



SOLACE UNIVERSAL MANUAL



Installation & Operation

**Read this manual carefully before
installing or operating this unit**

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1. Preface

Thank you for choosing a Evo SOLACE UNIVERSAL Multi-functional Commercial Pool Dehumidifier & Ventilation unit. This is the operation manual for models C-250 to C-1800.

Please read this manual carefully as it provides useful operation and maintenance information that will maximise the benefits your dehumidifier can offer. Keep the manual in a safe place. You may want to refer to it again.

The Solace Universal Multi-Functional Commercial Pool Dehumidifier & Ventilation unit is designed to provide an environment that is both comfortable and cost effective. It controls unwanted humidity in the pool enclosure and helps to prevent unsightly condensation from forming on surfaces.

HUMIDITY CONTROL

If the space temperature is below the desired set point, the heat recovered during dehumidification is directed to the air reheat coil for space heating. If the pool water temperature is also below the set point, some of the recovered heat is directed to the pool water condenser (for pool heating mode only) for pool water heating. If neither air heating nor pool water heating is required, the recovered heat can be directed to an auxiliary air conditioning condenser if the system is so equipped. If the system does not include an auxiliary air conditioning condenser, the unit will direct the recovered heat to the air reheat coil until the need for dehumidification is satisfied.

SPACE HEATING

When the compressor is running, space heating will continue until the space temperature reaches the set point. The controller will activate the auxiliary space heating system if the unit is unable to satisfy the heating need with heat recovered during dehumidification.

SPACE COOLING (OPTIONAL)

If space cooling is required and the unit is equipped with an auxiliary air conditioning condenser (air-cooled or water-cooled), the controller will activate the space cooling mode of operation. In this mode, the heat removed from the space air will be directed to the auxiliary air conditioning condenser. The air-cooling mode of operation is independent of the need for dehumidification.

WATER HEATING (OPTIONAL)

If the pool water temperature is also below the set point, some of the recovered heat is directed to the pool water condenser for pool water heating. Heating can only take place during the dehumidification when heat is captured in the refrigeration circuit. This is only available on the mode pool heating, which is equipped with a pool water condenser.

FRESH AIR AND ENERGY RECOVERY

The unit includes energy conservation strategies such as heat recovery, airflow measurement and CO2 based control help control costs while improving indoor air quality.

STANDARD ITEMS FACTORY SUPPLIED FOR FIELD INSTALLATION

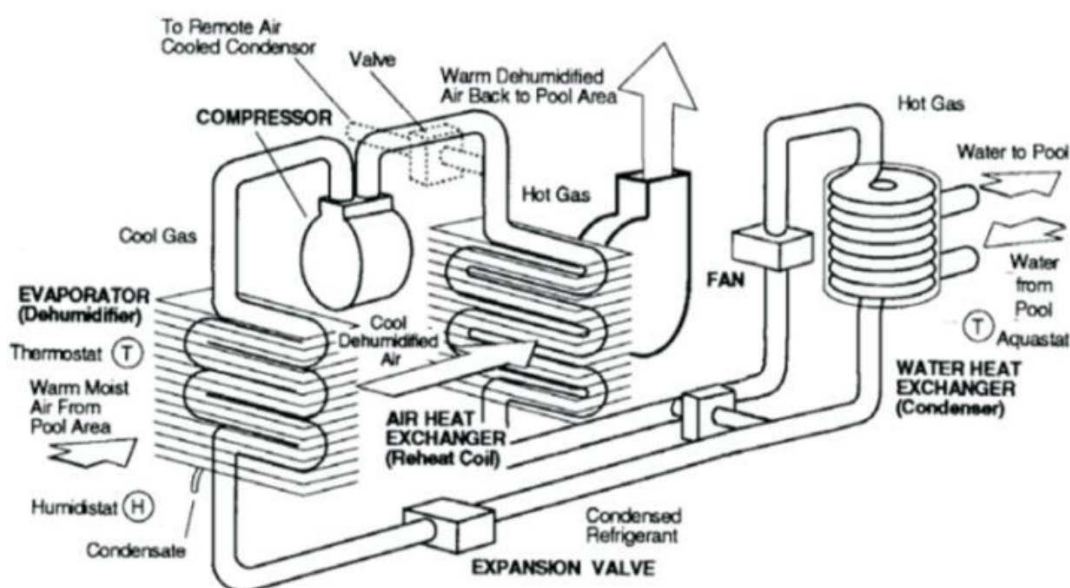
- Microprocessor control interface device
- Outside air temperature sensor
- Humidity sensor
- Air quality sensor

SYSTEM OPTIONS

- Remote Air-cooled condenser for space air conditioning
- Water-cooled condenser
- Pool water heating
- Cooling/heating coils



2. How It Works



MULTI FUNCTIONAL DEHUMIDIFIER REFRIGERANT SYSTEM SCHEMATIC



The fan draws in warm, moist air from the pool enclosure. This air passes through the evaporator (dehumidification) coil and gives up heat energy to the refrigerant which is in a cool, liquid state. This exchange of energy causes the air temperature to fall below its dew point, resulting in moisture condensation on the evaporator coil. The moisture formed falls into the unit's condensate drain pan.

The refrigerant enters the unit's compressor, where it is compressed into a hot gas. While in the compressor, the refrigerant absorbs the energy used to operate the compressor. This hot gas refrigerant then travels either through an air reheat coil, the pool water condenser or to an optional auxiliary air conditioning condenser, which may be either air or water cooled. If air heating is called for, the air reheat coils is used. The hot refrigerant exchanges energy with the cooler, dehumidified air coming from the evaporator coil. This causes the temperature of the air to rise for heating.








If pool water heating is required, the hot gas flows into a pool water condenser, where it adds energy to the incoming pool water. This heats the pool water while the refrigerant is condensed into a warm liquid. If space cooling is called for, the refrigerant flows to the auxiliary air conditioning condenser by passing the air reheat coil and pool water condenser and allowing cool air from the evaporator coil to provide space cooling.

3. Safety Instructions

Read the Safety Instructions carefully before operation.

 WARNING	Incorrect handling could cause a serious hazard such as death, serious injury etc. with a high probability.
 CAUTION	Incorrect handling could cause a serious hazard depending on the conditions.

Meaning of symbols used in this manual are shown as below.

	Prohibited – be sure not to do.
	Important - Be sure to follow this instruction
	Be sure to ground
	Be sure to disconnect the power plug
	Never step on the unit or place anything on them
	Danger of electrical shock
	Do not insert fingers or objects

DO NOT disconnect/connect the power during operation. This may cause a fire due to sparks, etc.

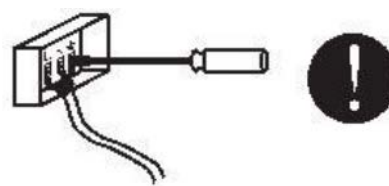
When an abnormality (smell of burning, etc.) occurs, stop the unit and disconnect the power or turn off the breaker. If the unit continues to be operated in an abnormal condition, it may cause a fire or hazards.

Apply Grounding. Do not connect a grounding wire to a gas pipe, water pipe, lightning rod or ground wire of a telephone. If a grounding is incorrect, it may cause an electronic shock.

WARNING

No connection in the middle of power cord or extend the power cord. Multifunctional socket is forbidden to be used.

Remove dirt from the power terminal. If dirt adheres to the terminal or fixed is incomplete it may cause a fire or electric shock.



Do not scratch or process the power cord. Do not put heavy objects on the power cord, heat it or process it. The cord may become damaged and cause a fire or electric shock.

Consult your dealer for installation.

Do not insert fingers or objects into the air inlet and air outlet. Since the fan rotates at high speed, this may cause an injury.

Repair or relocation must not be done by the customer. If done incorrectly, it may cause fire, electric shock, water leakage and other hazards.

Consult your dealer if you are unsure of anything.

WARNING

Do not pull the power cord. Use the screwdriver to disconnect it. The core wire of the power cord may be disconnected, and it may cause a fire.

When the unit is to be cleaned, switch off and disconnect the power or turn off the breaker.

Since the fan rotates at high speed during operation, it may cause an injury.

Install an earth leakage breaker when the unit is installed in a humid location. If the earth leakage breaker is not installed, it may cause an electrical shock.



The customer must not install this unit themselves. If done incorrectly it may cause a fire, electric shock, water leakage etc.

Ensure that you consult your dealer.

CAUTION

Do not operate for a long time in the rain. It will shorten the lifespan of the unit.

Do not apply an insecticide or flammable spray. It may cause a fire or deformation of the cabinet.

Do not clean the unit with water. Water may enter the unit and degrade the insulation which can cause electric shock.

When the unit is not going to be used for a long time, disconnect the power or turn off the breaker and make sure there is no water inside the unit. If not dirt may collect and cause a fire hazard.

Do not install the unit where there is flammable gas.

