



CoolChip CDU 121

Application and Planning Guide

The information contained in this document is subject to change without notice and may not be suitable for all applications. While every precaution has been taken to ensure the accuracy and completeness of this document, Vertiv assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

Vertiv recommends installing a monitored fluid detection system that is wired to activate the automatic closure of field-installed coolant fluid supply and return shut off valves, where applicable, to reduce the amount of coolant fluid leakage and consequential equipment and building damage. Refer to local regulations and building codes relating to the application, installation, and operation of this product. The consulting engineer, installer, and/or end user is responsible for compliance with all applicable laws and regulations related to the application, installation, and operation of this product.

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit <https://www.vertiv.com/en-us/support/> for additional assistance.

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1 Important Safety Instructions



CAUTION: Always check for water, wastewater, or any liquid accumulation on the floor or beneath the unit before and after operation or maintenance. Fluids can cause slip hazards and may damage the equipment. Ensure that the area is clean, dry, and free of obstructions to maintain a safe working environment.

1.1 General

Mechanical and electrical equipment such as coolant distribution units (CDUs) present potential mechanical and electrical hazards. All safety, installation, operation, and maintenance instructions must be adhered to. Any work on or use of the equipment must only be carried out by technically competent personnel who are fully trained. This product is designed to minimize all potential hazards by restricting access through unit casings, doors, and covers while equipment is operational.

Before carrying out maintenance work, ensure that:

1. Equipment is switched OFF.
2. Equipment and controls are disconnected from the electrical supply.
3. All rotating parts such as pumps and three-way valve have come to rest.
4. The unit is furnished and cleaned, pressurized with nitrogen, free of any contaminant and ready to be filled with the coolant required.

If there is any doubt regarding safety, installation, operation or maintenance instructions, contact Vertiv for clarification and advice. See [Technical Support and Contacts](#) on page 21.

1.2 Installation/Handling

Installation and operation must be conducted in accordance with local and national regulations and normal codes of good practice. When moving or lifting the product, caution must be observed to ensure the safety of personnel. Use only the appropriate lifting equipment.

1.3 Application

This product is to be used indoors only and must be only used for the application it was designed for. This product must not be used in a hazardous environment.

1.4 Warranty

Failure to comply with the Vertiv's installation, maintenance, and operation instructions may affect the reliability and performance of the unit and invalidate any warranty.

1.5 Electrical Connection



WARNING! This unit is powered by high voltage. Serious injury or death can occur. Power supplied to this product must be provided with an external means of isolation.

Electrical connections must be carried out in accordance with local and national regulations by a qualified electrician. In particular, the disconnection of all AC sources shall only be carried out by qualified electricians. Never make any electrical connections inside the unit or to the unit, unless the electricity supply has been switched OFF at the disconnect (isolator).

1.6 Replacement Parts

Any parts replaced during maintenance or service must be the same specification as those being replaced and should only be obtained from Vertiv. The use of incorrect replacement parts may affect the operation or reliability of the unit and invalidate any warranty.



WARNING! Before performing any maintenance operation, make sure the power supply of the unit is disconnected.

1.7 Waste Disposal

Any waste or single use materials must be disposed of in a responsible manner and in strict adherence to local and national environmental regulations. For details, consult local environmental agencies.

1.8 Documentation

Application and planning guide together with operation and maintenance guide, Installation and commissioning guide and electrical diagram must remain with the unit always.

2 Agency

2.1 Product Standards and Approvals

Vertiv products, when installed and operated in accordance with this document, comply with the Low Voltage Directive 2014/35/EU (applicable only to AC version units), and EMC Directive 2014/30/EU for CE marking, as well as the Electrical Equipment (Safety) Regulations S.I. 2026 No. 1101 (applicable only to AC version units) and the Electromagnetic Compatibility Regulations S.I. 2016 No. 1091 for UKCA marking. Additionally, this product is cULus listed for the appropriate voltage models, with certification under UL 62368-1, 3rd Edition, and CSA C22.2 No. 62368-1:19, 3rd Edition. Certificates are available upon request. File number: E202715.



2.2 RoHS Compliance

Vertiv certifies that all products manufactured and supplied by Vertiv are fully REACH and RoHS compliant in accordance with EN IEC 63000 and the directive 2011/65/EU revised directive (EU) 2015/863 and (EC) 1907/2006.



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3 Product Description

Please refer to the following submittals located in [Submittal Drawings](#) on page 23 .

Table 3.1 Submittals

Document Number	Title
20000653	CoolChip CDU Standard Features
20000654	CoolChip CDU Cabinet Dimensional Data AC & DC Unit
20000655	CoolChip CDU Connection Location AC Version
20000656	CoolChip CDU Piping Schematic
20000657	CoolChip CDU Electrical Connection DC Unit
20000658	CoolChip CDU Leak Detection Rope AC & DC Unit
20000659	CoolChip CDU Component Location Diagram DC Version
20000660	Ship Loose Accessories AC and DC Version
20000703	CoolChip CDU Connection Location DC Version
20000704	CoolChip CDU Electrical Connection AC Unit
20000705	CoolChip CDU Component Location Diagram AC Version

3.1 General

This document describes the performance, application and specification of the Vertiv™ CoolChip CDU 121 coolant distribution unit (CDU).

