CLIMATEWORX INTERNATIONAL

MISSION CRITICAL Air Conditioning Systems

Series IR
Product Overview Manual

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COLE-CAN-SIRX12POM 2012

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In the interest of continuous improvement, ClimateWorx reserves the right to change specifications without notice.

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Nomenclature

Platform	Type of System	Width	Depth	Voltage	Fan Type	Refrigerant	filters	Compressor Type	Heating	Heater Control	Humidification	Dehumidification	Capacity Control	Hydronic	Other
IR	C	12	42	J	0	X	C	X	X	X	X	X	X	B	X

Platform:
IR: IRX12 In-Row

Type of System:
A: Air cooled
W: Water cooled
G: Glycol cooled
C: Chilled Water

Width:
12: 12 inch width
24: 24 inch width

Depth:
42: 42 inches deep

Voltage:
J: 100-120V/1ph/60 Hz (chilled water only)
U: 200-240V/1ph/60 Hz
R: 220-240V/1ph/50 Hz (chilled water only)

Fan Type:
0: Tube Axial
1: SWSI BI Impeller

Refrigerant:
R: R410A w/ N_2 Holding Charge
T: R410A Charged (Self Contained units only)
X: Not required/Not applicable

Filters:
G: 2” filter, 30%
N: Normal 4” filter, 85% (24” unit only)
C: 1” Aluminum, washable filter (12” unit only)
S: Special Specifications
E: External Filters

Compressor Type:
H: Scroll (12” type)
X: Not required/Not applicable

Heating:
X: Not required/Not applicable

Heater Control:
X: Not required/Not applicable

Humidification:
X: Not required/Not applicable

Dehumidification:
X: Not required/Not applicable
S: Special Specifications (Split Dis)

Capacity Control:
G: Hot gas by pass
X: Not required/Not applicable

Hydronic:
B: 3-way CW, 300 psig close-off valve
X: Not required/Not applicable

Other:
X: Standard Unit
S: Special Specifications

Overview

The ClimateWorx IRX12 is a 12 inch wide precision air conditioning unit placed within a row of heat generating IT equipment. It performs functions such as cooling, air filtration and condensate management. It can be used either as a stand-alone unit to cool a row of equipment, or as a hot spot cooler to support CRAC units. The IRX12 is suited for high-density, critical environments such as computer rooms, telecommunication facilities, LAN/WAN network environments and medical equipment rooms.

Capacities

The IRX12 has a cooling capacity of three tons nominal. Capacity varies with different conditions.

Room Air Distribution

In row units are placed between racks of heat generating IT equipment. Air is drawn through the rear of the unit, cooled and then exhausted through the front into the cold aisle. This neutralizes the sensible heating effects generated by the data processing equipment.

Configurations

All models manage room temperatures using either air cooled DX, water/glycol cooled DX or chilled water cooled configurations.

Compliance Approvals

All ClimateWorx equipment is evaluated and accepted by a Nationally Recognized Testing Laboratory, NTRL accredited organization to UL 1995 Standard.

Standard Features

- Compact Footprint
- Variable Capacity Operation
- 900W Power Supply
- Dual A-B Power Feed
- SS Condensate Drain Pan
- Condensate Management
- 5 Temperature Sensors
- 20% MERV-1 1” deep aluminum filter
- Network compatible microprocessor control
- 6/8 axial direct drive fans

Optional Features

- Cable leak detection
- Alternate colors available
- Communication card for integration with building management systems (BMS) using Ethernet or RS485 connections.

Scalable Solutions (Applications)

The IRX12 unit is an in-row based unit which can support CRAC units in addressing hot spots in a data center. Alternatively, it can also be used in smaller rooms where floor space is not an issue. It can be used in multiple applications and is available in various configurations to suit any situation. This section details the advantages of row-based cooling, the benefits and applications of using row-based cooling, the advantages of hot and cold aisle containment and the various system configurations that are available for the IRX12.

Advantages of Row-Based Cooling

The IRX12 product improves energy efficiency and cooling ability in various ways. It draws air directly from the hot aisle, which allows it to take advantage of higher heat transfer efficiency due to higher temperature differences. It then discharges room temperature air directly in front of the server racks it is cooling. This increases energy efficiency by allowing the chiller to operate at a higher return water temperature. In cases where chilled water is not available, or if the situation calls for it, air-cooled, water cooled and glycol cooled solutions are also available to be used. Placing the cooling unit in the row enables the unit to operate at higher supply and return temperatures yielding 100% sensible capacity, which significantly reduces humidification demand.

Benefits of Row-Based Cooling:

1. Hot spot combating
2. Decentralized cooling
3. Growth scalability
4. Redundancy

Hot Spot Combating

The primary feature of the IRX12 is to combat hot spots within a data center. The unit functions as a support unit for CRAC units that are already operating in a room. By placing a unit in a row with heat generating IT equipment, the unit maintains and regulates hot spot temperatures enough so that CRAC units can adequately cool the rest of the row.

Decentralized Cooling

The air conditioning units are designed to be dispersed around the rows of a data center. This approach allows the IRX12 to perform at 100% sensible capacity without the use of ducting equipment. By decentralizing the units and dispersing them around a data center, hot spots are better managed and redundancy can be accounted for.