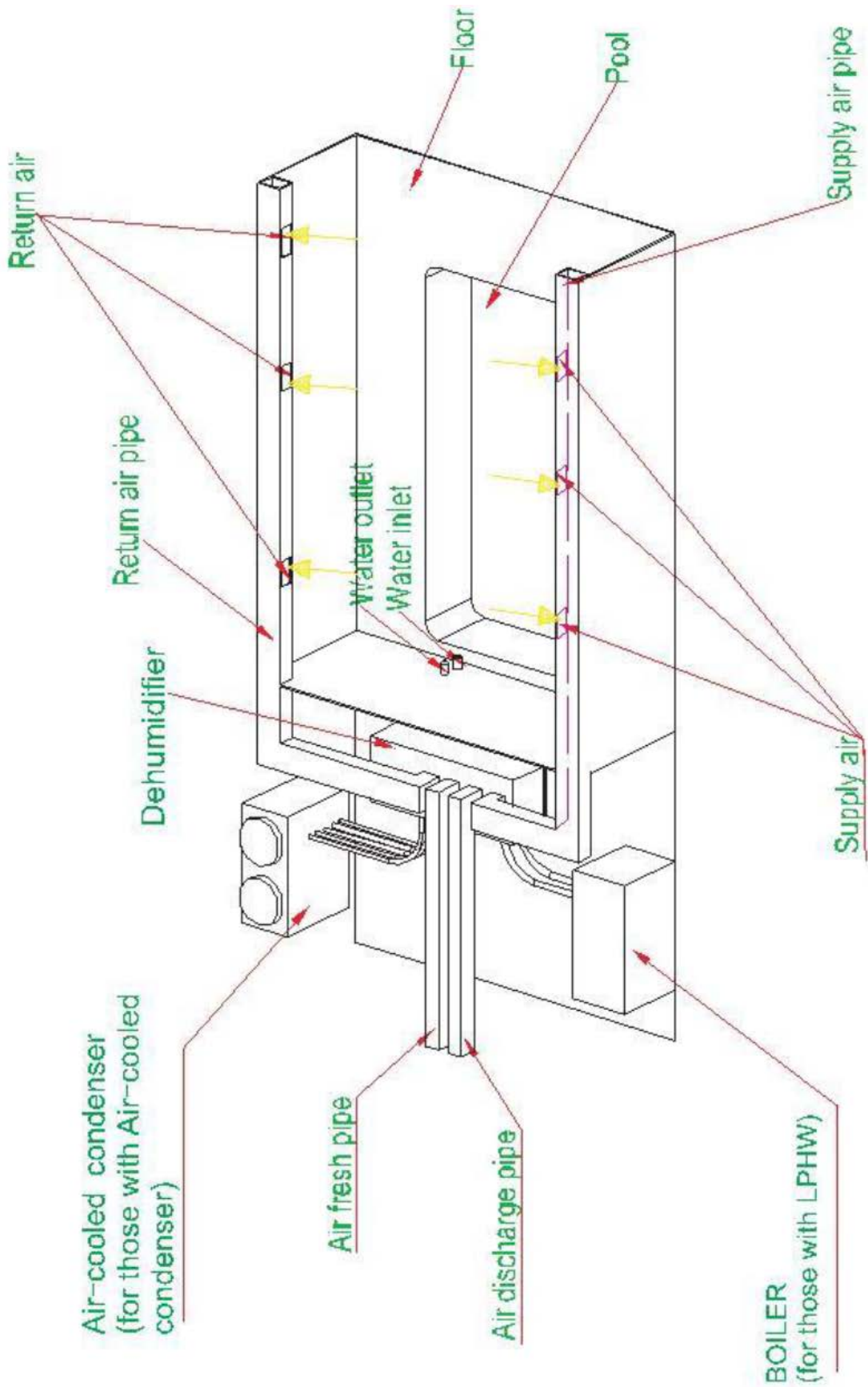
Do not operate switches with wet hands.

Do not step on the unit and do not put anything on it.

Do not step onto an unstable bench when attaching/detaching the panel

4. Installation

4.1 Installation Diagram



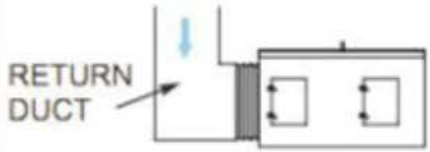
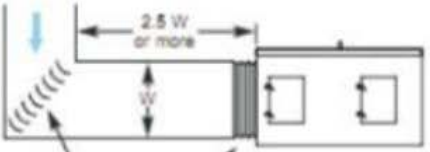
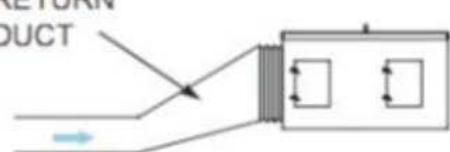
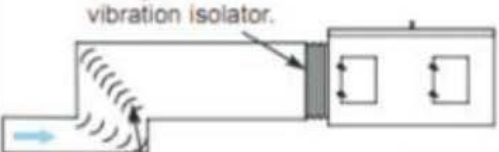
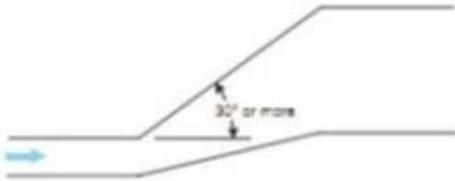
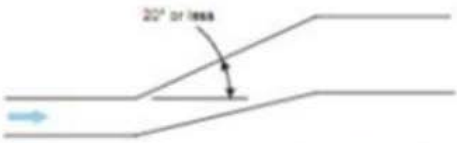
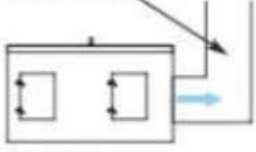
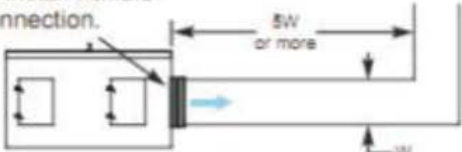
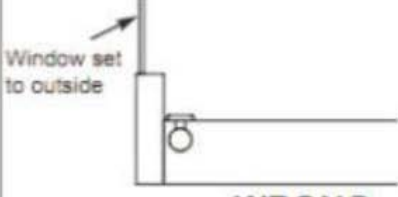
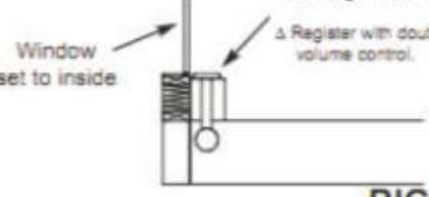
4.2 Installation Site

Select a suitable location for the unit, where the unit will not be subject to any damage.

- a) The unit must be mounted on a flat and level foundation capable of supporting the entire operating weight of the equipment.
- b) The location must not contain corrosive-chemical storage or connect to any space that contains corrosive-chemical storage.
- c) The location must not include a natatorium or spa room, or any space where the exterior of the unit would be exposed to chloramines outgassing from a pool.
- d) Ensure that water cannot collect under the unit, it is recommended that units are installed on plinths 100mm above finished floor level. This also aids condensate drainage.
- e) Please allow adequate clearance to service panels on the unit; recommended 800mm minimum.
- f) Ensure loose debris such as leaves, grass cuttings, etc will not block air inlet grilles.
- g) Consider protection from extreme weather conditions if installed externally.
- h) Inadequate working spaces may compromise workplace safety. Inadequate working spaces may preclude proper maintenance.



4.3 Ducts Installation

Installation	Standard Practice for Ducts
 <p>RETURN DUCT</p> <p>WRONG</p> <p>The air will not be evenly distributed over the evaporator.</p>	 <p>TURNING VANES</p> <p>RIGHT</p> <p>Always install vibration isolator. Vanes and straight length allow air to flow evenly.</p>
 <p>RETURN DUCT</p> <p>WRONG</p> <p>The air will not be evenly distributed over the evaporator.</p>	 <p>TURNING VANES</p> <p>RIGHT</p> <p>Always install vibration isolator. Vanes and straight length allow air to flow evenly.</p>
 <p>WRONG</p> <p>Air cannot follow this steep angle.</p>	 <p>20° or less</p> <p>RIGHT</p> <p>Air can follow this transition.</p>
 <p>SUPPLY DUCT</p> <p>WRONG</p> <p>Reduction of airflow will result from the elbow being too close.</p>	 <p>5W or more</p> <p>RIGHT</p> <p>Always install flexible duct connection. Sufficient straight length allows proper air flow. Flexible duct connection absorbs vibration.</p>
 <p>Window set to outside</p> <p>WRONG</p> <p>Air cannot reach the lower part of the window.</p>	 <p>Window set to inside</p> <p>RIGHT</p> <p>Δ Linear grilles with volume control. Δ Register with double deflection and volume control.</p> <p>Dry air reaches all the window.</p>

Data subject to change without notice.

4.4 Electrical Installation

1.ELECTRICAL SAFETY

It is important to ensure that all aspects of the installation comply with the latest I.E.E. Regulations. It is also important to ensure that any remote devices which terminate within the pool hall are of the type and voltage as specified in the latest I.E.E. Regulations. The machine should be installed in accordance with EMC2004/108/EC.