The CoolChip CDU 121 contains a secondary closed loop circuit that provides a supply of cooling fluid to IT equipment, either through indirect cooling (such as rack mounted rear door heat exchangers), or direct cooling (such as cold plates at chip level).

The secondary circuit is a low pressure sealed system with the heat removed from the high heat density areas of IT equipment rejected to an external cooled fluid source (primary circuit) via a low pressure drop plate heat exchanger.

The secondary circuit ensures that the cooling fluid in a data center environment can be kept to a minimum volume, is closely controlled for flow, pressure and temperature (with optional condensation control) and can be accurately maintained for fluid quality (with filtration and additives).

The primary cooling source can be a chilled fluid system (either dedicated or from building system), fluid cooler, cooling tower or dry air cooler, depending on the desired secondary temperature and heat transfer duty (for more information refer to [Primary \(Facility\) Circuit](#) on page 10 and [Secondary Circuit](#) on page 15).

3.2 Features and Benefits

- Essential separation of the primary (facility) fluid from the IT equipment, providing low pressure, clean fluid to liquid cooled IT equipment.
- Magnetically levitated pump impeller, with no bearings or seals that could potentially fail.
- Low fluid volume in secondary loop, reducing leak risk.
- N+N secondary temperature sensors for built-in redundancy.

- Large pipe diameter and optimal hydraulic design with low pressure drop, providing maximum secondary flow up to 125 l/m at external pressure drop of 1 bar.
- Sanitary clamp design, easy installation, black box swap out approach.
- Sanitary clamp adaptors are available with valves or quick release couplings (QC).
- Large surface area heat exchanger to provide high cooling capacity with low approach temperatures.
- Secondary fluid control in differential pressure control mode or flow rate control mode to suit various application requirements.
- Secondary fluid temperature controlled within ±1 °C, to ensure cooling stability with variable heat load.
- Group control available for multiple CoolChip CDU 121s, enables N+X redundancy design for larger installations.
- 7-inch color touchscreen HMI.
- Multi-protocol communication with data center monitoring for easy integration. See [Remote Monitoring and Control](#) on page 17 .
- Full alarm monitoring, providing real-time status of the IT equipment and the local environment.
- With a rated cooling capacity of 121 kW, the unit consumes less than 875 W (AC model) or 860 W (DC model), ensuring high energy efficiency.
- Supports warm fluid cooling in direct contact liquid cooling applications, very low partial power usage effectiveness cooling, energy saving and operating expenses benefits for user.
- Compact size of 445 mm wide (19-inch rack mounting) x 175 mm high (4 U) x 850 mm long, black, textured finish to blend in with computer room environment.
- International service team to provide professional and all-in-one services from installation, maintenance, and troubleshooting.

3.3 Vertiv™ CoolChip CDU 121 Model Number Nomenclature

Table 3.2 CoolChip CDU 121 Model Number

Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Model Nb	X	D	U	1	0	0	W	B	Q	P	A	0	7	0	2	0	S	0	0	S	1	4	N	0	0

Table 3.3 CoolChip CDU 121 Model Number Definitions

Digit	Feature	Value	Description
1,2,3	Family name	XDU	Product family
4,5,6	Unit model	100	Base model
7	Cooling Type	W	Liquid to liquid
8	Unit revision	B	Revision B
9	Voltage	Q	110 V - 120 V, 208 V - 240 V, 1 PH, 50/60 Hz
		D	46 V - 52 V DC
10	Power input	P	IEC power inlet, dual Input
		3	OCP v3 power connector, single input
11	Controller	A	Standard controller
12	Placeholder	0	Placeholder

Table 3.3 CoolChip CDU 121 Model Number Definitions (continued)

Digit	Feature	Value	Description
13	Display	7	7-in. touchscreen display
14	Placeholder	0	Placeholder
15	Pump configuration	2	Two pumps
16	Placeholder	0	Place holder
17	Primary connection	S	1 1/2-in. sanitary flange
		F	FD83
18	Placeholder	0	Placeholder
19	Placeholder	0	Placeholder
20	Secondary connection	S	1 1/2-in. sanitary flange
		F	FD83
21	Secondary filtration	1	Fitted (50 micron)
		2	Fitted (25 micron)
22	Pressure relief valve	3	3 bar pressure relief valve
		4	4 bar pressure relief valve
23	Reservoir	N	Internal SS reservoir w/ fluid level detection
24	Packaging	0	Standard
25	Placeholder	0	Placeholder

There are two versions of the CoolChip CDU 121: the AC unit and the DC unit.

- The type of power input is different. Specifically, the AC unit uses a 220 V to 48 V power module, whereas the DC unit uses a 48 V busbar clip.
- The overall dimensions are essentially the same, except that the DC unit includes an additional busbar clip at the rear exterior of the unit.
- Except for the power input components, all other electrical components and refrigeration components are the same, and the internal installation is basically the same.