Growth Scalability

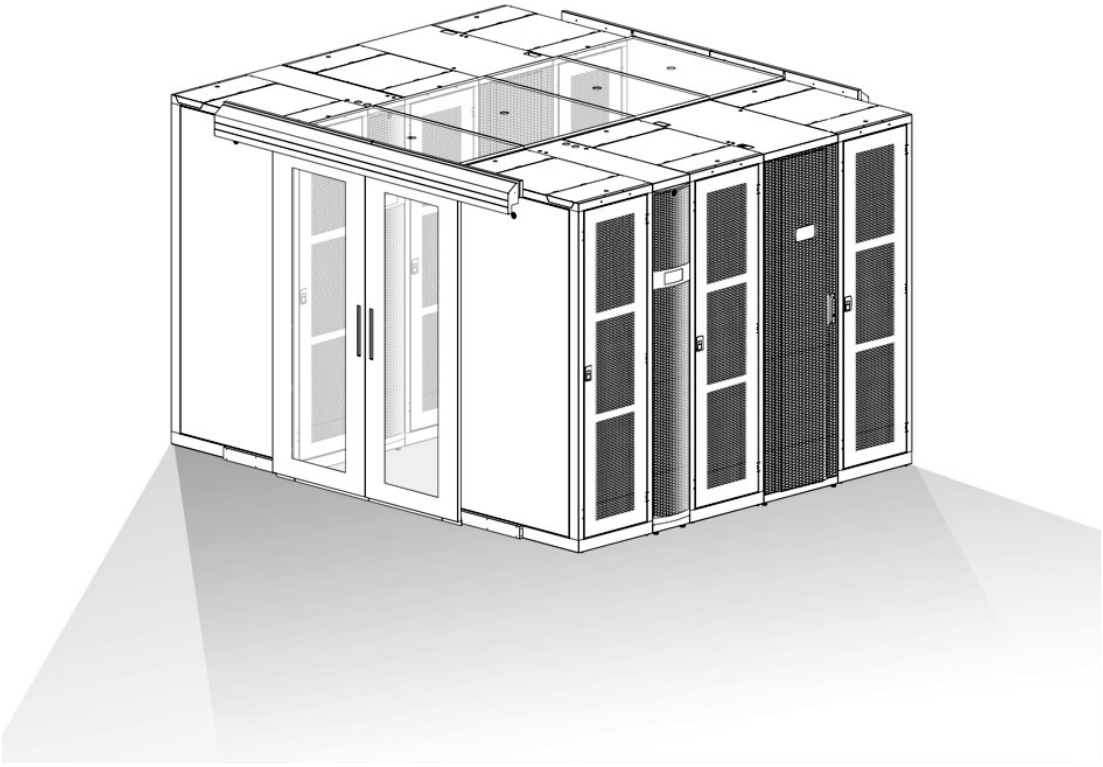
With its compact footprint, the IRX12 can be installed with data room expansions in mind. As additional cabinets are included in the room, extra in-row units can be added to suit their needs. Units can be ordered based on density and demand and can be easily installed to any configuration available.

Redundancy

The IRX12 is designed for N+1 redundancy. It ensures that the row will have the necessary amount of cooling required to balance the density load in the event of a unit failure. This system also reduces capital expenditures compared to CRAC units. Often in a data center with CRAC units installed, a second unit running at 100% is usually needed to facilitate N+1 redundancy. With the IRX12 in operation in a row of IT equipment, adding an extra unit can facilitate redundancy at a fraction of the cost for a normal CRAC unit.

Advantages of Hot/Cold Aisle Containment

The benefit from using row-based architecture is that it can accommodate aisle containment systems for either cold or hot aisle containment. Containing either the hot or cold air prevents mixing from occurring between the hot and cold airstreams. This allows reductions in energy costs and noise in the data center due to increased cooling efficiency.



Hot aisle containment isolates the hot aisle from the cold aisle, capturing heat. By removing and cooling the air from the hot aisle and returning it to the surrounding room area at slightly below room temperature, the return air temperatures achieved increase the capacity of the air conditioner and, in some cases, eliminate the need for make-up humidification. This is known as load neutralization. The downside to this is that due to the conditions in the contained hot aisle environment, repairs and maintenance in the aisle may become a challenge. The temperatures in the hot aisle can reach in excess of 105°F, making it

uncomfortable for maintenance and repairs to be done. Also infrastructure components, lighting, fire suppression devices increase the cost of deployment.

Cold aisle containment is the opposite of the hot aisle; isolating the cold aisle, releasing heat into the surrounding room area. This prevents the cold air from short circuiting and mixing with the hot air. However, because of the small volume of space the air occupies in the contained aisle, there may not be enough air for the IT equipment to draw in during emergency situations, thus starving the equipment. Also infrastructure components, lighting, fire suppression devices increase the cost of deployment.

ClimateWorx offers hot and cold aisle containment systems which can be easily added to all CableTalk brand cabinets. This system mounts to existing holes in the cabinet, so there is no need for any on-site modifications. The modular top construction of CableTalk cabinets accommodates varying widths and depths of cabinets, and all roof and panels for the containment system have full gaskets for maximum containment. Once installed, all features and access panels are still operational.

System Types

Chilled Water

The IRC1242 chilled water systems use water from a chiller plant for cooling. Used in large buildings, chilled water can be used to service multiple machines which can be cost effective for large installations. Chilled water systems have the advantage of running very long distances and servicing many IT environments, or the whole building, with just one chiller plant. They also have the lowest cost per kW for large installations. However, chilled water systems have the highest capital costs per kW for smaller installations. They also introduce a source of liquid into the IT environment, which can cause damage due to leaking. These systems are best used in either medium to large sized data centers.

DX configurations

Air

Air cooled systems utilize a refrigerant and an evaporator coil to cool air exhausted from computer room equipment. They are organized in a split system configuration where the IRA1242 is connected to an outdoor, air-cooled condenser. Refrigerant is circulated through piping that connects the two mechanisms together. Using these circulating refrigerant lines, the heat generated from IT equipment is transferred to the outdoor environment through direct expansion. Air cooled systems have the advantage of having the lowest capital costs and easy maintainability, however, refrigeration lines cannot be run long distances without suffering efficiency loss. This is why many outdoor air-cooled condensers are placed as close to the compressor unit as possible. Also, multiple units cannot be attached to a single air-cooled condenser. Hence, air-cooled units are best suited to small and medium sized data centers.