2.PROTECTED SUPPLY

Whilst not mandatory, we recommend that an R.C.C.B. is always fitted or that the supply is to local electricity authority recommendations, and that all ducting is bonded in accordance with these regulations. The supply to the machine should incorporate fuses or motor rated circuit breakers (type GU, FAZC) to specified rating (see data sheet)

H.R.C. Fuses are recommended. An isolator must be fitted within clear view of the machine and not more than 2 meters away. The isolator must have a minimum of 3mm air gap when in the off position.

3.POWER SUPPLY

Power supply of the dehumidifier must consistent with the power supply described in the circuit diagram. If inconsistent power supply is connected, the dehumidifier will not be guaranteed either in performance or warranty.

Note: The voltage must be measured at the dehumidifier mains terminals with all the fans/compressors running at the rated condition.

4.CORRECT CABLE SIZING

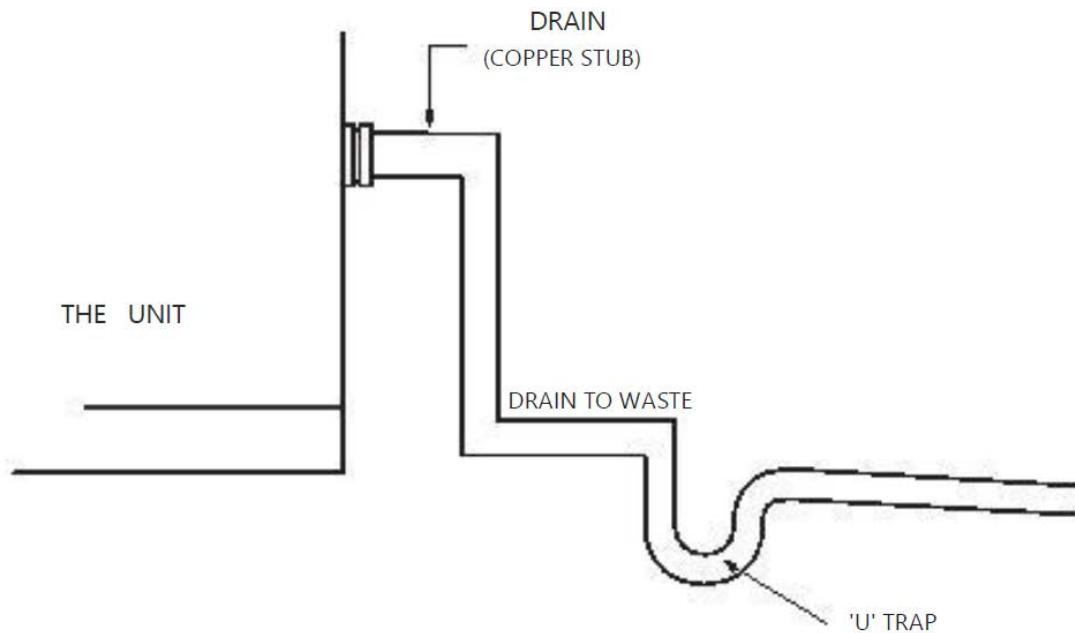
The cable supplying electricity to a machine with a given load must increase in cross sectional area (CSA) as the length increases in order that the voltage drop within the cable does not exceed recommended limits. Cable sizing should be calculated by an approved electrician with due consideration to I.E.E. and local codes of practice.



4.5 Plumbing

CONDENSATE DRAIN

The condensate drip tray in the dehumidification unit collects the water removed by the dehumidification process, It is therefore necessary to ensure that the dehumidification unit is placed on a level plinth so that the condensate can run away and not overflow the edges of the drip tray inside the machine. The drain pipe should run away with adequate fall to waste and must incorporate a 'U' trap.



BOILER PLUMBING

Suitable breakable couplings, isolation, and drain down valves should be installed in the boiler water flow and return pipes local to the dehumidification unit. Refer to the boiler manufacturer's instructions before designing the pipework system.

IMPORTANT GENERAL CONDITIONS

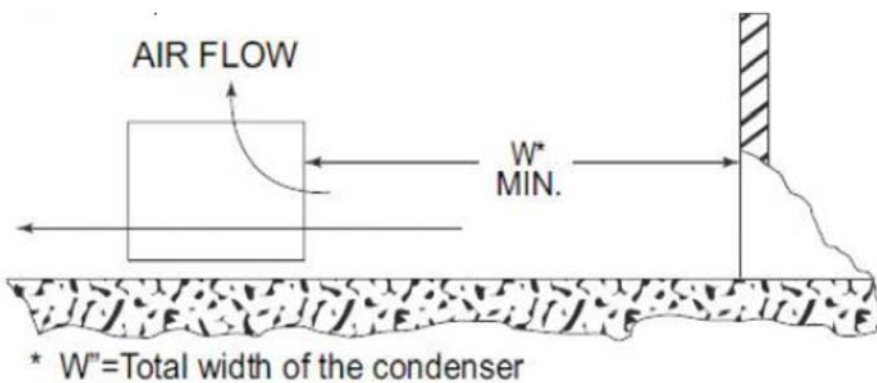
- 1) Do not route water pipes across service access panels or air inlet/outlets.
- 2) The water circuits to and from the dehumidification unit should be capable of maintaining the specified water flow limits required by the machine.
- 3) All pipework must be adequately supported with allowance for expansion and contraction especially with regard to the plastic pipework.
- 4) It is recommended that when installing water systems, the last connections to be made should be adjacent to the dehumidification unit to avoid undue stresses on the unit connections.

4.6 Air-Cooled Condenser Installation

The most important consideration which must be considered when deciding upon the locations of air-cooled equipment is the provision for a supply of ambient air to the condenser, and removal of heated air from the condenser area. Where this essential requirement is not adhered to, it will result in higher head pressures, which cause poor operation and possible eventual failure of equipment. Units must not be located in the vicinity of steam, hot air, or fume exhausts.

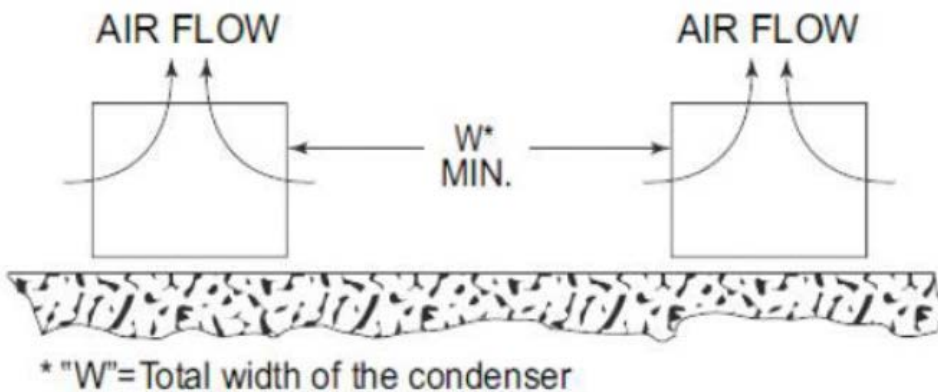
WALLS OR OBSTRUCTIONS

The unit should be located so that air may circulate freely and not be re-circulated. For proper air flow and access all sides of the units should be a minimum of "W" away from any wall or obstruction. It is preferred that this distance be increased whenever possible. Care should be taken to see that ample room is left for maintenance work through access doors and panels. Overhead obstructions are not permitted. When the unit is in an area where it is enclosed by three walls, the unit must be installed as indicated for units in a pit.



MULTIPLE UNITS

For units placed side by side, the minimum distance between units is the width of the largest unit.



1. The installation platform requirement of air cool condenser (only for the model including air cooling function)
2. Spacing requirement. As for the machine will exchange heat, the unit must be installed at open area with good air flow. At the same time, the space distance of heat exchanger air inlet side can't less than 1500mm, air outlet space distance can't less than 3000mm.
3. Outdoor installation platform Requirements. Height deviation for each meter is not more than 1mm. The total deviation of the platform is not more than 5mm. Bearing standard: Each square meter is not less than 1ton.
4. The distance of copper connection between indoor unit Max 15m.

