



MISSION CRITICAL Air Conditioning Systems

P Series

Commissioning Checklist Dual Circuit DX

Commissioning

WARNING!



Do not run this equipment for longer than 6 hours, or use this equipment for regular operation, in the absence of a heat load for which the system is designed. Failure to comply with these instructions, or failure to follow the steps in this manual will void the manufacturer's warranty and may damage the equipment, or result in a reduced operating life of some components, leading to early equipment failure.



Before switching on the unit, the following checklist should be completed by ClimateWorx authorized personnel only. Failure to do so may damage the unit and void warranty.

Model no. : _____ Serial no. : _____

Client : _____

Location : _____ Unit no. : _____

Tested by : _____ Date : _____

General



Switch off main power isolator and all branch circuit breakers/fuses.

- Remove all transit bolts and fixtures.
- Check pulleys and belts alignment.
- Check proper belt tension.
- Check smooth rotation of blower wheels & bearings.
- Check drain pipe connected and fitted with 100mm minimum air trap.
- Verify water flows away freely from drain pipe.
- Check air filter fitted and direction of airflow pointing into the unit.
- Check all electrical connections are tight.
- Check main power and interconnecting control wires installed are suitably sized to cope with the imposed load marked on the unit serial plate.
- Check thermal overload relays are set to motor serial plate current.
- Verify any short circuit in power branch circuits and control transformer circuits.

- Check supply voltage within $\pm 10\%$ of the values marked in the unit serial plate.
- Record supply voltage : L1 - L2 : _____ V
L2 - L3 : _____ V
L3 - L1 : _____ V



The main fan and motor will start after the following procedure. Make sure the fan and motor is ready to run.

Switch on the control transformer and main fan circuit breakers/fuses, and power up the unit. The unit is factory programmed to automatic startup when power applied. Manually turn on the unit if necessary.

- Check that rotation direction of the fan is correct. Interchange two power wires if the rotation is reversed.
- Record the input and output voltage of transformer:

Transformer TX1 - Primary : _____ V _____ A

Secondary tapping 1 : _____ V _____ A

Secondary tapping 2 : _____ V _____ A

Secondary tapping 3 : _____ V _____ A

- Record the main fan motor running current :

FAN 1	FAN 2 (IF EQUIPPED)	FAN 3 (IF EQUIPPED)	FAN 4 (IF EQUIPPED)
L1 _____ A	L1 _____ A	L1 _____ A	L1 _____ A
L2 _____ A	L2 _____ A	L2 _____ A	L2 _____ A
L3 _____ A	L3 _____ A	L3 _____ A	L3 _____ A

- Check calibration of temperature and humidity sensors. See Maintenance Guide for calibration procedure.
- Test “Low airflow” alarm.
- Test “Filter dirty” alarm.
- Review Voltage % reading on page 1 of settings. If the reading is less than 95% or greater than 105% go to the setting page 6, log in with level 1 password and scroll down until you get to item “Volt adjust”. Adjust this setting until the reading on page 1 of settings is within the range above (adjusting up decreases percentage on readings and adjusting down increases percentage on readings).

Chilled water circuit/Dual/Free Cool Units



Switch off main isolator and all branch circuit breakers/fuses.

- Check chilled water supply pipe fitted and direction of water flow correct.
- Check any sign of water leak.
- Check air purged from the cooling coil.
- Check valve manual override operation.

Switch on the main isolator and control transformer circuit breakers/fuses. Switch to {Testmode} tab and move cursor to cooling Analogue O/P, output symbol, (Free Cooling 1 & 2 for Free cool units) see User Guide for details and Dual/Free cooling operating sequence.

- Press the “Auto” selection box to switch to manual override operation.
- Adjust the output to 0% by pressing the “-” key and check the chilled water valve at fully closed position.
- Adjust the output to 50% by pressing the “+” key and check the chilled water valve at half open position.
- Adjust the output to 100% by pressing the “+” key and check the chilled water valve at fully open position.
- Press the “Auto” selection box to return the output to automatic operation.

Air-cooled condenser



Make sure the main isolator on the condenser power box is switched off.

- Check that condenser fans rotate freely.
- Check supply voltage within $\pm 10\%$ of the values marked in the unit serial plate.
- Record supply voltage : L1 - L2 : _____ V
 L2 - L3 : _____ V
 L3 - L1 : _____ V

Insert a jumper wire on the condenser interlock terminals. Switch on the main isolator on the condenser power box.

