi). The HWP unit alone, excluding hoses, will withstand 4480 kPa (650 psi).

Poor quality water supply must be pre-filtered and it is essential that adequate water treatment is maintained, particularly where open cooling towers are used.

Note: It is required that the water supply system be fitted with a water flow switch and water pump safety interlock. These items prevent the HWP units from going into fail safe lockout status due to a loss of water flow. Failure to install the above items would require the resetting of all HWP units in the system - either by breaking the power supply to each unit or breaking the thermostat control circuit.

HWP✳R units require a minimum water supply temperature of 17°C.

Circuit Balancing Valve
It is recommended that a circuit balancing valve be fitted to maintain water flow at a constant rate. The minimum water flow rate is 1.2 litres per second.

Electrical
The air conditioner should be connected to the appropriate power supply for each model, as specified in the wiring diagram, with neutral and adequate earth. The supply to have an accessible switch to allow isolation of the unit. Wire the heating and cooling room thermostat to the electrical terminals adhering to the wiring diagram supplied with the unit. All wiring to the air conditioner must comply with the wiring regulations of the local electrical authority.

Air / Water Flow
Refer to HWP 225 Data Sheet pamphlet (available at www.temperzone.biz) for detailed information on air handling performance and water flow rates.

Unit Protection
Unit protection is incorporated in the UC7 Controller board. A high pressure lockout protects the unit in the event of either water flow failure in cooling mode, fan failure in heating mode, or a loss of refrigerant. Units include an anti rapid cycle timer for compressor on/off protection.

HWP✳R units also have a low refrigerant temp. safety thermostat to protect against icing up of the water within the unit's condenser on heating mode and a pump/ flow verification relay to protect individual units from a loss of water flow.

A non-specific fault LED/output signal is also included on the protection board for remote fault indication to building management systems.

Refer to UC7 Controller label on the unit for operation & fault diagnostics information, or visit *www.temperzone.biz*.

Note: Lockout protection can be reset by switching unit's power supply off and on. Lockout protection will also reset when the thermostat switches, or is switched to the dead zone.

HWP✳CEKT models supplied with electric heat include a manual (120°C) high temp. safety thermostat.

Room Thermostat
The thermostat should be set within the recommended operating range of between 19°C and 30°C. The thermostat should not be used as an on-off switch.

Optional TZT-100 & Remote Air Temperature Sensor
Separate installation instructions are supplied with the TZT-100 room temperature controller. The air temperature sensor is by default located in the TZT-100 Wall plaque. An optional remote air temperature sensor is available so that the measurement of the room temperature can be taken away from the wall plaque, eg. elsewhere in the room or in the return air duct.

Ensure the remote sensor wire is run separately and away from main power supply wires, including the interconnecting cable.

Water Circulating Pump & Flow Verification Option
In order to promote efficiency and avoid running the water circulation pump unnecessarily, the unit's UC7 Controller can be used to control the activation of the pump prior to running the compressor. After activation of the CPC, the UC7 waits for the PFVR contact to close before energising the CMC and therefore starting the compressor (refer wiring diagram). The UC7 also de-activates the pump when the compressor stops.

Water Regulating Valve Control Option
A 0-10V signal is available on output V1 for the control of a water flow control valve (optional); refer wiring diagram. When used, the valve is closed (0V signal) when the compressor is off. When the unit is cooling the signal will control the valve to obtain an optimum condensing temperature. When the unit is heating (reverse cycle units) the valve is directed fully open (10V signal).

UC7 Controller Options
For more information on the functions, operation and options provided by the UC7 Controller (eg BMS control via modbus over RS485, condensate lift-pump control, DRED, data logging), refer to the *UC7 Operation & Installation* manual available at **www.temperzone.biz**.

COMMISSIONING
1. Check that the thermostat (not supplied) is correctly wired and set at the desired temperature.
2. Check that the air filter (if fitted) is clean.
3. Check that the fan runs freely without vibration.
4. Check condensate drain and safety drain tray for free drainage.

MAINTENANCE

Quarterly
1. Check air filters 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 quality of water supply and cleanliness of any water filters.

Six Monthly
Check tightness of electrical connections.