4.7 Pipe Installation

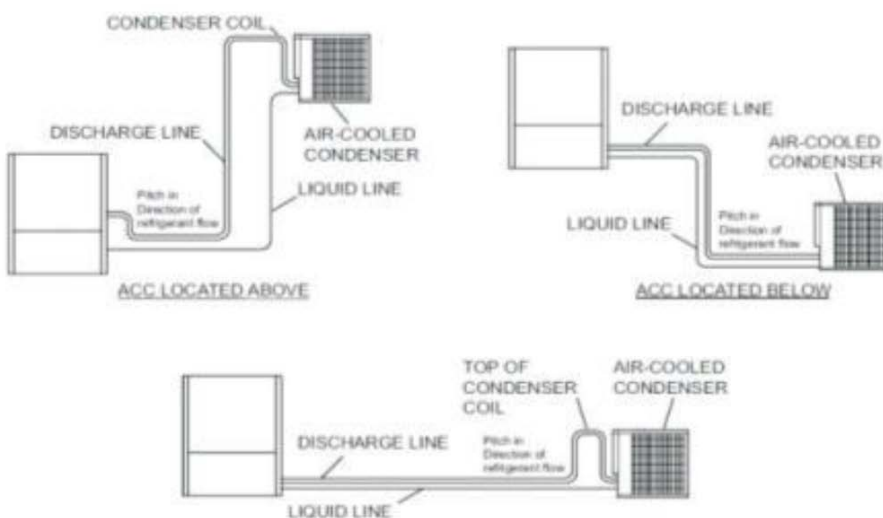
Installation of the outdoor air-cooled condenser should only be done by a qualified refrigeration mechanic familiar with this type of work. Many service problems can be avoided by taking adequate precautions to provide an internally clean and dry system and by using procedures and materials that conform to established procedural standards.

1. Materials

- Use clean, dehydrated, refrigeration-grade copper tubing for all refrigerant lines. Hard drawn tubing should be used where no appreciable amount of bending around pipes or obstructions is necessary. If soft copper tubing must be used, care should be taken to avoid sharp bends which may cause restrictions and excessive refrigerant pressure drops.
- Use long radius elbows wherever possible with one exception - short radius elbows should be used for any traps in the hot gas riser.
- Braze all copper to copper joints with a phosphorus-copper alloy material such as Silfos 5 or equivalent. Do not use soft solder.
- During brazing operations flow an inert gas, such as nitrogen, through the lines to prevent internal oxidation scaling and contamination.
- Support refrigeration lines at intervals with suitable hangers, brackets or clamps.
- Pack glass fiber insulation and a sealing material around refrigerant lines, where they penetrate a wall, to reduce vibration and to retain some flexibility.
- The liquid line and discharge line should not be in contact with one another. If the installing contractor must tie these lines together because of an installation requirement, the contractor must insulate them from each other to prevent heat transfer. Because the discharge line is hot during system operation, precautions should be taken to avoid personnel injury.

2. Sizing

- The lines must be sized and routed so that oil is carried through the system. Using smaller lines than recommended will give excessive pressure drops, resulting in reduced capacity and increased power consumption. Oversized lines could result in an oil flow problem within the system and possible compressor damage.
- Excessive pressure drops in the liquid line may cause flashing of the refrigerant and a loss of a liquid seal at the expansion valve inlet. A reduction in capacity may then occur because the presence of gaseous refrigerant will partially block the expansion valve. Using hot gas and liquid line sizes recommended in the Air Cooled Condenser section for these units and the proper system refrigerant charge will prevent this problem.
- Discharge lines should be designed to prevent condensed refrigerant and oil from draining back to the compressor during OFF cycles.



NOTE

The size of the Copper Pipe: 2pcs of 25mm, 2pcs of 19mm

5 Water Chemistry

5.1 Pool Water Chemistry

Water chemistry in swimming pools is critical for the health of the bathers and the condition of the enclosure and components. An enclosure with poor water chemistry has a noticeable “chlorine” smell, which is an indication of high chloramines in the air. Not only does this have an effect on the water, but it affects the bathers and the air they breathe.

Recommended Pool Water Chemistry

Acidity pH	pH	7.2 – 7.8
Total Alkalinity, as CaCO ₃	ppm	80 – 120
Total Hardness, as CaCO ₃	ppm	150 – 250
Total Dissolved Solids	ppm	1000
Maximum Salt Content	ppm	8000
Free Chlorine Range	ppm	1 -2 Domestic
Free Chlorine Range	ppm	3 – 6 Commercial
Superchlorination	max	30ppm for 24 hours
Bromine	ppm	2 – 5
Baquacil	ppm	25 – 50
Ozone	ppm	0.9 Max
Maximum Copper Content	ppm	1
Aquamatic Ionic Purifier	ppm	2 Max

6 Start-up Check List

6.1 Pre-Start Checklist

Before starting the unit, be sure that the following items have been completed.

- Ensure there is enough space to install the unit. See “Installation”, for installation recommendations.
- Inspect the packing to be sure it is completed. If damaged, please send a report to your dealer. Protect the unit if installation is delayed.
- Check to be sure that all packaging materials have been removed from the unit.
- Check that the unit physical installation (ducting, piping, fans, fan valve, panel etc.) is in accordance with the recommendations of the Installation section.
- Ensure the manual and other necessary documents are completed.
- Check that the condensate drain is connected.
- Ensure that the space air temperature of the pool enclosure is not lower than 22°C, and the temperature of the pool water is at least 21°C
- If the unit is equipped with the auxiliary air-cooled air conditioning condenser, ensure that it has been correctly wired and piped and that the control wiring has been connected between the unit and the ACC unit.



- If the unit is equipped with the auxiliary water-cooled air conditioning condenser, ensure that proper water flow and temperature are available. Check the water flow direction into and out of the unit.
- Make sure that the fan belt(s) are tight and the fan scroll turns freely in the blower housing.
- Ensure that the pool water temperature sensor has been properly installed.
- Ensure the pressure of pressure gauges is higher than 15kg/cm² (22psi).
- Ensure that proper pool water flow and pressure are available (for pool heating only). Check the water flow direction into and out of the unit. Make sure that the unit is down line from the filter and up line from the chemical feed system.
- Verify electrical power and control connections are in accordance with local codes. Check for proper power supply and a properly sized and installed fused disconnect switch located within sight of the unit (in 10 m).

6.2 Start-Up

1. After making sure that all personnel are clear of the unit and the water flow to the unit is OFF, turn on the unit electrical disconnect. When the blower motor starts, verify that it is rotating in the proper direction. If it is backwards, turn off power to the unit, reverse any two of the power leads, and reapply power.
2. When the blower is running in the correct direction, measure the current draw of the motor. Make sure it does not exceed the FLA value listed on the motor nameplate. Record the current value(s). If the value is too high, the static pressure in the supply duct may be too low and the motor pulley will need to be adjusted.
3. Disconnect power from the dehumidifier unit. Re-tension the blower belt. Turn on the pool water supply to the unit. Use valves in the water line to set the flow rate to the range called out on the unit's data plate. After correct water flow has been established, reapply power to the unit.

NOTE: Excessive flow rate can erode the pool water condenser.



HIGH VOLTAGE is used in the operation of this equipment. DEATH OR SERIOUS INJURY may result if personnel fail to observe precautions. Work on electronic equipment should not be undertaken unless the individual(s) has (have) been trained in the proper maintenance of the equipment and is (are) familiar with its potential hazards. Shut off power supply to equipment before beginning work and follow lockout procedures. When working inside equipment with power off, take special care to discharge every capacitor likely to hold dangerous potential. Be careful to not contact high voltage connections when installing or operating this equipment.

NOTE

LOW VOLTAGE - DO NOT be misled by the term "low voltage." Voltages as low as 50 volts may cause death

4. Use the main menu to access the detailed status display. Choose the "AUTO" or "MANUAL" mode to access the detailed status display.
5. Put the unit into air heating mode by setting the humidity set point to 60% and the air temperature set point to 28°C above the current temperature in the space.
6. Set the pool water temperature set point to 27°C. This should cause the unit to run in water heating mode. The compressor will start approximately at least six minutes after power is applied to the unit. Measure the current draw of the compressor. It should be less than the RLA value listed on the data plate. Also measure the voltage at the unit's power connections.



7. Change the water temperature set point lower/higher than 27°C. This should cause the unit to change to air heating mode.
8. If the unit is equipped with an auxiliary air-cooled air conditioning condenser, change the air temperature set point lower/higher than current air temperature. The unit should change from air heating mode to air cooling mode. Check to be sure that the remote air cooled condenser fan.
9. Add the calculated additional refrigerant and oil charge. The temperature of the supply air from the unit should drop after a minute or two. Allow the unit to run for at least ten minutes in this mode. Record the performance data of Air Cooling.
10. If the unit is equipped with an auxiliary air conditioning condenser, change the water temperature set point lower/higher than current air temperature. This should cause the unit to change to air cooling and water heating mode. Allow the unit to run in this mode for at least ten minutes. Record the performance data of Air Cooling and Water Heating.
11. Adjust the air temperature, relative humidity, and water temperature (with pool heating) set points to the design values.
12. The start-up procedure is now complete and the unit is fully operational.