- Check the rotation direction of the condenser fans. Interchange two power wires if the rotation is reversed.
- Record the running current of the condenser fan motors

Fan 1 -L1 : _____ A L2 : _____ A L3 : _____ A

Fan 2 -L1 : _____ A L2 : _____ A L3 : _____ A

Fan 3 -L1 : _____ A L2 : _____ A L3 : _____ A

Fan 4 -L1 : _____ A L2 : _____ A L3 : _____ A

Switch off the main isolator and remove jumper wire. Switch on main isolator again for commissioning of the refrigeration system.

Refrigeration system

- Check signs of oil leak



Follow the instruction in the section “Charging” in the Installation guide to properly charge the refrigeration circuits if this has not been done already. It is generally the responsibility of the installing contractor to assure the proper charging of the system.

- Check refrigerant lines



Follow the instruction in the section “Refrigerant Pipe work Installation” in the Installation guide to ensure the proper placement of traps in the pipe work, proper pipe sizes have been used and that the lines have been connected properly (hot gas to hot gas, liquid to liquid etc.) and that the Compressor circuits are not crossed.

Cooling Only: Switch on main power isolator to turn on the unit. Adjust the temperature setpoint to energize the compressor. Ensure humidity setpoint is well above actual to ensure dehumidification demand is zero.

Normal refrigerant operating pressures at 22°C (72°F), 50% R.H and 35°C, (95°F) ambient are:

R-22 : Suction Pressure 65 to 70 psig / Discharge Pressure 235 to 265 psig

R-407C: Suction Pressure 65 to 70 psig / Discharge Pressure 255 to 285 psig

Note: Discharge pressure may vary with outdoor ambient conditions. Adjustment to the low ambient control device (regulating valve, manual bypass valve if equipped, condenser fan speed control or condenser ORI valve) may be necessary.

- Record the compressor operating pressures:

	<u>Compressor 1</u>		<u>Compressor 2</u>
Discharge	_____ psig	Discharge	_____ psig
Discharge Temp.	_____ ° F	Discharge Temp.	_____ ° F
Suction	_____ psig	Suction	_____ psig

- Record room conditions:

Temperature : _____ ° C Humidity : _____ % RH

- Record the superheat: Normal superheat is 10-12⁰F (10 to 15⁰F at compressor)

<u>Compressor 1</u>	<u>Compressor 2</u>
_____ °F	_____ °F

- Record the subcooling: Normal subcooling is 12-19⁰F

<u>Compressor 1</u>	<u>Compressor 2</u>
_____ °F	_____ °F

- Record the compressor running current Compressor 1 Compressor 2

L1 : _____ A	L1 : _____ A
L2 : _____ A	L2 : _____ A
L3 : _____ A	L3 : _____ A

- | | |
|---|---|
| <input type="checkbox"/> Compressor 1:Test “Low pressure” alarm. | <input type="checkbox"/> Compressor 2:Test “Low pressure” alarm. |
| <input type="checkbox"/> Compressor 1:Test “High pressure” alarm. | <input type="checkbox"/> Compressor 2:Test “High pressure” alarm. |
| <input type="checkbox"/> Compressor 1:Test “Compressor Overload” alarm. | <input type="checkbox"/> Compressor 2:Test “Compressor Overload” alarm. |

Reset temperature and humidity setpoints.

- Check for touching Pipes



Once charging and adjusting of the refrigeration circuit is complete make sure that all pipes, distributor tube and capillary lines are not in contact with each other or other objects that will result in premature failure from wear. It is the responsibility of the installing contractor to assure this step has been followed.

Electric heater

Switch on main isolator, control transformer, fan and heater circuit breakers/fuses only. Adjust temperature setpoint to energize the heaters.

For SCR controlled and step controlled reheat:

Switch on the main isolator and control transformer circuit breakers/fuses. Switch to {Testmode} tab and move cursor to heating analogue output symbol (see User guide for details).

- Press the “Auto” selection box to switch to manual override operation.
- Adjust the output to 35% by pressing the “+” key and check the heater current and record below.
- Adjust the output to 66% by pressing the “+” key and check the heater current and

record below.