Glycol

Glycol cooled systems use similar components as an air cooled system. Instead of using an outdoor condenser, they use an internal glycol cooled condenser and the waste heat is piped to an outdoor fluid cooler using a pump package. Glycol may be pumped longer distances than refrigerant therefore the IRG1242 can placed further away from the fluid cooler without sacrificing efficiency. As well, multiple

units can be connected to a single fluid cooler and pump package. The downside is that glycol cooled systems induce a higher capital and operating cost, due to the addition of the fluid cooler and pump package and higher operating conditions. Also, this system introduces liquid into the IT environment, which can damage IT equipment if a leak occurs. These systems are generally suited to small or medium sized data centers with moderate availability requirements.

Water

The IRW1242 water cooled systems differ from glycol cooled systems in that they use a water loop to extract heat from the condenser and that heat is rejected using a cooling tower instead of a fluid cooler. Otherwise, the systems and components are very similar to one another. Condenser water loops and cooling towers are usually part of a larger system that also rejects heat from room comfort air conditioning systems and water chillers. It holds the same advantages of glycol cooled systems in that it can run long distances and service multiple units with one cooling tower. However, it suffers from the fact that it has high initial costs for the cooling tower, pump and piping systems and maintenance costs due to frequent cleaning and water treatment requirements. This system again introduces liquid to the IT environment, meaning that leaks can damage the equipment if not handled carefully. Water cooled systems are generally suited to small, medium or large sized data centers with moderate to high availability requirements.

Standard Features

Compact Footprint

The IRX12 compact dimensions (12” x 42”) minimizes floor space footprint.

Cabinet

The cabinet consists of a rigid frame and exterior panels. There are also two serviceable panels on the front and back of the machine. The framework is constructed using 16 gauge cold formed steel, powder-coated to provide proper surface adhesion. The side panels are manufactured from 18 gauge steel and are insulated with 1/2” thick foam.

Fan

All units are equipped with energy efficient, axial fans. DX units are equipped with six fans while chilled water units use eight. The fans provide a draw-through air pattern to ensure uniform airflow over the cooling coil. Each fan is hot swappable for zero down time replacement.

Cooling Coil (CW only)

Constructed with copper tubes, aluminum fins and 18 gauge galvanized steel end plates, the cooling coil is designed with high sensible heat ratios in mind to provide maximum cooling. The coil includes a stainless steel drain pan for condensate that accumulates outside the coil.

Filters

The machine uses washable, 20% efficiency ASHRAE 52.1, ½ inch, deep loading filters that comply with HF1 standards for electronics.

Condensate Pump

The condensate pump is factory wired and piped internally to the condensate drain pan and outlet. The pump also has dual internal floats.

Remote Temperature Sensors

Remote sensors are provided to help adjust the unit's temperature settings relative to adjacent rack temperatures. The sensors may be placed up to 10 ft from the unit itself, and are use for remote placement in the field on bordering IT racks.

Power Supply

The unit includes 3 power supplies running at 900 watts total. Each power supply is capable of running the machine at 70% of its maximum capacity in the event of any single power supply failure on site.

Dual A-B Power Feed

The unit features two power feeds, which allows a level of system fault tolerance and uninterruptible cooling to exist.

Optional Features

Liquid Detection

Detection consists of a cable placed on either the floor or subfloor around all possible leak sources. If any liquid contacts the cable, the microprocessor will display an alarm for a leak. The unit is shipped with 10 feet of wire to extend to the bottom of the unit and 15 feet of sensing cable to be placed in the field.

Alternate Colors

The IRX12 standard unit color is Raven black. Custom colors are available, consult the factory for details.

Open Architecture

The IR system protocol allows integration with all building management systems (BMS). This is done using Ethernet or RS485 connections. Additional communication card is required.

Microprocessor Control

The microprocessor control is standard on all machines. It provides precision control for rooms that demand specific requirements, such as computer rooms, medical equipment rooms and LAN/WAN network environments. It features an easy-to use display which allows operators to access options via a menu-driven interface that controls and monitors the air conditioning unit.

General Features

1. 16-bit microprocessor with 4 MB of memory to ensure high performance
2. Can be integrated with variety of BMS systems
3. Multiple units can be linked up together to form a pLAN network
4. Up to 16 units can be connected at any given time

Control Type

The controller uses a proportional/integral/derivative (PID) programming logic, which enables precise environmental control in real-time. This allows the system to manipulate custom control variables to achieve optimal system response.

Functions

- Supply and Return Air Conditions
- Event Logging
- Alarms
- Fan Speed Adjustment
- Redundant Group Control

Logging

The event log keeps a record of all the alarms and events that occurred since the unit's activation. Each log contains a time/date stamp as well as operating conditions at the time of occurrence. The controller also displays run times for major components in hours.

Controller Display

The display is a six key graphics management terminal which displays a screen resolution of 132 x 64 pixels with LED backlighting that is attached to the front panel door of the unit. It connects to the controller using an RJ12 interface and requires no additional installation for its operation.