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4 Technical Data

4.1 General

Table 4.1 Dimensions

Dimensions	Height		Width		Depth	
	in.	mm	in.	mm	in.	mm
Standard Cabinet	6.89	175	17.52	445	33.46	850
Shipping Cabinet	17.36	441	26.22	666	43.15	1096

NOTE: The dimensions of the DC unit do not include the rear busbar clip. Therefore, the overall dimensions of the AC and DC units are the same.

Table 4.2 Weights

Weights	Dry		Operating		Shipping	
	lb	kg	lb	kg	lb	kg
Standard AC unit	119.05	54	131.6	59.7	196.21	89
Standard DC unit	115.74	52.5	128.3	58.2	190.7	86.5

4.2 Pipe Connections

Pipe connections for both the primary and secondary circuits are located at the rear of the cabinet and may exit from either the top or bottom, depending on the unit configuration.

Table 4.3 Pipe Connections for Primary and Secondary Circuits

Circuit Type	Pipe Connection
Primary (facility) circuit	1.5 in. sanitary clamps
Secondary circuit	1.5 in. sanitary clamps

4.3 Circuit Fluid Volumes

Table 4.4 Fluid Circuit Volumes for Primary and Secondary Circuit

Circuit Type	Fluid Circuit Volume
Primary (facility) circuit	3.4 liters
Secondary circuit	7.3 liters

4.4 Electrical Data

Table 4.5 Electrical Data

Parameter	Electrical Data	
	AC	DC
Supported power supplies	110 V - 120 V, 208 V - 240 V, 1 PH, 50/60 Hz	46 V - 52 V DC
Unit full load amps	7.6 A / 3.8 A	18 A
Unit installed load	2.015 kVA (maximum)	-
Typical power consumption	875 W	860 W

Table 4.6 Submittals

Document Number	Title
20000657	CoolChip CDU Electrical Connection DC Unit
20000703	CoolChip CDU Connection Location DC Version
20000704	CoolChip CDU Electrical Connection AC Unit
20000705	CoolChip CDU Component Location Diagram AC Version

4.5 Operating Conditions

Table 4.7 Operating Conditions

Condition	Requirements
Operating temperature and humidity range	18 °C to 45 °C, 20% to 60%
Storage temperature and humidity range	-40 °C to 70 °C, less than 95% (40 °C) RH
Pollution degree	PD 2
Maximum altitude	Below 1000 m (The output should be reduced when the altitude exceeds 1000 m)
Primary coolant type	Treated water or up to 40% glycol/water
Secondary coolant type	Treated water or 25% glycol mixture
Primary circuit allowable pressure drop	10 bar
Secondary circuit allowable pressure drop	3 bar or 4 bar (depending on the selected pressure relief valve)

4.6 Noise

Sound power level at 3 m is less than 55 dBA.

4.7 Primary (Facility) Circuit

Figure 4.1 on the facing page shows the maximum primary circuit pressure drop through the Vertiv™ CoolChip CDU 121 unit for treated water.

The primary inlet temperature range is 12 °C to 45 °C and the secondary return temperature range is 24 °C to 65°C