- Adjust the output to 100% by pressing the “+” key and check the heater current and record below.
- Press the “Auto” selection box to return the output to automatic operation.
- Record heaters running current below: - Note: Units with SCR reheat will demonstrate pulsating current. The pulse rate will change as the demand changes. This is normal.

33% Demand	66% Demand	100% Demand
L1 : _____ A	L1 : _____ A	L1 : _____ A
L2 : _____ A	L2 : _____ A	L2 : _____ A
L3 : _____ A	L3 : _____ A	L3 : _____ A

- Test “Heater overheat” alarm

Reset temperature setpoint.

Humidifier

Switch off the main power isolator.

- Check that humidifier water supply line is connected and supply water pressure is adequate.

Switch on main isolator and control transformer circuit breakers/fuses.

Switch on the fan circuit breaker and humidifier circuit breaker. Adjust the humidity setpoint to energize the humidifier.

- Check humidifier fill valve operation (energizes after a 3 minute time delay).
- Check humidifier water level control.
- Record humidifier running current -

L1 : _____ A
L2 : _____ A
L3 : _____ A
- Test “Boiler dirty” alarm. (Change “Boiler Dirty T”, see instructions in M52 User Guide, to “0”sec. Alarm should activate in approximately 4 minutes when the water is at high level).

Note: If Boiler Dirty Alarm activates during normal start-up the “Boiler Dirty T” default setting may need to be increased. See M52 User Guide.

Reset humidity setpoint and Boiler Dirty T.

Settings Summary

The following tables summarize the settings in each page. Record the current settings. Use this as a reference in the future if any settings get changed. Record any new settings and keep record with the equipment.

Page 3 :	Configuration 1	Date:		
Description	Range	Default	Units	Actual Setting
No. of duty unit	1-16	1	-	
*Temp. set point	12-30	22	°C	
*Temp. set point	53-86	72	°F	
Humid. Set point	30-80	50	% RH	
Ht/Dehum/Hum Fan	10-100	80	%	
Standby Fan	0-100	10	%	
Cooling Min Fan	10-100	65	%	
Cooling Max Fan	10-100	90	%	
CW Valve Start - Pt	10-100	20	%	
Discharge Set - Pt	10-500	275	Ps	
Discharge Dead Bd	1-50	10	Ps	
Water Reg Min AO	10-100	20	%	
Comp Max Speed	0-7200	5400	RPM	
Comp Min Speed	0-7200	1800	RPM	
Comp Hum Speed	0-7200	3600	RPM	

*Display changes to °F when Temp Units on Page 3 settings is set to °F

Page 4 :	Configuration 2	Date:		
Description	Range	Default	Units	Actual Setting
Baud rate	1200-19.2k	9600	bps	
On/Off mode	Local/Remote/Timer	Local	-	
Auto changeover	0-9999	24	hours	
Warm-up period	0-180	120	seconds	
Fan purge delay	0-9999	120	seconds	
Comp. elapse	30-300	180	seconds	
Comp. Min time	30-300	180	seconds	
Pos. start delay	0-600	180	seconds	
Humid. Fault delay	0-9999	900	seconds	
Liquid H/L Fault delay	0-60	60	seconds	
*Temp. units	°C/°F	°C	-	
Sensor display	Unit/ Site	Unit	-	
Language	English/ Chinese	English	-	
Control Sensor	Return/Supply/Mix	Return	-	

*Display changes to °F when Temp Units on Page 3 settings is set to °F

Page 5 :	Configuration 3	Date:		
Description	Range	Default	Units	Actual Setting
*Temp. dead band	0-10	2	°C	
*Relaxed band Temp	0-20	5	°C	
*Temp. dead band	0-18	4	°F	
*Relaxed band Temp	0-36	9	°F	
Hum. Dead band	0-30	6	%RH	
Relaxed band Humid	0-50	20	%RH	
*Prop. band Cool	1-10	2	°C	
*Prop. band Heat	1-10	2	°C	