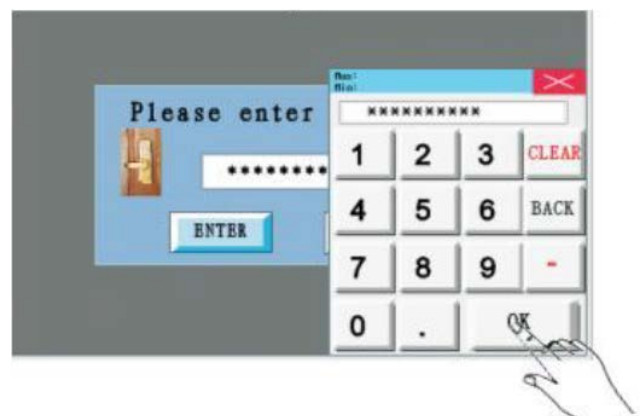
7 Operation

7.1 How to Control

After application of power to the control system, image will appear for approximately 10 seconds followed by an initial startup screen as shown below:



Touch the screen will lead to password enter: The initial user password is 111111



7.2 Run-Mode Menu



1) AUTO

Under this mode selection, the unit will run automatically by dehumidification and air heating, dehumidification and water heating, dehumidification and air cooling.



The above screen contains basic information of the status and target set point status displays:

- Space Temp: Room (space) temperature in °C
- Space Humid: Room (space) relative humidity in %
- Pool Temp: Pool water temperature in °C
- SysSta: The running status
- CtrlMode: The current operation status

To set the target set point by touch the

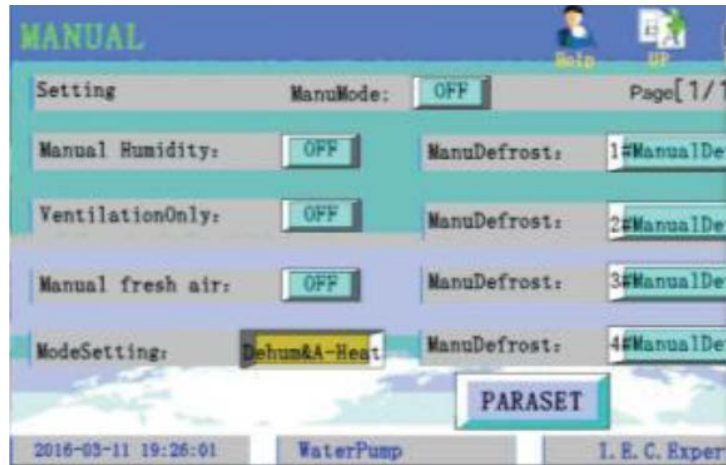


2) MANUAL

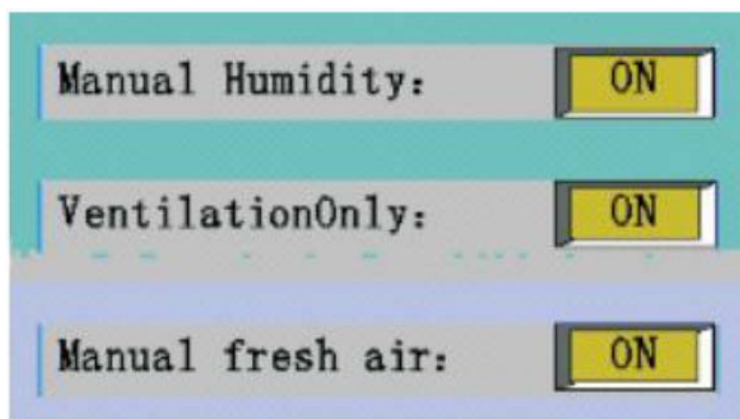
**WARNING**

Manual mode operation should only be performed by a qualified HVAC service technician. Improper use will cause system damage and possibly hazardous operation

Under this mode selection, the unit will run on the selective mode



The above screen contains basic information of the status and the selective running mode. There are three options to choose:

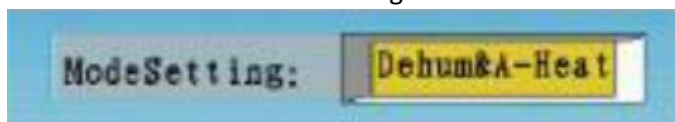


Manual Humidity: Off/On

Ventilation Only: Off/On

Manual Fresh Air: Off/On

There are three different running modes to choose:



Dehu&A-Heat: Dehumidification and air(space) heating mode

Dehu&W-Heat: Dehumidification and pool water heating mode, for those with pool water heating function

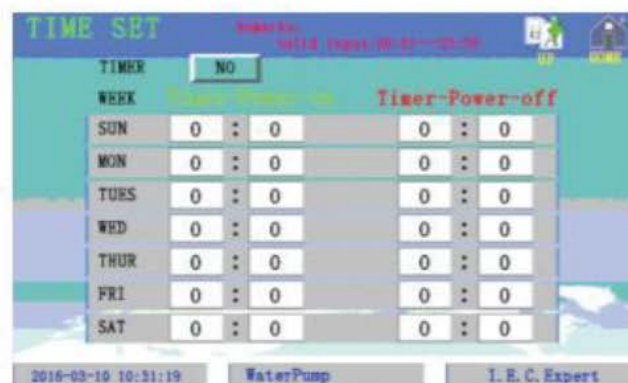
Dehu&A-Cool: Dehumidification and air(space) cooling mode, for those with air/water cooled condenser

Touch **PARASET** to access the parameter setting



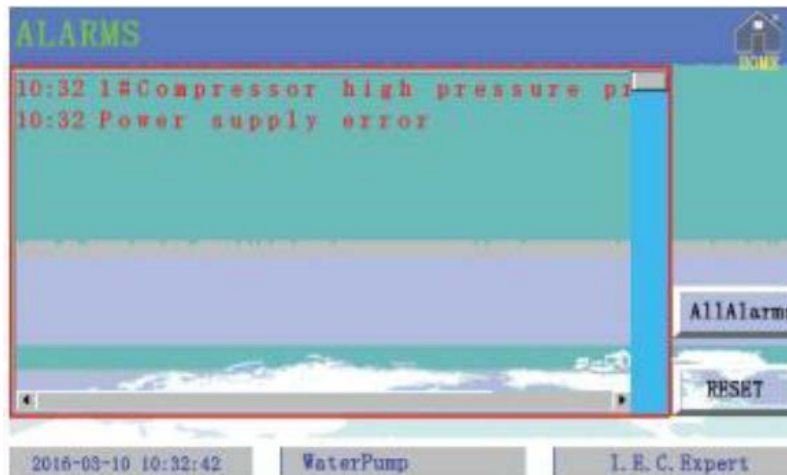
- SpaceTempDiff: The temperature difference of room (space) temperature in °C
- SpaceHumidDiff: The humidity difference of room (space) relative humidity in %
- PoolTempDiff: The temperature difference of pool water temperature in °C
- AuxAirHeatDif: The temperature difference for auxiliary air(space) heating in °C
- AuxPoolHeatDif: The temperature difference for auxiliary pool water heating in °C

Touch **TIMER** to access the timer setting for each day from Sunday to Saturday



7.3 Alarms Menu

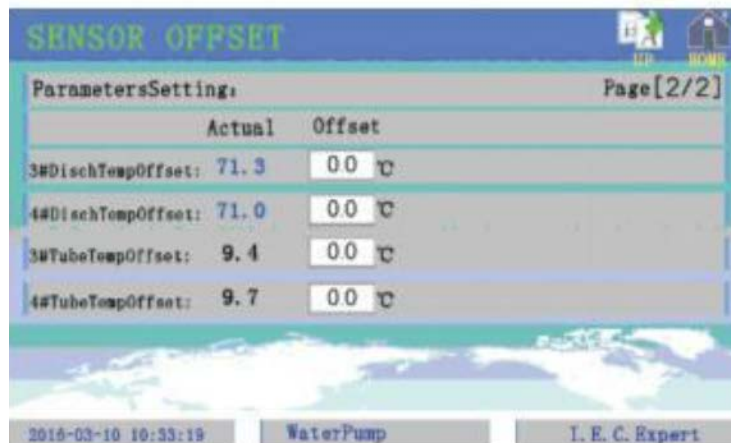
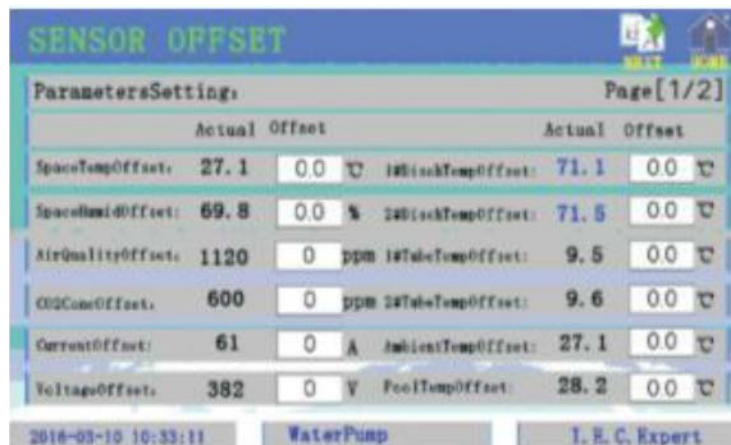
The alarms screen provides information on all the faults that have occurred in the dehumidifier. It can be used for troubleshooting by an experienced HVAC technician.