Figure 4.1 Primary Circuit Pressure Drops

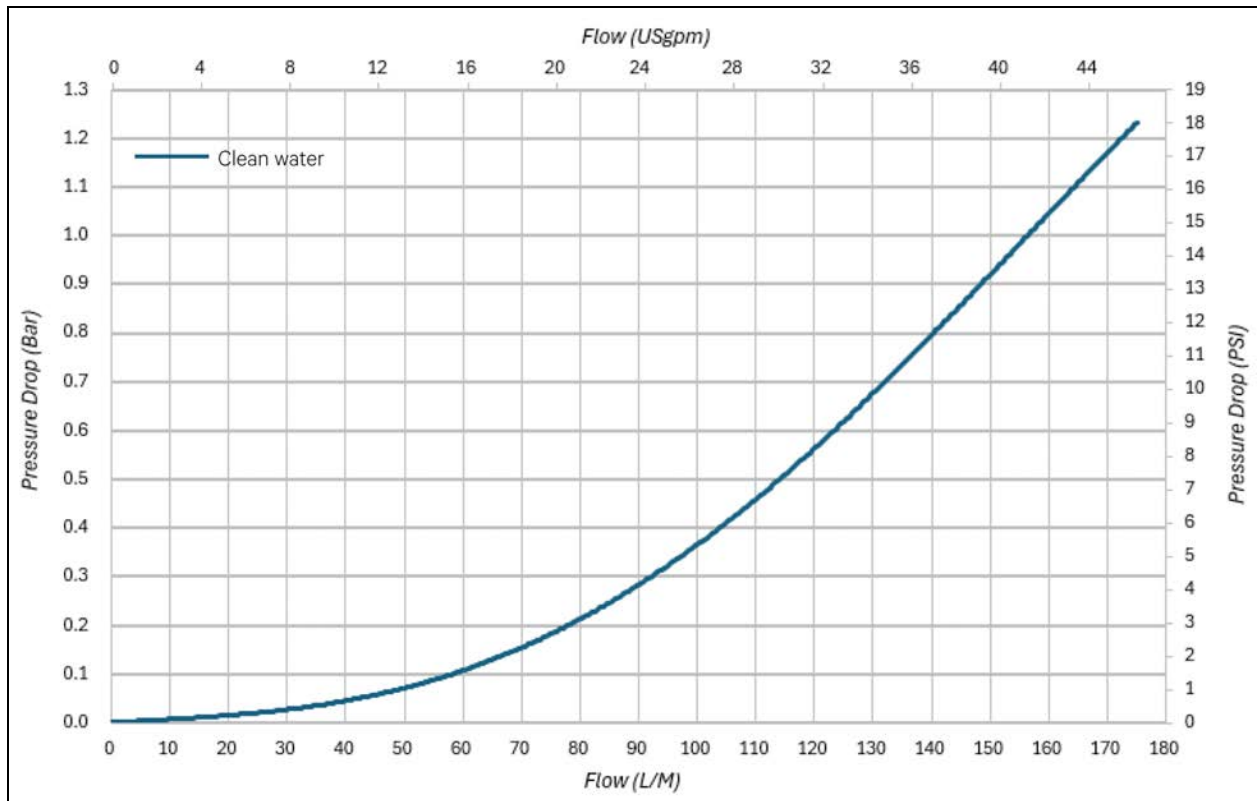
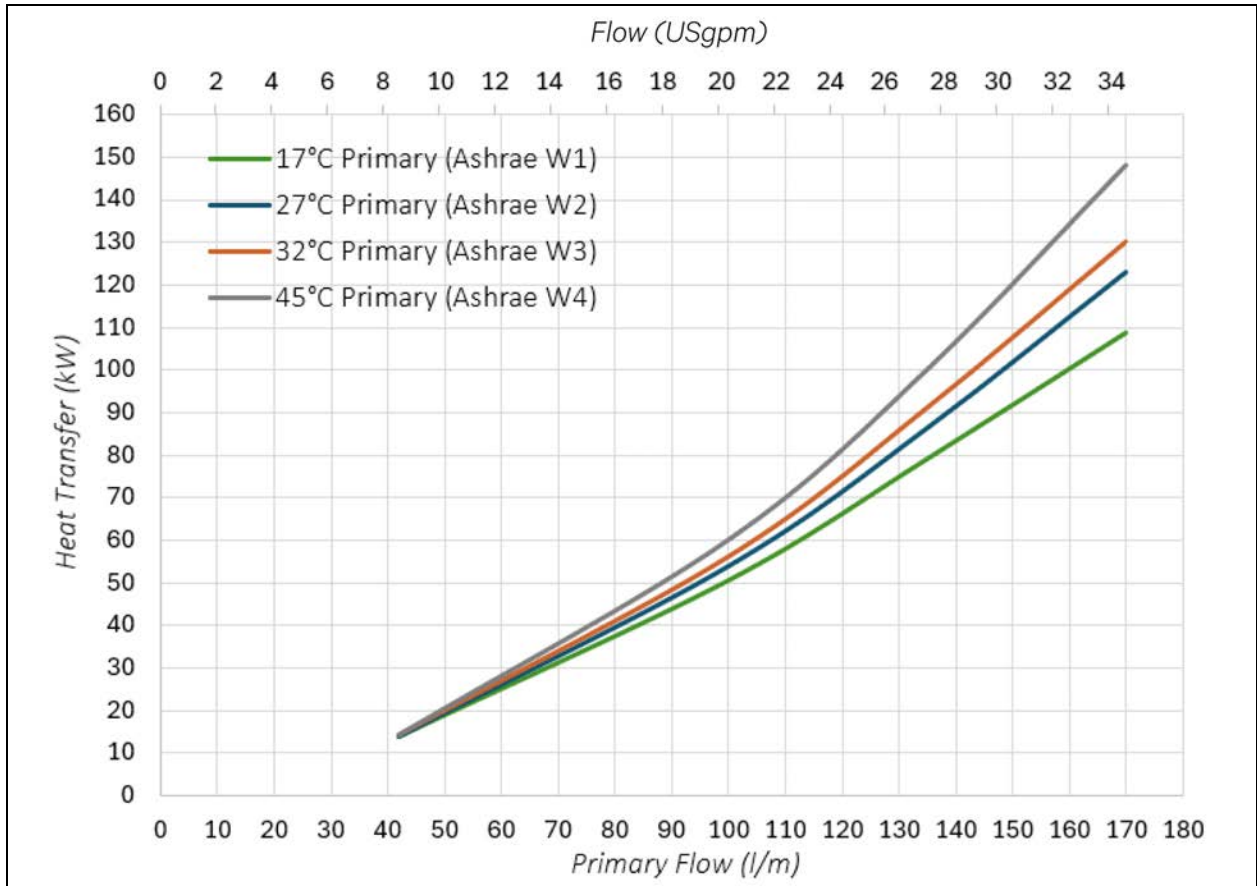


Figure 4.2 on the next page, Figure 4.3 on page 13 and Figure 4.4 on page 14 are guide for the primary (facility) fluid flow, based on the required heat transfer at 3 °C, 5 °C, and 7 °C, approach temperature differences (ATD), for a variety of primary inlet temperatures (including ASHRAE conditions).