*Prop. band Cool	2-18	4	°F	
*Prop. band Heat	2-18	4	°F	
Prop. band Humid	2-10	3	%RH	
Prop. band Dehum	2-10	3	%RH	
Temp. I-time	1-6000	1800	seconds	
Humid. I-time	1-6000	1800	seconds	
Temp. D-time	0-61	15	-	
Humid. D-time	0-94	15	-	
Humid. Control	Enable/ Disable	Enable	-	
Reheat Control	Enable/ Disable	Enable	-	
Dehum. Control	Enable/ Disable	Enable	-	
Free Cooling Control	Enable/ Disable	Disable	-	
*Free Cooling T/D	3-7	3	°C	
*Free Cooling H/L	4-12	7.2	°C	
*Free Cooling T/D	6-14	6	°F	
*Free Cooling H/L	39-54	45	°F	
Damper end switch delay	30-180	30	seconds	
Temp Control	Avg/ Max	Avg	-	

*Display changes to °F when Temp Units on Page 3 settings is set to °F

Page 6 :	Configuration 4			
Description	Range	Default	Units	Actual Setting
System Type	CHW/Single/Dual	Dual	-	
Control Mode	Auto/Manual	Auto	-	
Restart delay	0-9999	10	seconds	
Network address	1-99	1	F	
Sensor Mode	Local/Remote/Disable	Local		
Heater Min. On	0-100	0	%	
Cool Min. On	0-100	0	%	
*R. Temp Hi limit	12-37	30	°C	
*R. Temp Low limit	5-30	15	°C	
*R. Temp Hi limit	53-99	86	°F	
*R. Temp Low limit	41-86	59	°F	
R. Humid. Hi limit	50-90	70	%RH	
R. Humid Lo limit	20-50	30	%RH	
*S. Temp Hi limit	12-37	30	°C	
*S. Temp Low limit	5-30	15	°C	
*S. Temp Hi limit	53-99	86	°F	
*S. Temp Low limit	41-86	59	°F	
S. Humid. Hi limit	50-90	70	%RH	
S. Humid Lo limit	20-50	30	%RH	
Volt Hi limit	102-120	115	%	
Volt Low limit	80-98	85	%	
Volt adjust	80-120	100	%	
*R. temp offset	+5 /- 5	0	°C	
*R. temp offset	+10/ -10	0	°F	
R. hum offset	+10/ -10	0	%RH	
*S. temp offset	+5 /- 5	0	°C	
*S. temp offset	+10/ -10	0	°F	
S. hum offset	+10/ -10	0	%RH	

*Display changes to °F when Temp Units on Page 3 settings is set to °F

Page 7 :	Configuration 5			
Description	Range	Default	Units	Actual Setting
*Max Superheat Temp	2-20	10	°C	
*Max Superheat Temp	36-68	50.0	°F	
*Min Superheat Temp	1-10	7	°C	
*Min Superheat Temp	34-50	44.6	°F	
*Dehum SH offset	1-10	6	°C	
*Dehum SH offset	34-50	42.8	°F	
E TX Max Step	0-750	450	-	
E TX Min Step	0-750	100	-	
Valve Adjust Time	10-360	60	seconds	
Initial Valve Step	0-750	250	-	
Low Pressure Reset	20-100	60	psi	
E TX Valve Step	2-20	4	-	
Comp1 VFD Speed	1200-7200	0	rpm	
Comp 2 VFD Speed	1200-7200	0	rpm	
Fan Run Time Reset	-	-	-	
Comp 1 Run Time Reset	-	-	-	
Comp 2 Run Time Reset	-	-	-	
Heater 1 Run Time Reset	-	-	-	
Heater 2 Run Time Reset	-	-	-	
Heater 3 Run Time Reset	-	-	-	
Humid Run Time Reset	-	-	-	

*Display changes to °F when Temp Units on Page 3 settings is set to °F

Special Notes on Site Conditions:



Use the space provided to record site conditions or aspects of the installation that you feel may pose a concern for the unit’s proper operation. For example: Absence of adequate load, poor air flow, air short circuiting or obstructions, poor duct design, raised floor height, other cooling equipment in the space etc. Continued unit operation with improper conditions will void the manufacturer’s warranty, may damage the equipment, or result in a reduced operating life of some components, leading to early equipment failure. Please contact our office at 1-800-648-2584

NAME PHONE NO. I have been advised of the conditions listed above and will not touch the equipment

NAME PHONE NO. I have been instructed in the operation of the equipment.

You have finished the start-up check list. Please return this checklist to the factory within 14 days to register the warranty. Failure to do so will cause undue stress on the end user in the event of a warranty claim.