Yearly
1. Remove lint and dust accumulation from heat exchange air coil. (Note: failure to do this may affect efficiency).
2. Replace air filter if damaged to maintain adequate air flow and efficiency.

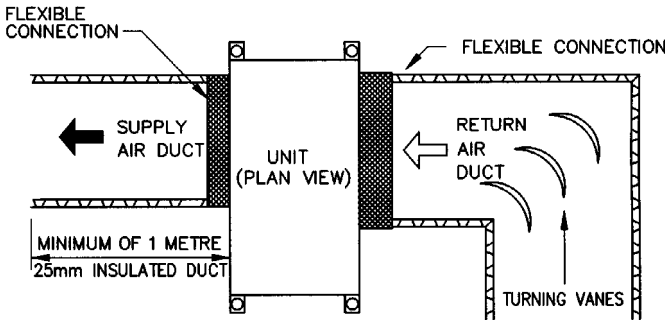
NOTE
The manufacturer reserves the right to make changes in specifications at any time without notice or obligation. Certified data is available on request.

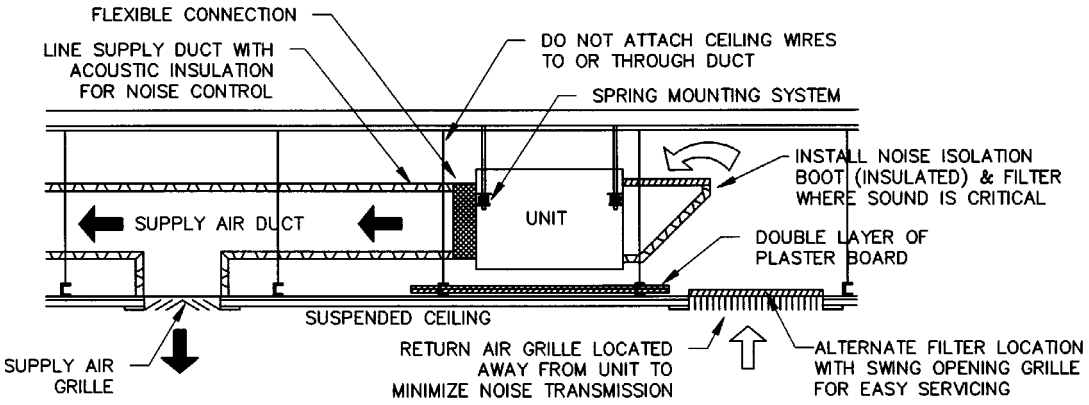
This pamphlet replaces the previous issue no. 3978 dated 06/16.
Wiring revisions B.