Alarms

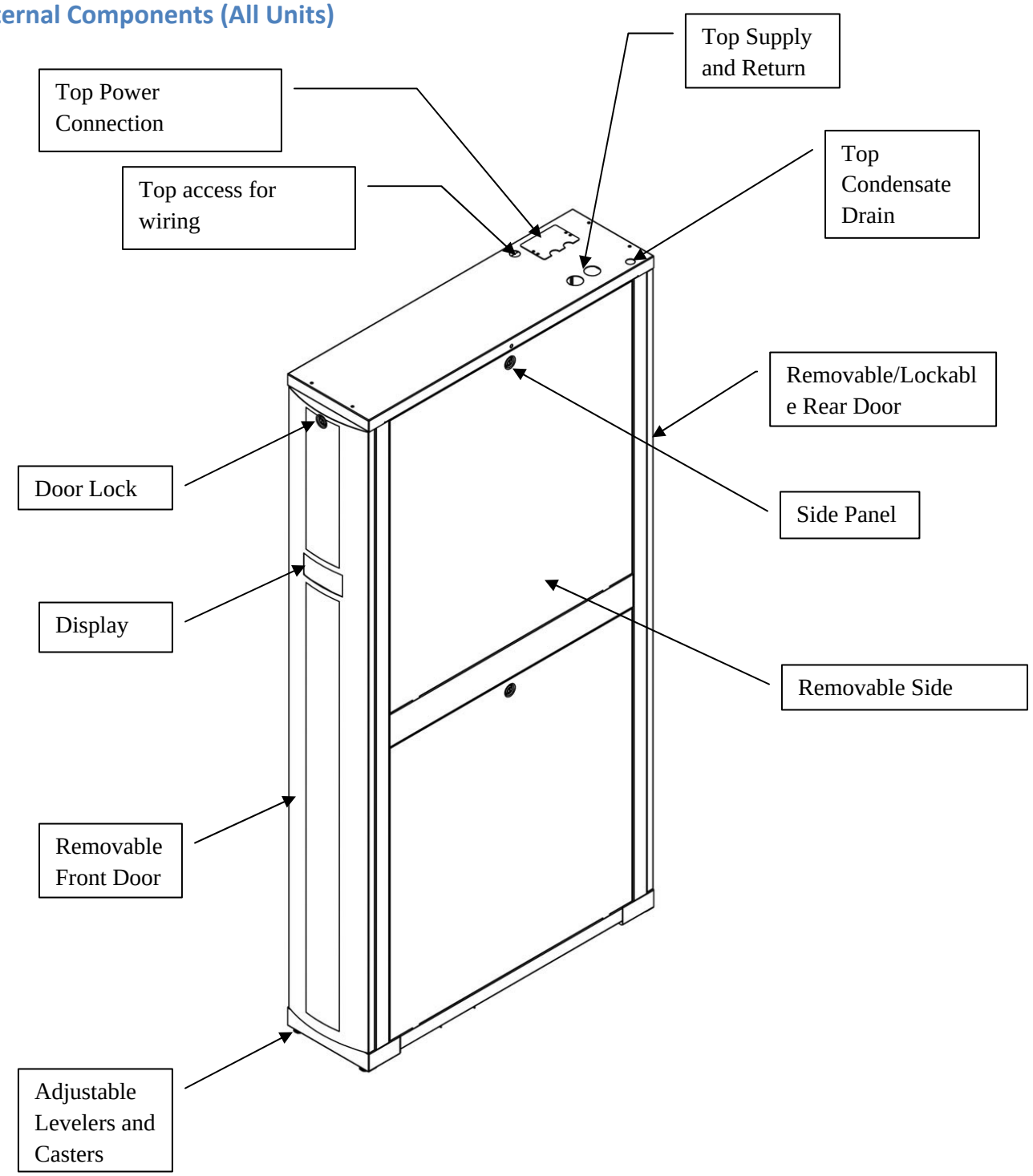
- Low/ High Temperature Return Air – Bottom
- Return Air Temperature Sensor Fail - Bottom
- Low/ High Temperature Return Air – Top
- Return Air Temperature Sensor Fail - Top
- Low/ High Temperature Supply Air – Bottom
- Supply Air Temperature Sensor Fail - Bottom
- Low/ High Temperature Supply Air - Top
- Supply Air Temperature Sensor Fail - Top
- Filter dirty
- DC Fan Failure
- Power Supply Overload
- Auxiliary Float High Limit
- Condensate Pump Overload
- Flow Sensor Fail
- Chilled Water Valve Sensor Fail
- Entering Water Temperature Sensor Fail
- Leaving Water Temperature Sensor Fail
- Rack NTC Sensor Fail
- Compressor Short cycling
- High Refrigerant Pressure
- Low Refrigerant Pressure
- Pressure Sensor Fail
- Mixing Valve Feedback Sensor fail
- Fire Alarm

pLAN Networking

The IRX12 controllers have the ability to link up together and share information with one another through the use of a pLAN networking protocol. Up to 16 units can be linked up and controlled as a unity. The pLAN network exchanges sensor readings of rack temperature readings and operates from either the maximum or average reading. This prevents the units from fighting one another to control cooling capacity. Controllers on pLAN must be able to be grouped. A group of controls will operate independently as long as there are no Alarms on any unit in that group. Once a unit in the group goes into Alarm and that alarm has standby enable selected the sensors from the group get included in highest value (or average) for control. Two sensors will be remote mounted and will be monitored for Highest or Average (selectable) and will vary the fan speed. One sensor will be in the return air and one sensor will be in the supply air. The cooling demand is controlled by the return air. On the display we can select the label under manufacture level configuration system settings the temperature as supply or return air based on which one is controlling cooling demand. In a situation where the a machine in the group is in alarm and the alarm is set for Standby Enable contact enables the control to other units cooling by the highest of the sensors in that group and control the fan speed by the highest of all the remote sensors in that group.