NOTE: Minimum secondary supply temperature (secondary setpoint) will be the primary facility fluid temperature plus the approach temperature difference ATD. If the ATD exceeds 7° C, the secondary supply temperature may fluctuate.

NOTE: For stable control, the primary fluid flow should not be more than 20% above the values illustrated.

Figure 4.2 Primary Flow and Temperature Graph for 3°C, ATD



For example, if the required heat transfer (IT load) is 120 kW and the primary facility fluid temperature is 32 °C (for example a secondary setpoint of 35 °C, for 3 °C ATD), then the minimum required primary flow will be 162 l/m.

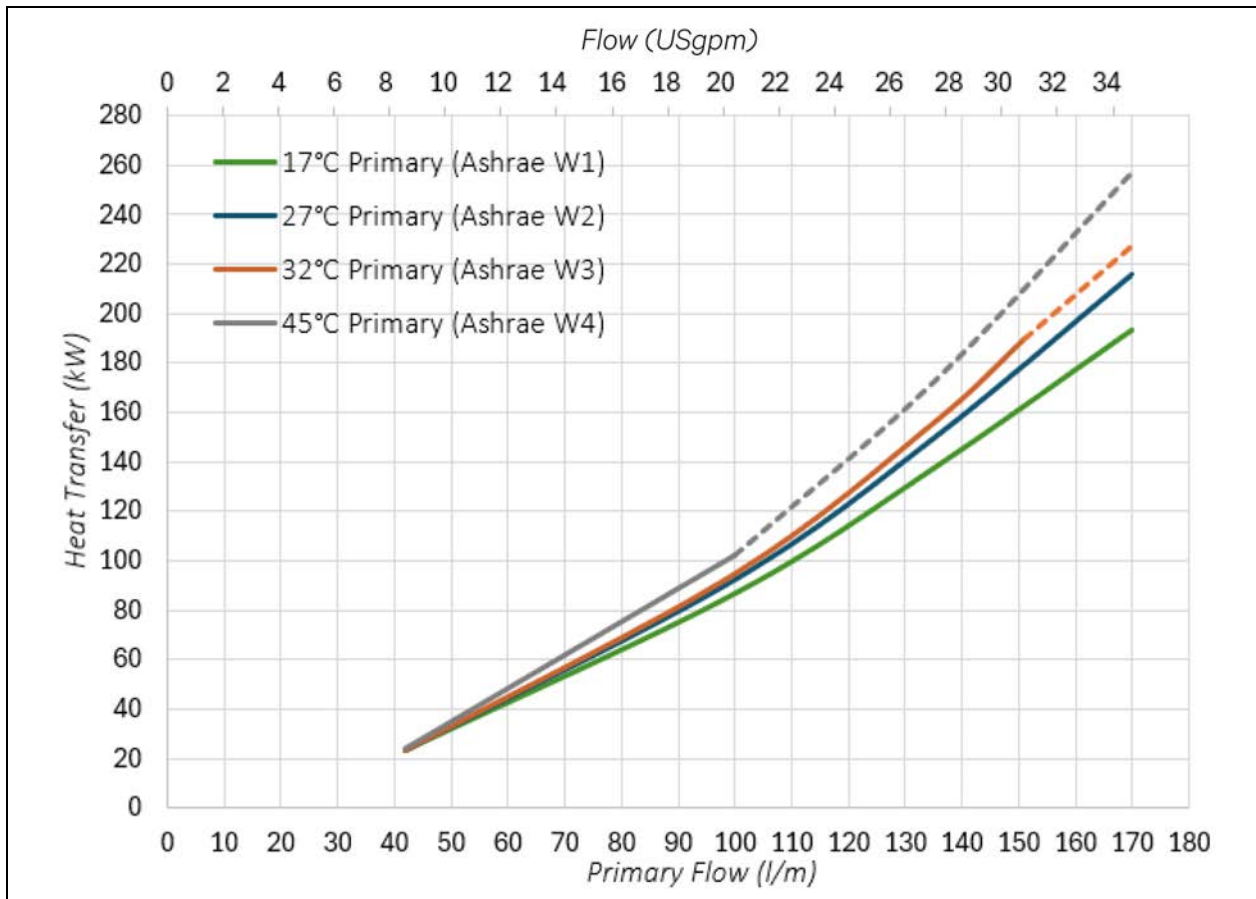
Specific duty points can be calculated by the Vertiv if required. See [Technical Support and Contacts](#) on page 21 .

The end installer should ensure that primary fluid supplied to the Vertiv™ CoolChip CDU 121 is filtered to at least 500 microns (35 mesh).

The primary circuit of the CoolChip CDU 121 is rated for a maximum working pressure of 10 bar. If the pressure at installation exceeds this, then arrangements should be made to fit a pressure-reducing valve.