Fig. 3 Application Considerations

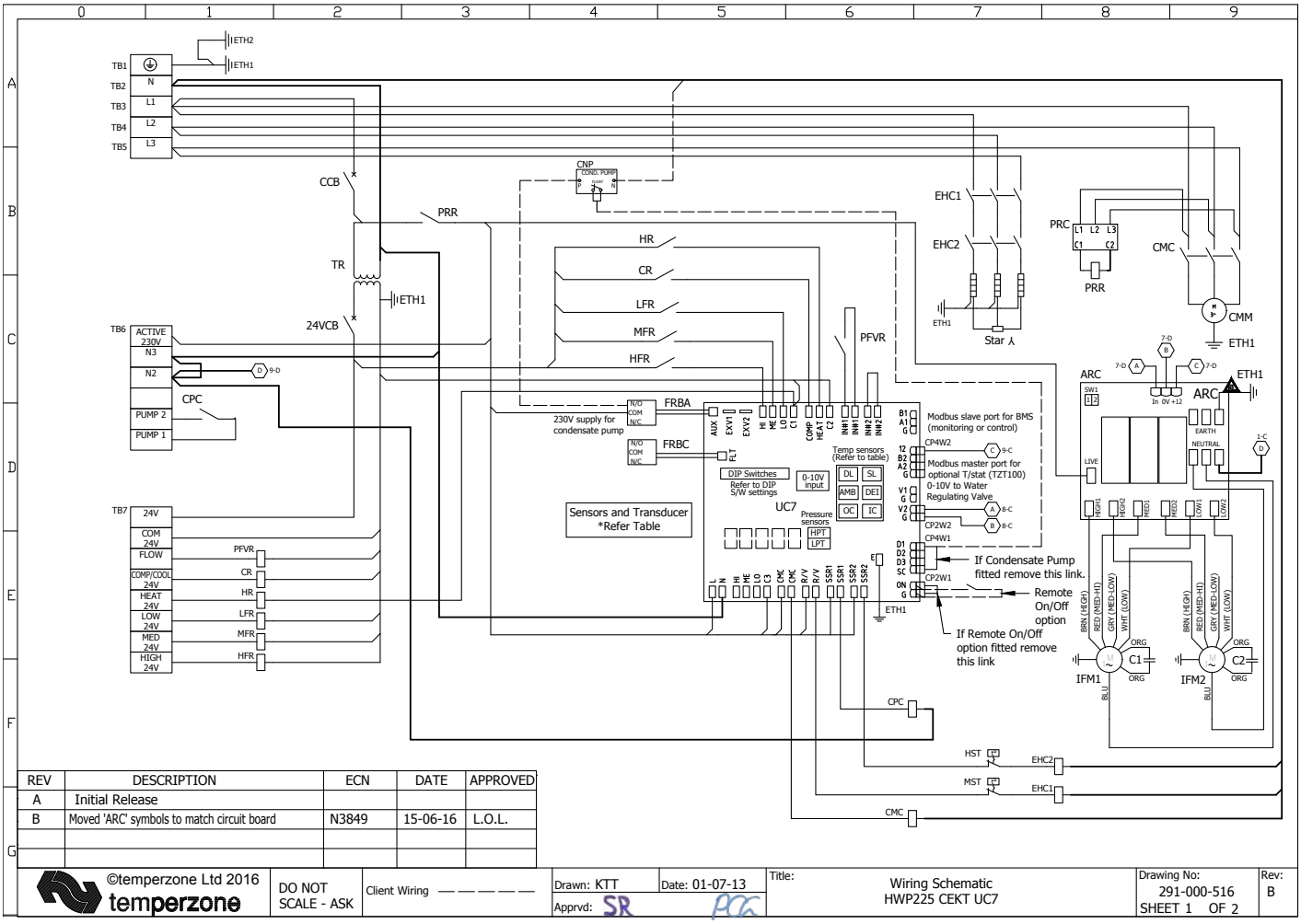
Recommendations for Noise Isolation:

1. Avoid installing units, with non-ducted return air, directly above spaces where noise is critical.
2. Use flexible connections between unit and rigid ducting.
3. Use generously sized acoustically lined ducts.
4. If generous duct size is not possible, use turning vanes on bends to reduce air turbulence (regenerated noise).
5. Use 90° bends in ducting to significantly assist in noise reduction.





HWP 225CEKT



REV	DESCRIPTION	ECN	DATE	APPROVED
A	Initial Release			
B	Moved 'ARC' symbols to match circuit board	N3849	15-06-16	L.O.L.

©temperzone Ltd 2016 temperzone | DO NOT SCALE - ASK | Client Wiring | Drawn: KTT | Date: 01-07-13 | Apprvd: SR | Title: Wiring Schematic HWP225 CEKT UC7 | Drawing No: 291-000-516 SHEET 1 OF 2 | Rev: B

Important Notes:

1) Pressure Transducer Note
Black: + Terminal
White: Mid Teminal
Green: - Terminal

2) Important Note
Compressors fitted are directional. If rotation incorrect, compressor/s will not pump, be noisy, and draw minimal current. To correct rotation, reverse two phases.

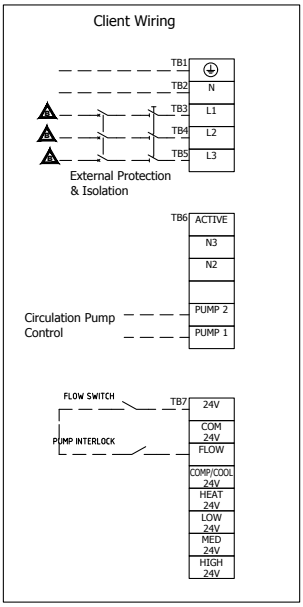
3) Transformer Note
Control transformer 240V primary voltage is used for countries with 230-240V power supply. For countries with supply voltage 200-220V change primary voltage to 208V on transformer.