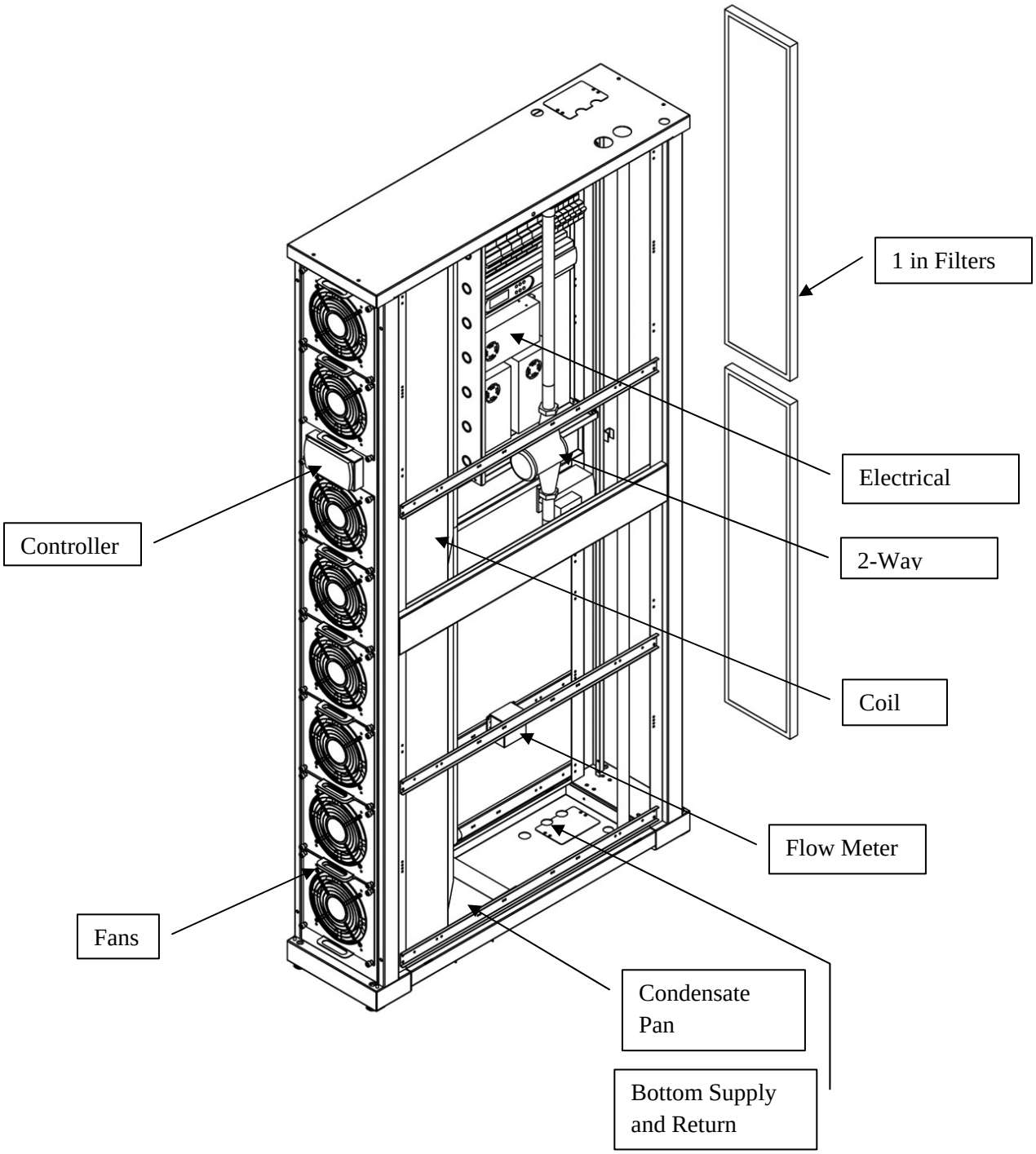
Models

External Components (All Units)