The dehumidifier may stop when the fault occurs, Press the reset button after the fault has been eliminated to go back to normal operation

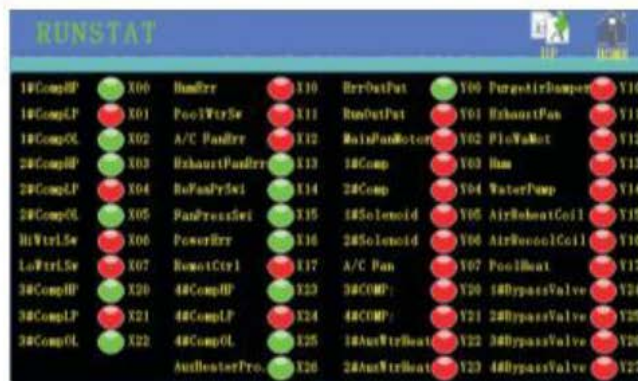
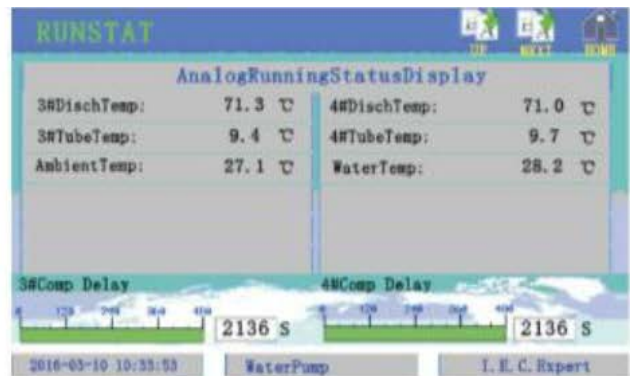
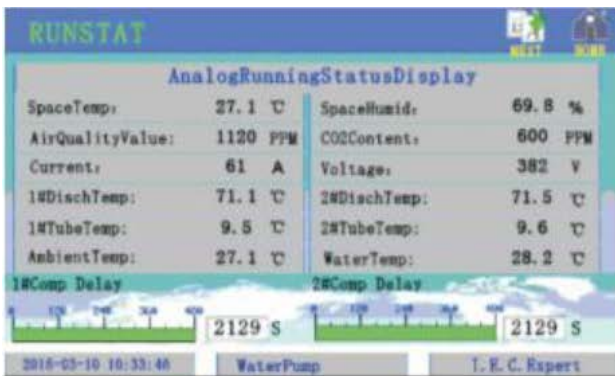
7.4 Sensors Off Set Menu

The offset screen is to calibrate different sensors to a known standard. The signed value of this parameter is added to actual value read from the sensor



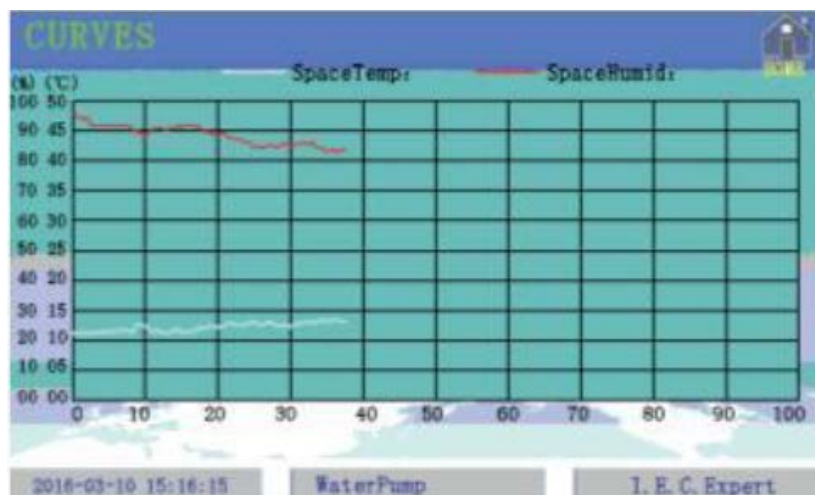
7.5 Run-state Menu

The RUNSTATE screen contains the technical information of the status the dehumidifier



7.6 Curves Menu

The CURVES screen is to display the value of Room (Space) temperature and Room (Space) Humidity.



7.7 On/Off Menu

ON/OFF screen is to turn on or turn off the dehumidifier



The dehumidifier unit has numerous safety devices designed to protect the system from failures. Whenever a fault condition occurs, the alarm message will display on the screen.



The dehumidifier may stop when the fault occurs, Press the reset button after the fault has been eliminated to go back to normal operation

8 Alarm and Troubleshooting

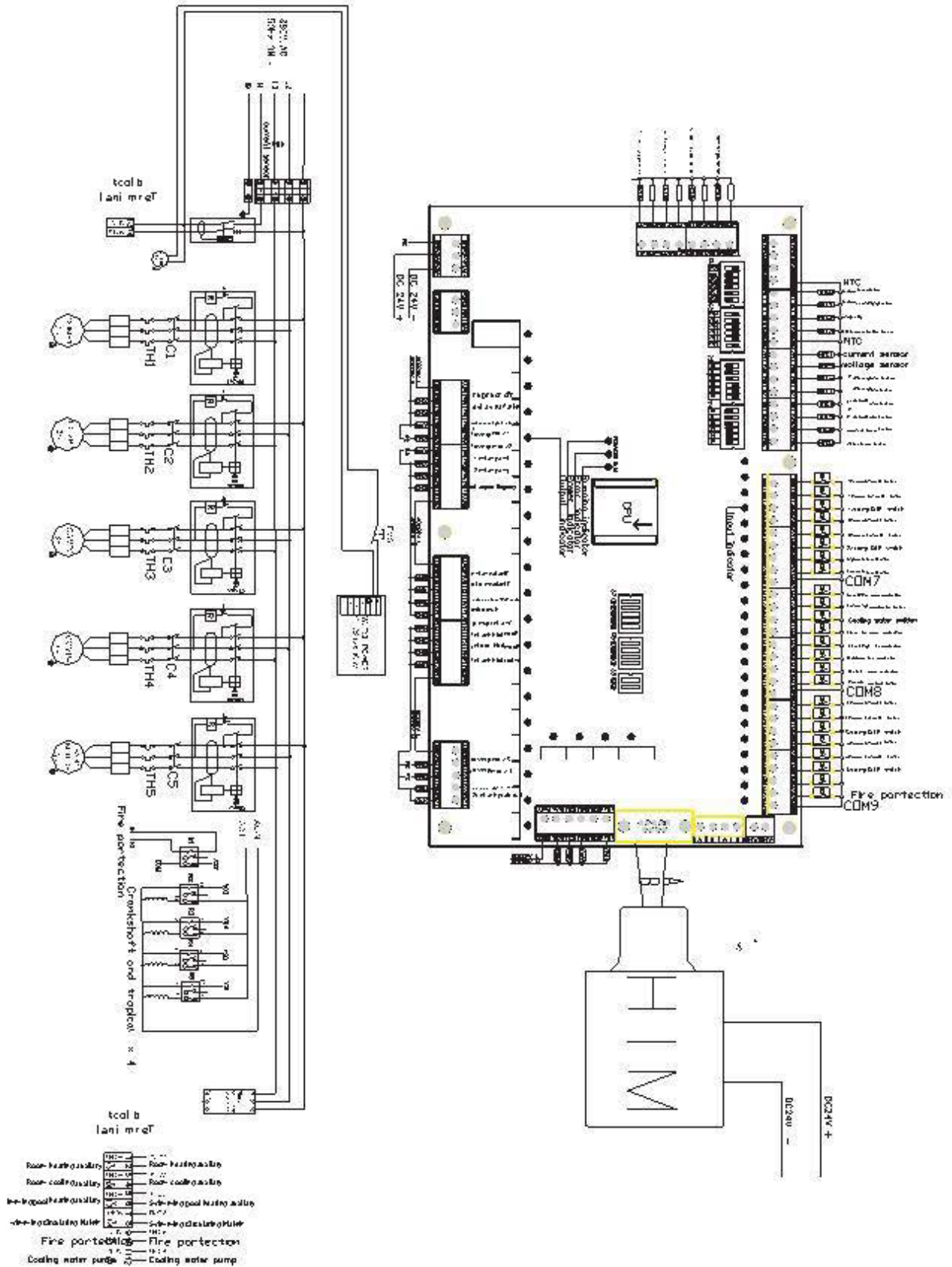
The alarm messages detected by the dehumidifier are displayed as below:

ALARM MESSAGE	CAUSE	SOLUTION	DEHUMIDIFIER
1# Tube temperature sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
1# Compressor low pressure protection	Fan motor problem	Check fan motor	Only the faulty system stops
	Obstruction is return duct system	Remove duct obstruction	
	Expansion valve problem	Replace expansion valve	
1# Compressor high pressure protection	A/C condenser power off	Restore power to A/C	Only the faulty system stops
	A/C condenser fan gets blocked	Remove blockage	
	Excessive refrigerant charge	Remove charge to proper amount	
	A/C 4-way valve is not opening	Repair A/C 4-way valve	
1# Compressor Overload protection	Low refrigerant charge	Properly charge refrigerant	Stops
	Fan valve motor problem	Check fan motor	
1# Compressor Discharge temperature over the limit	Refrigeration system problem	Check the whole refrigeration system	The faulty system will stop after 3 times
1# Compressor discharge temperature sensor	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
2# Tube temperature sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
2# Compressor low pressure protection	Fan motor problem	Check fan motor	Only the faulty system stops
	Obstruction is return duct system	Remove duct obstruction	
	Expansion valve problem	Replace expansion valve	
2# Compressor high pressure protection	A/C condenser power off	Restore power to A/C	Only the faulty system stops
	A/C condenser fan gets blocked	Remove blockage	
	Excessive refrigerant charge	Remove charge to proper amount	
	A/C 4-way valve is not opening	Repair A/C 4-way valve	
2# compressor overload protection	Low refrigerant charge	Properly charge refrigerant	Stops
	Fan valve motor problem	Check fan motor	
2# compressor discharge temperature over the limit	Refrigeration system problem	Check the whole refrigeration system	The faulty system will stop after 3 times
2# Compressor discharge temperature sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
3# Tube temperature sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
3# Compressor low pressure protection	Fan motor problem	Check fan motor	Only the faulty system stops
	Obstruction in return duct system	Remove dust obstruction	
	Expansion valve problem	Replace expansion valve	
3# Compressor high pressure protection	A/C condenser power off	Restore power to A/C condenser	Only the faulty system stops
	A/C condenser fan gets blocked	Remove blockage	
	Excessive refrigerant charge	Remove charge to proper	
	A/C 4-way valve is not opening	Repair A/C 4-way valve	
3# Compressor overload protection	Low refrigerant charge	Properly charge refrigerant	Stops
	Fan valve motor problem	Check fan motor	
3# Compressor discharge temperature over the limit	Refrigeration system problem	Check the whole refrigeration system	The faulty system will stop after 3 times

3# Compressor discharge temperature sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
4# Tube temperature sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
Return fan pressure failure	Main fan damper is not open	Open the main fan damper	Stops
	Check the main fan motor	Change a new fan motor	
Space temperature below limit	Space temperature is too low	Warm the space	Keeps running with alarm message on the screen
Space temperature above limit	Space temperature is too high	Cool the space	Keeps running with alarm message on the screen
Space temperature sensor fault	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
Air cooled condenser fan pressure failure	Check the fan motor	Change a new fan motor	Stops
Water temperature sensor fault	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
Lack of water flow	Pool water circulation pump off	Turn on circulation pump	Stops
	Pool water filter dirty	Backwash filter	
	Pool water flow too low	Adjust the water flow	
4# Compressor low pressure protection	Fan motor problem	Check fan motor	Only the faulty system stops
	Obstruction in return duct system	Remove duct obstruction	
	Expansion valve problem	Replace expansion valve	
4# Compressor high pressure protection	A/C condenser power off	Restore power to A/C condenser	Only the faulty system stops
	A/C condenser fan gets blocked	Remove blockage	
	Excessive refrigerant charge	Remove charge to proper amount	
	A/C 4-way valve is not opening	Repair A/C 4-way valve	
4# Compressor overload protection	Low refrigerant charge	Properly charge refrigerant	Stops
	Fan valve motor problem	Check fan motor	
4# Compressor discharge temperature over the limit	Refrigeration system problem	Check the whole refrigeration system	The faulty system will stop after 3 times
4# Compressor discharge temperature sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
Current detection Sensor Failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
Voltage detection sensor failure	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	
Power supply error	Phase protection for 3 phase unit	Reverse any two of the power leads	Stops
Fire Protection	signal line(L&N) receives signal	Check signal line	Stops
		Check cables between PCB and relay	
Ambient temperature sensor fault	Sensor problem	Change a new one	Only the faulty system stops
	Sensor wire is loose	Fasten the sensor wire	

9 Circuit Diagram

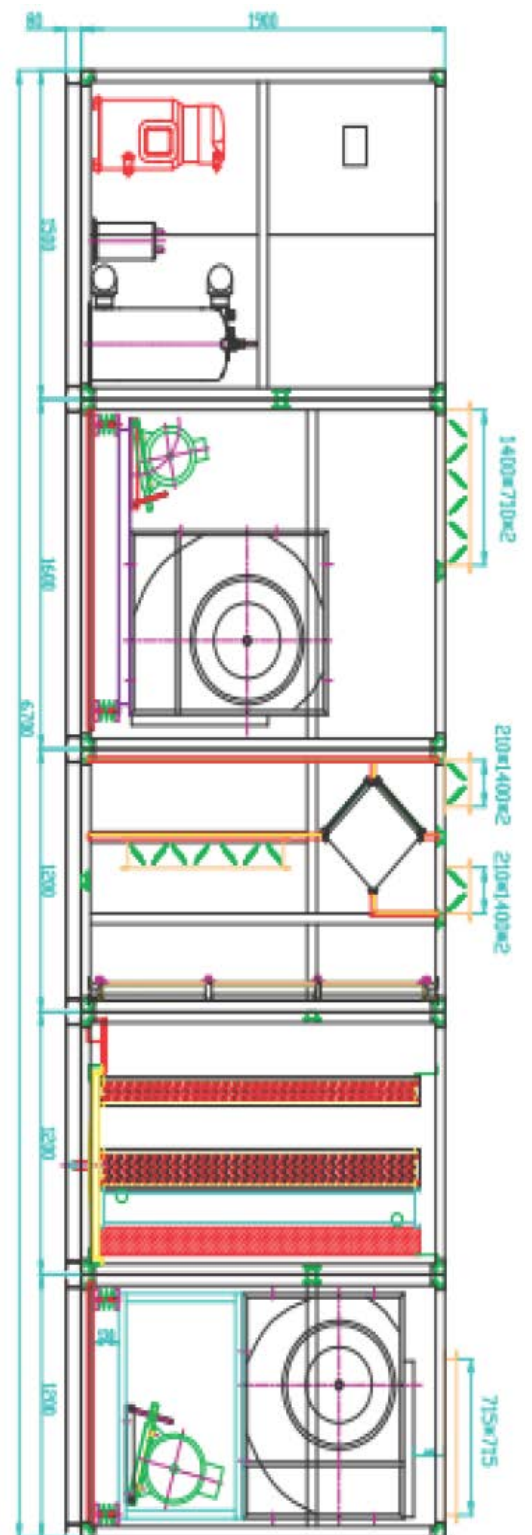
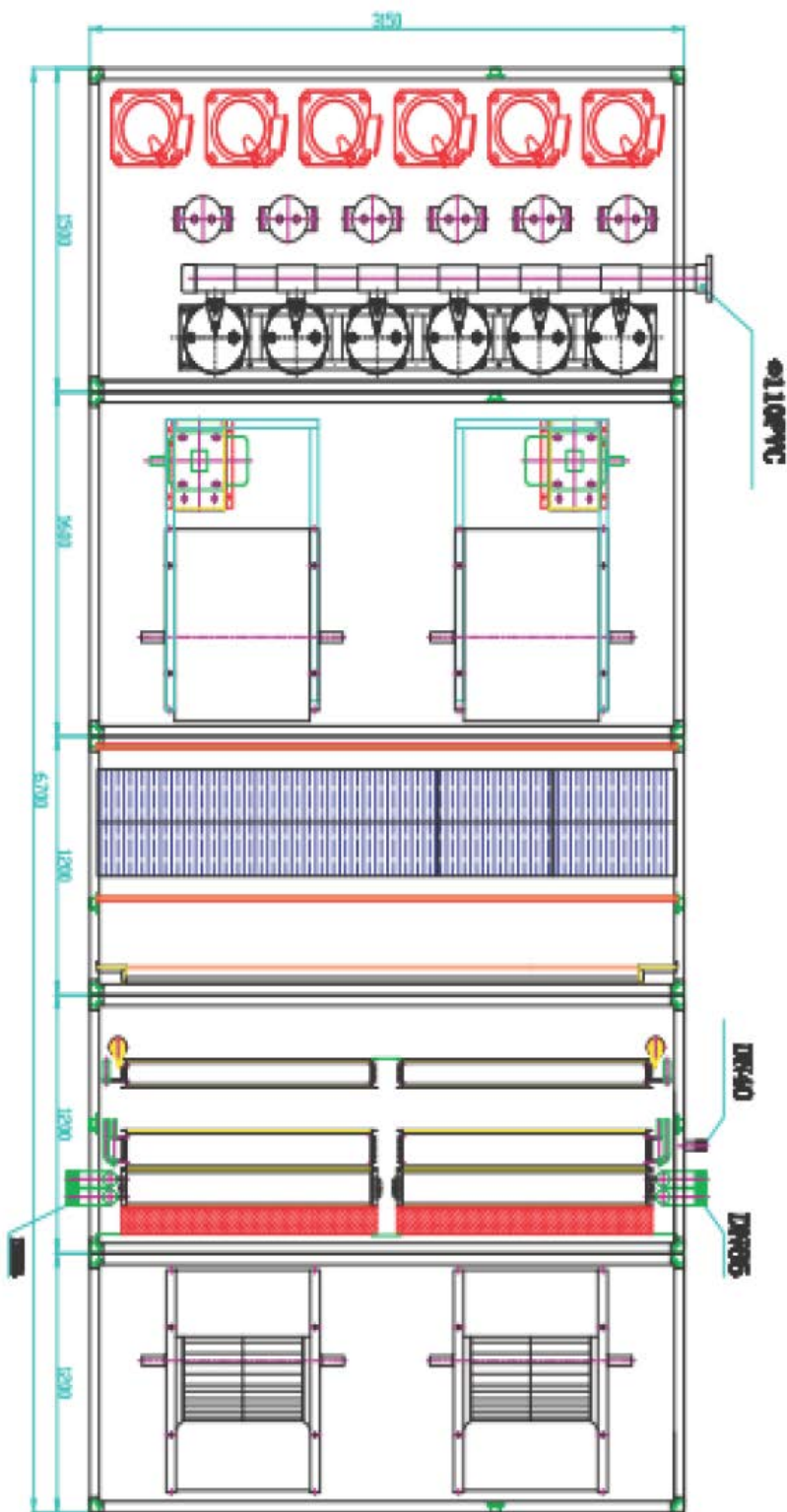
C-1200, C-1500
THREE PHASE (3~N 50Hz)