Sensors (S) / Transducers (T)			
	Name	Type	Colour
AMB	Fast Temp Sensor	S	BLACK
DL	Discharge Temp	S	RED
SL	Suction Temp	S	BLUE
IC	I/D Coil	S	YELLOW
HPT	High Pressure	T	

UC7 DIP switch settings	
DIP switch	↑ On/Off ↓
1,3,4,6,13,14	On
2,5,7,8,9, 10,11,12,15,16	Off

ARC SW1 DIP switch settings	
DIP switch	On/Off
2	Off
1	On

Client Wiring



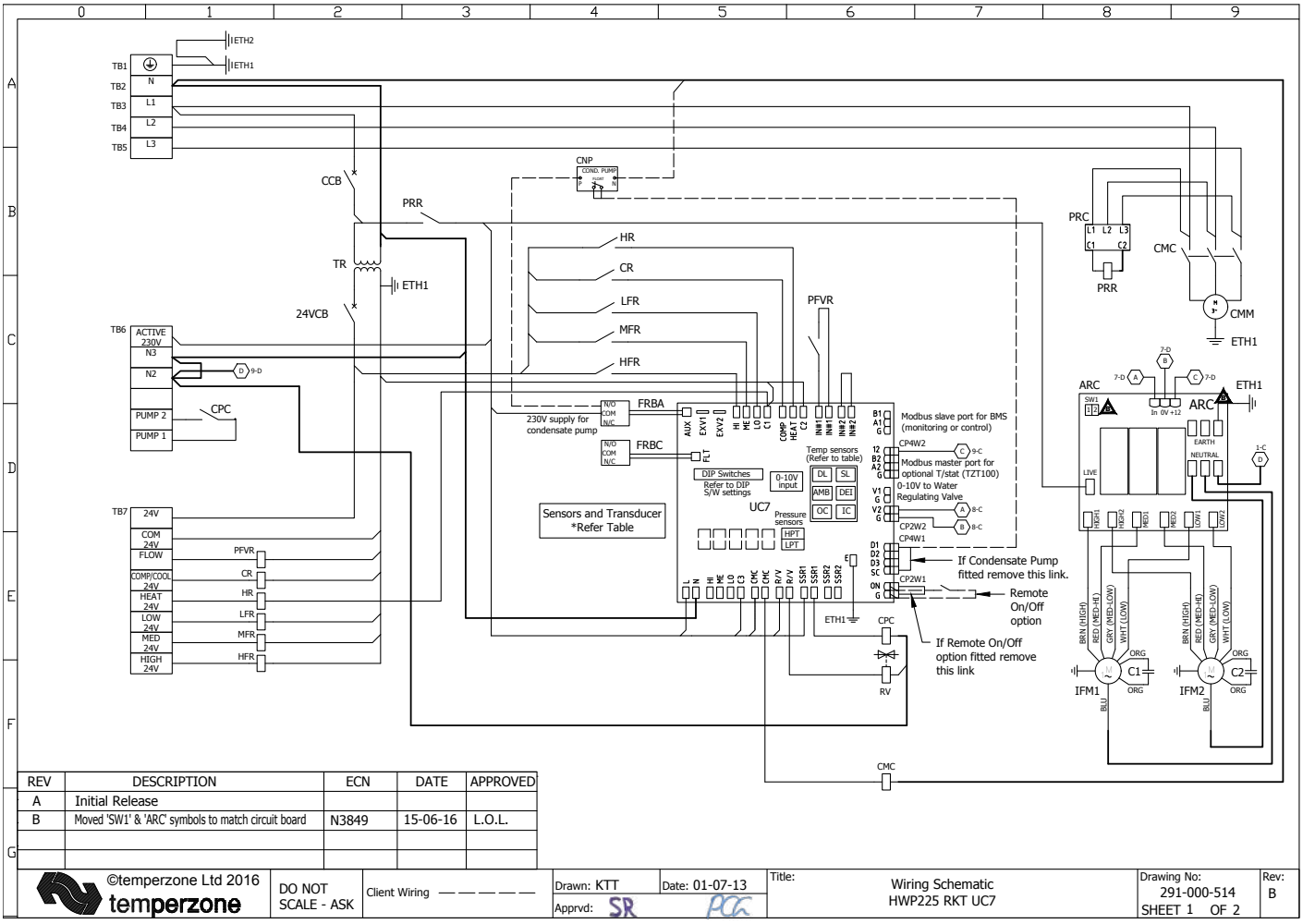
	Capacities - Nett to AS/NZS 3823		HWP
			225
	Cooling - Net	kW	22.22
	Heating - Electric Heat	kW	12.00
	Electrical Input		
	Cooling -	kW	6.31
	Heating - Electric heat	kW	12.60
	E.E.R. (Cooling)	kW/kW	3.522
	A.E.E.R. (Cooling)	kW/kW	3.516
	Electrical		
	Supply required 3Ph 380-415V ~ 50Hz		
CM	Compressor type : Scroll		
	Compressor (3Ph) run amps rated conditions	A	10.4/10.5/10.3
	Oil type : P.O.E.		
IFM1	Indoor Fan Motor (1Ph)	W	450
	Indoor fan motor (1Ph) Full load amps	A	2.7
	Fan Capacitor size	MFD	15
IFM2	Indoor Fan Motor (1Ph)	W	256
	Indoor fan motor (1Ph) Full load amps	A	1.89
	Fan Capacitor size	MFD	8
	Electric Heat running Amps	A	19.7/17/17
CCB	Control circuit breaker	A	10
24VCB	24 Volt circuit breaker	A	2
	Refrigerant - R410A	Kg	3.5
	Unit Weight - Nett	Kg	215
	LBHG		