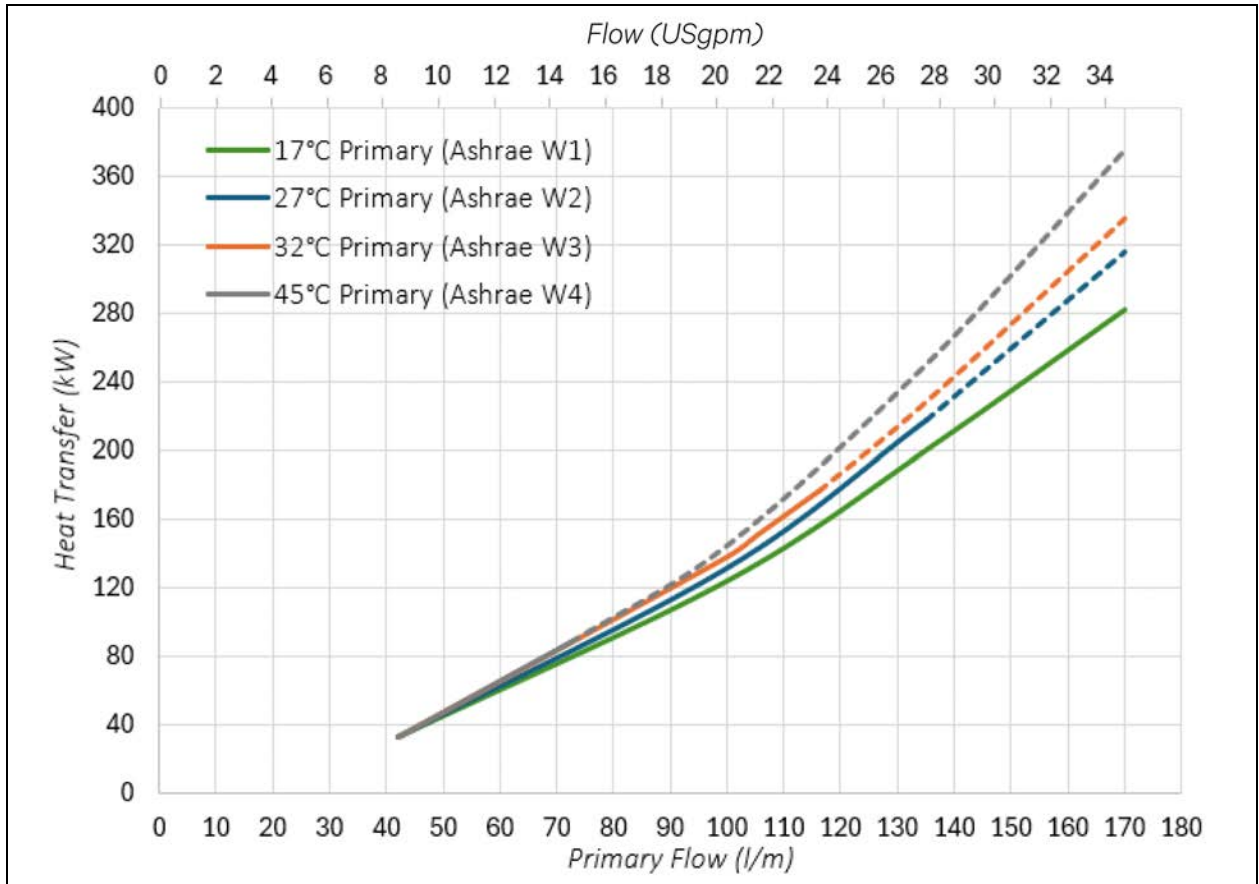
NOTE: Both primary supply and return connections should be fitted with full port isolation valves at the point of installation, for maintenance purposes.

Figure 4.3 Primary Flow and Temperature Graph for 5 °C, ATD



NOTE: The dashed portion of the line indicates that the secondary return temperature exceeds 65 °C, which is outside the recommended operating range.