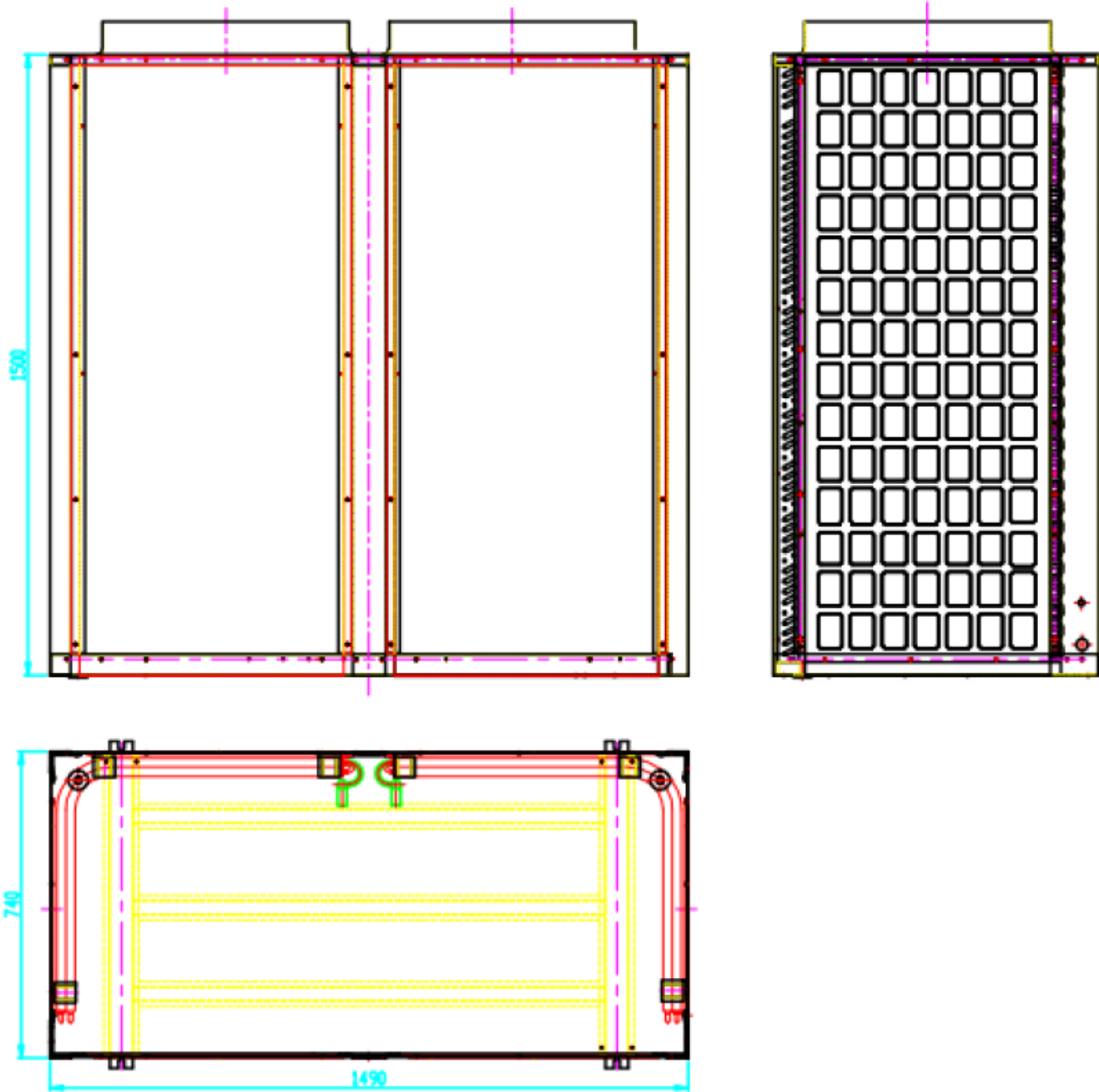
10 Dimension and Parts

10.1 Description of Parts and Dimensions

Dehumidifier (Indoor Unit)



Air Cooled Condenser (Outdoor Unit)



11 Maintenance

11.1 Overview

Periodic routine maintenance will promote extended equipment life. A simple check could result in noticing possible problems before they develop into major problems

11.2 Daily Maintenance

Pool water chemistry is a part of daily maintenance and it is recommended to follow National Spa and Pool Institute standards.

11.3 Monthly Maintenance

- A) Air Filters, inspect and replace or clean as applicable. Dirty filters restrict air flow and can cause improper unit operation.
- B) Ensure that the condensate collection pan is draining properly and the condensate is not overflowing. Check the condensate and overflow lines to ensure that neither are clogged.
- C) Check the operation of the blower motor and compressor. Ensure that the compressor does not rub the housing. Check fan and mounting brackets for tightness.
- D) Ensure that the ALARM light is not illuminated.

11.4 Annual Maintenance

- A) Inspect the refrigeration and water circuits for leaks, wear or corrosion. Corrosion on the water piping or condenser may indicate poor pool chemical maintenance and improper chlorine and pH levels.
- B) Check electrical components for loose wiring.
- C) Wash, brush, or vacuum the evaporator and air condenser coils. This will ensure proper heat transfer and reduce static pressure losses. Caution should be taken not to wet electrical components inside the unit.



12 Technical Specification

Dehumidification System		
Specification		C-1500
Dehumidification Capacity (30°C,80%RH)	kg/hr	150
Air heating capacity (30°C,80%RH)	kw	291.4
Supply Air	cbm/h	45000
External static pressure	Pa	300
Compressor consumption power	kw	73.8
Fan motor consumption power	kw	15.2
Total consumption power	kw	89
Fresh air	cbm/h	0~12000
Fresh air valve	type	Automatic
Air filter	type	Initial effect
Air return valve	type	Automatic
Ventilation Valve (ERV)	type	Automatic
Power Supply	V/Hz/Ph	380-415/50/3
Refrigerant	Type	R407c
Protections	Type	Phase Protection, High/Low Pressure Protection, Overload Protection, Water-Proof PCB, Compressor staged start, Compressor Auto- Protection, Fan Motor Auto-Protection
Condenser drain pipe diameter	inch	1
Dimension	Length (mm)	6700
	Width (mm)	3150
	Height (mm)	1980
Weight	Kg	3750
Optional System		
Pool heating capacity	kw	300
Pool water flow	cbm/h	50
Pool inlet/outlet water pipe diameter	inch/mm	4/110
LPHW/Electric heater	kw	300
LPHW Inlet/outlet water pipe diameter	inch	1 ½
Air Cooled Condenser for Air Cooling (Optional System)		
Cooling Capacity (30°C,80%RH)	kw	260.1
Outdoor Unit Fan Motor Power	kw	1.1
Dimension	Length (mm)	1490
	Width (mm)	740
	Height (mm)	1500
Weight	Kg	148
Quantity to dehumidification system	Pcs	6

GUARANTEE CARD

Dear Valued Customer,

Thankyou for purchasing your Solace Universal Dehumidifier!

We hope that you will be pleased in using the dehumidifier and find that it maintains a delicate balance of humidity control and manages air and water temperatures for maximum comfort at the lowest costs. For easy reference, please record the purchase date of your unit and your dealer's information. You also need to record the model name and serial number. You can find this information from your dehumidifier or ask your dealer.

Model number _____

Serial number _____

Purchase date _____

Dealer name _____

Dealer address _____

Dealer Phone # _____

Keep this manual and the sales slip/receipt together in a safe place for future reference.