24VCB	24V CIRCUIT BREAKER
ARC	ANALOGUE RELAY CONTROLLER
CAP	CAPACITOR
CCB	CONTROL CIRCUIT BREAKER
CMC	COMPRESSOR CONTACTOR
CMM	COMPRESSOR MOTOR
CNP	CONDENSATE PUMP
CPC	CIRCULATION PUMP CONTROL
CR	COMPRESSOR RELAY
FRBA	FAULT RELAY BOARD AUXILLARY
FRBC	FAULT RELAY BOARD CONTROL
HFR	HIGH FAN RELAY
HR	HEAT RELAY
IFM	INDOOR FAN MOTOR
LFR	LOW FAN RELAY
MFR	MEDIUM FAN RELAY
PFVR	PUMP FLOW VERIFICATION RELAY
PRC	PHASE ROTATION CONTROLLER
PRR	PHASE ROTATION RELAY
RV	REVERSING VALVE
TR	TRANSFORMER
UC71	UNIT CONTROLLER 7

REV	DESCRIPTION	ECN	DATE	APPROVED
A	Initial Release			
B	Modified DIP switch settings on ARC	N3849	15-06-16	L.O.L.

©temperzone Ltd 2016 temperzone | DO NOT SCALE - ASK | Client Wiring | Drawn: KTT | Date: 01-07-13 | Apprvd: SR | Title: Wiring Schematic HWP225 CEKT UC7 | Drawing No: 291-000-516 SHEET 2 OF 2 | Rev: B

HWP 225RKT



REV	DESCRIPTION	ECN	DATE	APPROVED
A	Initial Release			
B	Moved 'SW1' & 'ARC' symbols to match circuit board	N3849	15-06-16	L.O.L.

temperzone | DO NOT SCALE - ASK | Client Wiring | Drawn: KTT | Date: 01-07-13 | Apprvd: SR | Title: Wiring Schematic HWP225 RKT UC7 | Drawing No: 291-000-514 SHEET 1 OF 2 | Rev: B

Important Notes:

1) Pressure Transducer Note
Black: + Terminal
White: Mid Teminal
Green: - Terminal

2) Important Note
Compressors fitted are directional. If rotation incorrect, compressor/s will not pump, be noisy, and draw minimal current. To correct rotation, reverse two phases.