Figure 4.4 Primary Flow and Temperature Graph for 7 °C, ATD



4.8 Secondary Circuit

Figure 4.5 Available Secondary External Differential Pressure

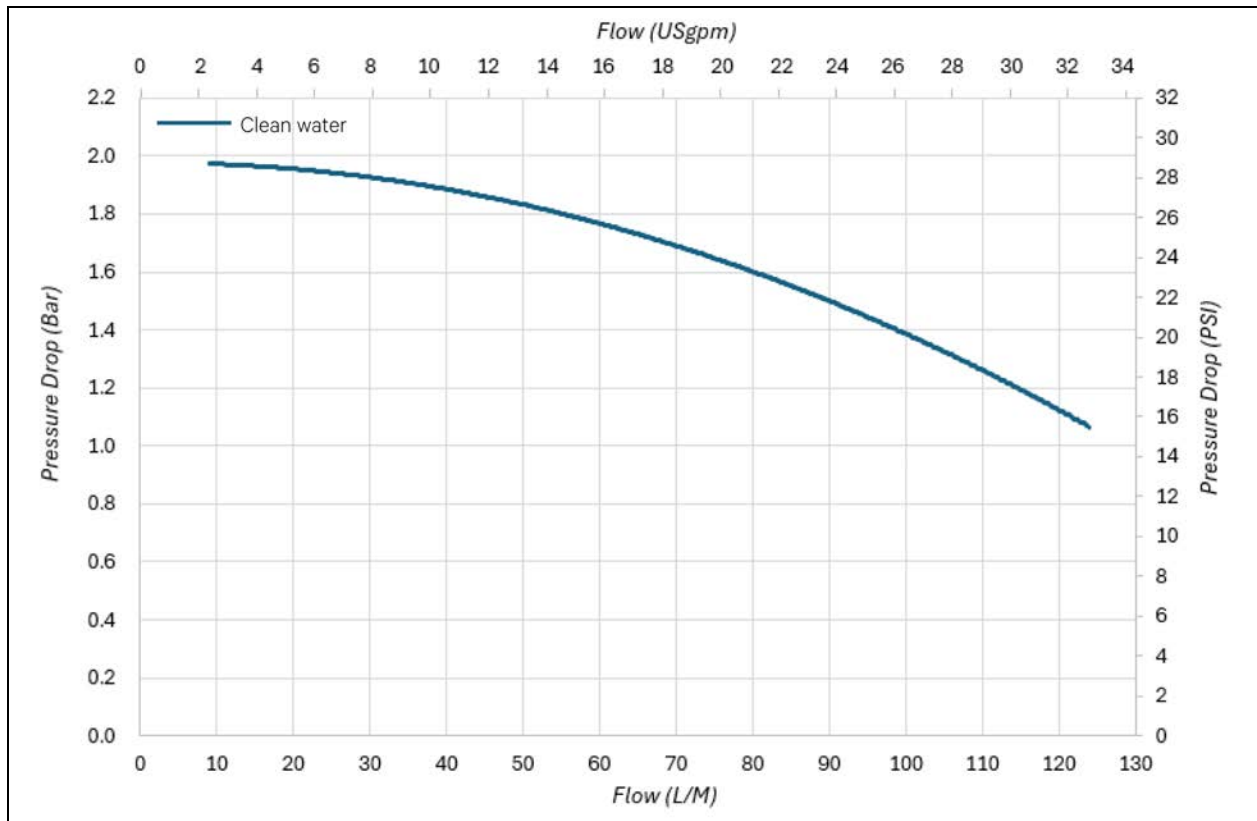


Figure 4.5 above shows the flow/pressure differential available at the secondary supply and return connections of the CoolChip CDU 121.

NOTE: The secondary flow meter's measurement range is 9 to 150 l/m.

4.9 Wetted Materials

For fluid compatibility purposes, all component materials in both primary and secondary circuits are listed in **Table 4.8** below and **Table 4.9** on the next page .

Table 4.8 Primary Circuit

Component	Materials
Hygienic fittings	304 or above stainless steel, EPDM seals
Pipe work	304 stainless steel (316 optional)
Machined pipe fittings	304 stainless steel (316 optional)
Three-Way valve	Brass DZR (body and stem), chrome plated brass DZR (ball), with PTFE seats, EPDM (O-ring seals)

Table 4.8 Primary Circuit (continued)

Component	Materials
Plate heat exchanger	316 stainless steel, copper brazed
Schrader valves	304 stainless steel
Pressure sensor	304 stainless steel, EPDM (seal material)

Table 4.9 Secondary Circuit

Component	Materials
Hygienic fittings	304 stainless steel, EPDM seals
Pipe work	304 stainless steel
Machined pipe fittings	304 stainless steel
Main pump	ADC12 (motor housing), EPDM (sealing O-ring), PPS (impeller and waterproof sleeve)
Insert non-return valve	POM (body and valve), EPDM (O-ring seals), 304 stainless steel (spring)
Fill Pump	EPDM (diaphragm and valve plates), Nylon (body), stainless steel (gasket and screw)
Plate heat exchanger	316 stainless steel, copper brazed
Schrader valves	304 stainless steel
Pressure sensors	304 stainless steel, EPDM (seal material)
Flow meter	304 stainless steel, EPDM, ETFE
Filter	304 or 316 stainless steel, EPDM (O-ring seals)
Drain valve/air vent (Schrader valves)	Brass (body), 304 stainless steel (valve insert)
Drain valve/Air vent tube	304 stainless steel
Pressure relief valve	304 stainless steel, EPDM O-rings
Expansion vessel	304 stainless steel (connector), IIR (Balloon)
Hose	Teflon (hose), S316 (connections)
Fill quick coupler	POM (body), 304 stainless steel (spring)
Fill non-return valve	304 stainless steel, FEM (sealing rings)
Optical level sensor	Polysulfone (housing and prism), TPE

5 Communications

5.1 Group Control

Refer to Vertiv™ CoolChip CDU 121 Operation and Maintenance Guide SL-71338 for more information.