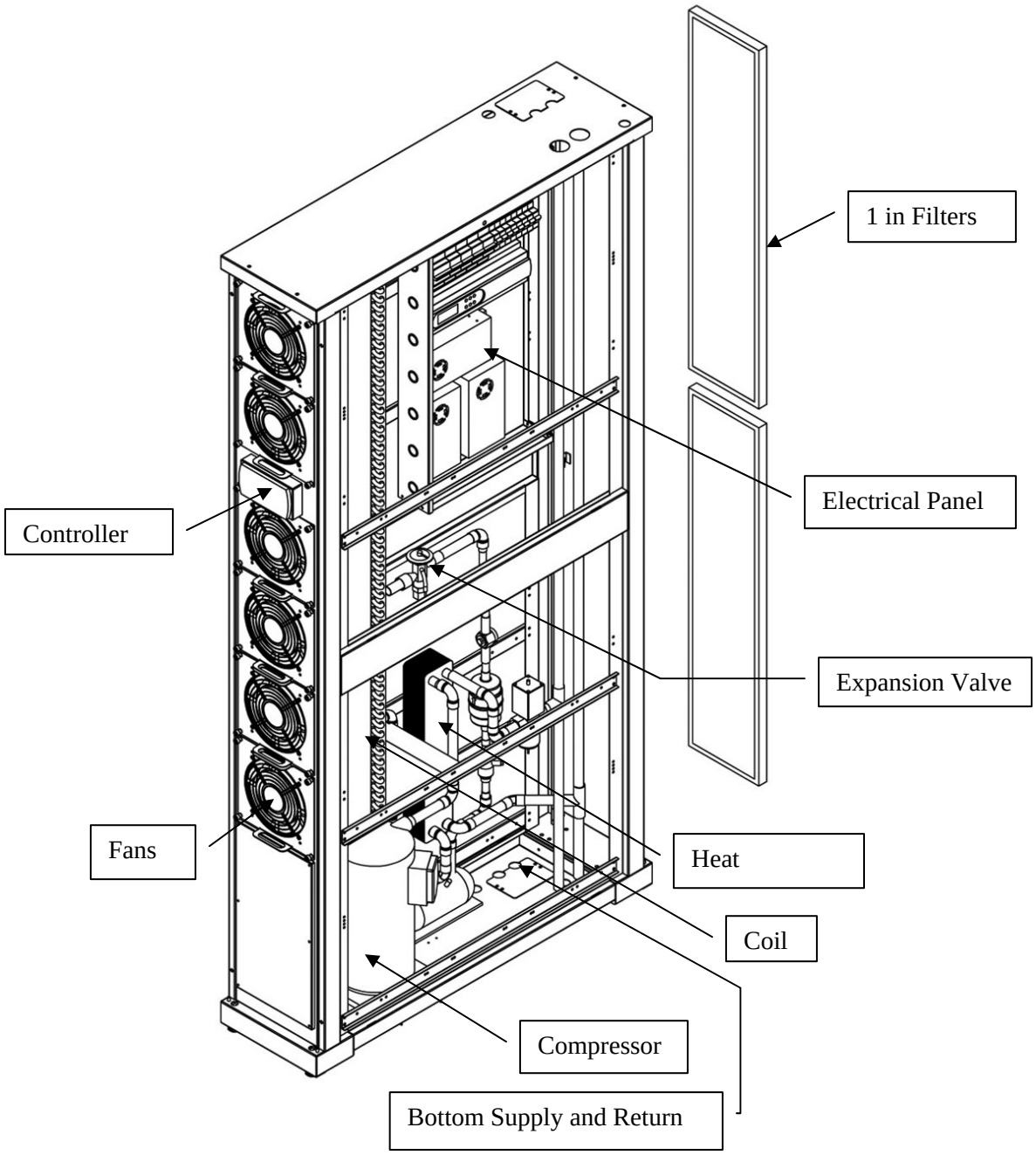
Internal Components (Chilled Water)

IRC1242

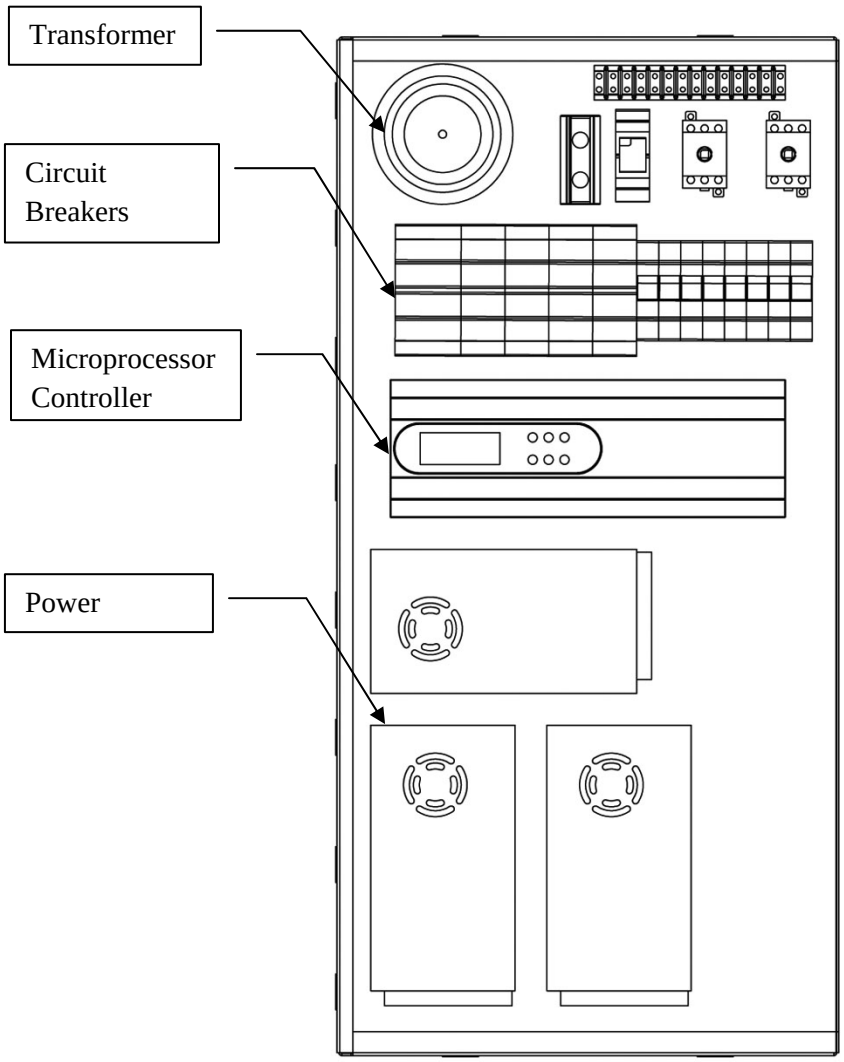


Internal Components (DX)

IRA/IRG/IRW1242



Main Electrical Panel



Technical Data

Sizing Calculations

To ensure and fulfill the needs of a data center, ClimateWorx International Inc. strives to provide the optimal product designed for its specific purpose. If a specific capacity rating is needed for a certain application, consult the factory for sizing adjustments and issues.