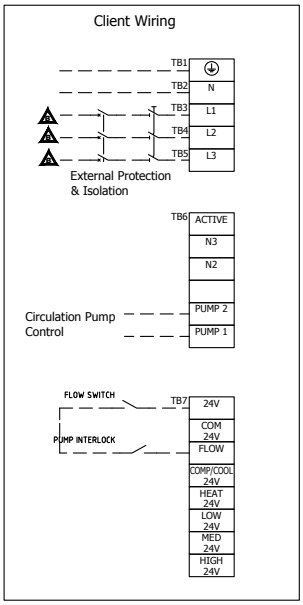
3) Transformer Note
Control transformer 240V primary voltage is used for countries with 230-240V power supply. For countries with supply voltage 200-220V change primary voltage to 208V on transformer.

Sensors (S) / Transducers (T)			
	Name	Type	Colour
DL	Discharge Temp	S	RED
SL	Suction Temp	S	BLUE
IC	I/D Coil	S	YELLOW
HPT	High Pressure	T	

UC7 DIP switch settings	
DIP switch	↑ On/Off ↓
1,6,13,14	On
2,3,4,5,7,8,9,10 ,11,12,15,16	Off

ARC SW1 DIP switch settings	
DIP switch	↑ On/Off ↓
2	Off
1	On

Client Wiring



	Capacities - Nett to AS/NZS 3823		HWP 225
	Cooling - Net	kW	22.22
	Heating - Reverse Cycle	kW	22.30
	Electrical Input		
	Cooling -	kW	6.31
	Heating - Reverse Cycle	kW	5.79
	E.E.R. (Cooling)	kW/kW	3.522
	A.E.E.R. (Cooling)	kW/kW	3.516
	Electrical		
	Supply required 3Ph 380-415V ~ 50Hz		
CM	Compressor type : Scroll		
	Compressor (3Ph) run amps rated conditions	A	10.4/10.5/10.3
	Oil type : P.O.E.		
IFM1	Indoor Fan Motor (1Ph)	W	450
	Indoor fan motor (1Ph) Full load amps	A	2.7
	Fan Capacitor size	MFD	15
IFM2	Indoor Fan Motor (1Ph)	W	256
	Indoor fan motor (1Ph) Full load amps	A	1.89
	Fan Capacitor size	MFD	8
	Rating Amps	A	14.6/10.9/10.8
	Max Running Amps (total)	A	17.7/14.7/14.5
CCB	Control circuit breaker	A	10
24VCB	24 Volt circuit breaker	A	2
	Refrigerant - R410A	Kg	3.5
	Unit Weight - Nett	Kg	215
	LBHG		

24VCB	24V CIRCUIT BREAKER
ARC	ANALOGUE RELAY CONTROLLER
CAP	CAPACITOR
CCB	CONTROL CIRCUIT BREAKER
CMC	COMPRESSOR CONTACTOR
CMM	COMPRESSOR MOTOR
CNP	CONDENSATE PUMP
CPC	CIRCULATION PUMP CONTROL
CR	COMPRESSOR RELAY
FRBA	FAULT RELAY BOARD AUXILLARY
FRBC	FAULT RELAY BOARD CONTROL
HFR	HIGH FAN RELAY
HR	HEAT RELAY
IFM	INDOOR FAN MOTOR
LFR	LOW FAN RELAY
MFR	MEDIUM FAN RELAY
PFVR	PUMP FLOW VERIFICATION RELAY
PRC	PHASE ROTATION CONTROLLER
PRR	PHASE ROTATION RELAY
RV	REVERSING VALVE
TR	TRANSFORMER
UC71	UNIT CONTROLLER 7

REV	DESCRIPTION	ECN	DATE	APPROVED
A	Initial Release			
B	Modified DIP switch settings on ARC; removed damper note	N3849	15-06-16	L.O.L.
B	380-415 was 342-436; swap isolator & CCB	N3849	15-06-16	L.O.L.

temperzone | DO NOT SCALE - ASK | Client Wiring | Drawn: KTT | Date: 01-07-13 | Apprvd: SR | Title: Wiring Schematic HWP225 RKT UC7 | Drawing No: 291-000-514 SHEET 2 OF 2 | Rev: B