Performance Data Chilled Water 42°F EWT (5.6°C)

105°F DB, 70.8°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	120324 (35.3)	114580 (33.6)	109313 (32.0)	104212 (30.5)	99250 (29.1)	94112 (27.6)
NET Sensible Cap	Btu/hr (kW)	120097 (35.2)	114580 (33.6)	109313 (32.0)	104212 (30.5)	99250 (29.1)	94112 (27.6)
Sensible Heat Ratio	SHR	0.998	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	24.7	19.6	16.1	13.4	11.4	9.7
Pressure Drop	ft-H20	18.6	12.0	8.2	5.8	4.2	3.2

100°F DB, 69.2°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	109575 (32.1)	103817 (30.4)	98541 (28.9)	93341 (27.3)	83345 (24.4)	82749 (24.2)
NET Sensible Cap	Btu/hr (kW)	109575 (32.1)	103817 (30.4)	98541 (28.9)	93341 (27.3)	83345 (24.4)	82749 (24.2)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	22.5	17.8	14.5	12.1	10.2	8.6
Pressure Drop	ft-H20	15.7	10.0	6.8	4.7	3.4	2.5

95°F DB, 67.7°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	98872 (29.0)	92937 (27.2)	87517 (25.6)	82102 (24.1)	72433 (21.2)	70895 (20.8)
NET Sensible Cap	Btu/hr (kW)	98872 (29.0)	92937 (27.2)	87517 (25.6)	82102 (24.1)	72433 (21.2)	70895 (20.8)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	20.4	16.0	13.0	10.7	8.9	7.4
Pressure Drop	ft-H20	12.9	8.2	5.4	3.8	2.6	1.9

90°F DB, 66.1°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	87766 (25.7)	81694 (23.9)	75986 (22.3)	70457 (20.6)	61046 (17.9)	58407 (17.1)
NET Sensible Cap	Btu/hr (kW)	87766 (25.7)	81694 (23.9)	75986 (22.3)	70457 (20.6)	61046 (17.9)	58407 (17.1)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	18.2	14.1	11.3	9.2	7.5	6.2
Pressure Drop	ft-H20	10.4	6.4	4.2	2.8	1.9	1.3

85°F DB, 64.5°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	76404 (22.4)	70121 (20.5)	64208 (18.8)	58269 (17.1)	48991 (14.4)	48517 (14.2)
NET Sensible Cap	Btu/hr (kW)	76404 (22.4)	70121 (20.5)	64208 (18.8)	58269 (17.1)	48991 (14.4)	48517 (14.2)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	15.9	12.2	9.6	7.7	6.1	5.2
Pressure Drop	ft-H20	8.1	4.9	3.1	2.0	1.3	1.0

80°F DB, 62.8°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	64557 (18.9)	58091 (17.0)	51869 (15.2)	45309 (13.3)	42330 (12.4)	39504 (11.6)
NET Sensible Cap	Btu/hr (kW)	64557 (18.9)	58091 (17.0)	51869 (15.2)	45309 (13.3)	42330 (12.4)	39504 (11.6)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	13.5	10.2	7.9	6.1	5.1	4.3
Pressure Drop	ft-H20	5.9	3.5	2.1	1.3	0.9	0.7

Performance Data Chilled Water 45°F EWT (7.2°C)

105°F DB, 70.8°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	111904 (32.8)	107153 (31.4)	102550 (30.0)	97772 (28.6)	92812 (27.2)	87665 (25.7)
NET Sensible Cap	Btu/hr (kW)	111904 (32.8)	107153 (31.4)	102550 (30.0)	97772 (28.6)	92812 (27.2)	87665 (25.7)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	23.0	18.4	15.1	12.6	10.7	9.1
Pressure Drop	ft-H20	15.2	10.6	7.3	5.2	3.7	2.8

100°F DB, 69.2°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	101350 (29.7)	96559 (28.3)	91776 (26.9)	86786 (25.4)	81582 (23.9)	76148 (22.3)
NET Sensible Cap	Btu/hr (kW)	101350 (29.7)	96559 (28.3)	91776 (26.9)	86786 (25.4)	81582 (23.9)	76148 (22.3)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	20.9	16.6	13.6	11.3	9.4	7.9
Pressure Drop	ft-H20	13.5	8.7	5.9	4.1	3.0	2.1

95°F DB, 67.7°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	90629 (26.6)	85662 (25.1)	80662 (23.6)	75412 (22.1)	69894 (20.5)	64080 (18.8)
NET Sensible Cap	Btu/hr (kW)	90629 (26.6)	85662 (25.1)	80662 (23.6)	75412 (22.1)	69894 (20.5)	64080 (18.8)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	18.8	14.8	12.0	9.8	8.1	6.7
Pressure Drop	ft-H20	11.0	7.0	4.7	3.2	2.2	1.6

90°F DB, 66.1°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	79605 (23.3)	74450 (21.8)	69172 (20.3)	63581 (18.6)	57636 (16.9)	51937 (15.2)
NET Sensible Cap	Btu/hr (kW)	79605 (23.3)	74450 (21.8)	69172 (20.3)	63581 (18.6)	57636 (16.9)	51937 (15.2)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	16.6	12.9	10.3	8.4	6.8	5.5
Pressure Drop	ft-H20	8.7	5.4	3.5	2.4	1.6	1.1

85°F DB, 64.5°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	68272 (20.0)	62847 (18.4)	57197 (16.8)	51123 (15.0)	45808 (13.4)	43020 (12.6)
NET Sensible Cap	Btu/hr (kW)	68272 (20.0)	62847 (18.4)	57197 (16.8)	51123 (15.0)	45808 (13.4)	43020 (12.6)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	14.3	11.0	8.6	6.8	5.5	4.6
Pressure Drop	ft-H20	6.5	4.0	2.5	1.6	1.0	0.8

80°F DB, 62.8°F WB	CW ΔT						
	°F (°C)	10 (5.5)	12 (6.6)	14 (7.7)	16 (8.8)	18 (10.0)	20 (11.1)
NET Total Cap	Btu/hr (kW)	56436 (16.5)	50750 (14.9)	44552 (13.1)	39602 (11.6)	36780 (10.8)	33914 (9.9)
NET Sensible Cap	Btu/hr (kW)	56436 (16.5)	50750 (14.9)	44552 (13.1)	39602 (11.6)	36780 (10.8)	33914 (9.9)
Sensible Heat Ratio	SHR	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	usGPM	11.9	9.0	6.8	5.4	4.4	3.7
Pressure Drop	ft-H20	4.6	2.7	1.6	1.0	0.7	0.5

Performance Data Air, Glycol & Water Cooled

Cooling Capacity	Cooling		Air	Glycol	Water
			IRA1242	IRG1242	IRW1242
110 F DB 72 F WB[1]	NET Total Cap	BTU/Hr (kW)	35962 (10.5)	36515 (10.7)	37236 (10.9)
	NET Sensible Cap	BTU/Hr (kW)	35962 (10.5)	36515 (10.7)	37236 (10.9)
	THR	BTU/Hr (kW)	45692 (12.5)	47846 (14.0)	45802 (13.4)
105 F DB 70.8 F WB[2]	NET Total Cap	BTU/Hr (kW)	36177 (10.6)	36482 (10.7)	37420 (11.0)
	NET Sensible Cap	BTU/Hr (kW)	36177 (10.6)	36482 (10.7)	37420 (11.0)
	THR	BTU/Hr (kW)	45982 (13.5)	47872 (14.0)	46057 (13.5)
100 F DB 69.3 F WB[3]	NET Total Cap	BTU/Hr (kW)	35904 (10.5)	36616 (10.7)	37626 (11.0)
	NET Sensible Cap	BTU/Hr (kW)	34579 (10.1)	36616 (10.7)	37626 (11.0)
	THR	BTU/Hr (kW)	45809 (13.4)	48139 (14.1)	46393 (13.5)
95 F DB 67.8 F WB[4]	NET Total Cap	BTU/Hr (kW)	35810 (10.5)	36521 (10.7)	37444 (11.0)
	NET Sensible Cap	BTU/Hr (kW)	35810 (10.5)	36521 (10.7)	37444 (11.0)
	THR	BTU/Hr (kW)	45930 (13.5)	48262 (14.1)	46421 (13.6)
90 F DB 66.2 F WB[5]	NET Total Cap	BTU/Hr (kW)	35506 (10.4)	36108 (10.6)	36853 (10.8)
	NET Sensible Cap	BTU/Hr (kW)	35506 (10.4)	36108 (10.6)	36853 (10.8)
	THR	BTU/Hr (kW)	46080 (13.5)	48295 (14.1)	46265 (13.6)
85 F DB 64.6 F WB[6]	NET Total Cap	BTU/Hr (kW)	34387 (10.1)	34915 (10.2)	35831 (10.5)
	NET Sensible Cap	BTU/Hr (kW)	34387 (10.1)	34915 (10.2)	35831 (10.5)
	THR	BTU/Hr (kW)	45696 (13.4)	47825 (14.0)	45987 (13.5)
80 F DB 67 F WB[6]	NET Total Cap	BTU/Hr (kW)	35463 (10.4)	35730 (10.5)	37116 (10.9)
	NET Sensible Cap	BTU/Hr (kW)	25884 (7.6)	26827 (7.9)	26619 (7.8)
	THR	BTU/Hr (kW)	46849 (13.7)	48711 (14.3)	47351 (13.9)
80 F DB 62.8 F WB[6]	NET Total Cap	BTU/Hr (kW)	33103 (9.7)	33002 (9.7)	34825 (10.2)
	NET Sensible Cap	BTU/Hr (kW)	33103 (9.7)	32782 (9.6)	34825 (10.2)
	THR	BTU/Hr (kW)	44326 (13.0)	45756 (13.4)	44924 (13.2)

Performance Data Air, Glycol & Water Cooled – Continued

Cooling Capacity	Cooling		Air IRA1242	Glycol IRG1242	Water IRW1242
75 F DB 61.1 F WB[6]	NET Total Cap	BTU/Hr (kW)	32121 (9.4)	32252 (9.4)	33690 (9.9)
	NET Sensible Cap	BTU/Hr (kW)	29331 (8.6)	29376 (8.6)	28581 (8.4)
	THR	BTU/Hr (kW)	43284 (12.7)	44950 (13.2)	43729 (12.8)
72 F DB 60 F WB[6]	NET Total Cap	BTU/Hr (kW)	31307 (9.2)	31493 (9.2)	32813 (9.6)
	NET Sensible Cap	BTU/Hr (kW)	25339 (7.4)	26879 (7.9)	25813 (7.6)
	THR	BTU/Hr (kW)	42424 (12.4)	44137 (12.9)	42808 (12.5)

1 Rated at Standard Air Volume - Air flow decreased to 950 CFM (448 l/s)

2 Rated at Standard Air Volume - Air flow decreased to 1080 CFM (510 l/s)

3 Rated at Standard Air Volume - Air flow decreased to 1270 CFM (599 l/s)

4 Rated at Standard Air Volume - Air flow decreased to 1520 CFM (717 l/s)

5 Rated at Standard Air Volume - Air flow decreased to 1880 CFM (887 l/s)

6 Rated at Standard Air Volume – Air flow is 2290 CFM (1081 l/s)

Note: For IRA1242 series, the outdoor air temperature is 95°F (35°C)

Note: For IRG1242 series, the entering 40% glycol mixture temperature is 105°F (40.6°C), the flow rate is 11gpm (0.69 l/s)

Note: For IRW1242 series, the entering water temperature is 85°F (29.4°C), the flow rate is 9.5gpm (0.6 l/s)