5.2 Remote Monitoring and Control

The Vertiv™ CoolChip CDU 121 provides a RS-485 and two 10/100 Ethernet communication ports for external and remote monitoring and control via customer BMS and/or DCIM and/or super computer control nodes. Refer to the Vertiv™ CoolChip CDU 121 Installation and Commissioning SL-80277 manual.

RS-485 Port

Modbus RTU is supported. The Modbus register table includes all the important CoolChip CDU 121 data points and values.

10/100 Ethernet Ports

Each port can be configured with its own IP address or both ports can share a single IP address for failover operation in 1+1 LANs (A and B switches).

Standard TCP/IPv4 application protocols and services are supported, including:

- SNMPv2/3 (Simple Network Management Protocol)
- HTTP (web server)
- FTP (file server)
- TELNET (command line interface)
- SMTP (alarm retransmission via email)
- NTP (network time protocol)
- BACnet IP - Ethernet 10/100
- BACnet
- Redfish DMFT-compliant
- Modbus TCP/IP
- SSH

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6 Fault Diagnosis and Handling



WARNING! Certain circuits have lethally high voltages, and only professional technicians are allowed to operate the unit. Special care must be taken when troubleshooting while powered on.



CAUTION: When using jumpers during troubleshooting, always remember to remove the jumpers after repair work is completed. If jumpers are connected after work is complete, they may override control functions and cause equipment damage.

Table 6.1 Fault Diagnosis and Handling

Issue	Possible Cause	Items to Check
Display not illuminated	Power failure on display board or controller I/O board	Check that 24 VDC is available at controller I/O board. If no LEDs are lit on the processor board, check the I/O board fuse FS1.
	Loose circuit connections	If LEDs are on, check for wiring faults between I/O board and display.
Temperature sensor fault	Loose wiring or sensor failure	Check the sensor connections to the control board; otherwise, replace the temperature sensor.
Pressure sensor fault	Loose wiring or sensor failure	Check sensor connections to the control board; otherwise contact the local service engineer to handle it.
Flow meter sensor fault	Loose wiring or sensor failure	Check sensor connections to the control board; otherwise contact the local service engineer to handle it.
Fill pump is running but water cannot be replenished	The pressure in the built-in tank is too low	Check whether the exhaust needle valve of the built-in tank is in the closed state. Check whether the built-in tank is short of water. If the tank has a low liquid level alarm, it needs to be filled with fluid by gravity first.
	There is air in the pipe	Open the exhaust needle valve and reduce the pressure in the pipeline to below 0.6 bar, then the fill pump will return to normal operation.
Secondary filter dirty	The fluid becomes dirty after long-term operation	Clean filter screen as described in the Vertiv CoolChip CDU 121 Operation and Maintenance Guide.
Pump cannot start	Circuit disconnection	Check pump fuse, check for loose cables, then turn power back on
	In manual mode, but the pump speed is not set	Set pump speed in manual mode or switch to automatic mode.
Pump stops running	Pump communication fault or pump fault	Contact the local service engineer to handle it.

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Appendices

Appendix A: Technical Support and Contacts

A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2378

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

A.2 Locations

United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH 43082

Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

Asia

7/F, Dah Sing Financial Centre

3108 Gloucester Road, Wanchai

Hong Kong

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Appendix B: Submittal Drawings

Submittal drawings referenced in this document are listed below and are presented in the order as mentioned within this document on the following pages.

Table B.1 Submittals

Document Number	Title
20000653	CoolChip CDU Standard Features
20000654	CoolChip CDU Cabinet Dimensional Data AC & DC Unit
20000655	CoolChip CDU Connection Location AC Version
20000656	CoolChip CDU Piping Schematic
20000657	CoolChip CDU Electrical Connection DC Unit
20000658	CoolChip CDU Leak Detection Rope AC & DC Unit
20000659	CoolChip CDU Component Location Diagram DC Version
20000660	Ship Loose Accessories AC and DC Version
20000703	CoolChip CDU Connection Location DC Version
20000704	CoolChip CDU Electrical Connection AC Unit
20000705	CoolChip CDU Component Location Diagram AC Version

STANDARD FEATURES

Product description -

The Vertiv™ CoolChip CDU121 in-rack coolant distribution unit (CDU) provides effective separation of the facility fluid circuit and secondary fluid network via a liquid-to-liquid heat exchanger for single rack direct-to-chip cooling applications.

Twin pumps -

With single pump redundancy, provide maximum flow up to 120 liter/minute at external pressure drop of 1.15 Bar.

Controller -

Enables running in group control for multiple units via CANbus, to enable N+X redundancy design for larger installations. Provides data, alarm and system logging over the full product lifetime recorded to an on-board SD card.

Communications -

Modbus RS485, TCP/IP & BACnet communication with data center monitoring systems.

Alarms -

Provide full alarm monitoring for real-time status of the IT equipment and the local environment.

Redundancy -

Redundant pumps, inverters, critical temperature sensors, power supplies and ethernet communication ports.

Hygienic connections -

Sanitary flange and clamps enable easy installation, maintenance and retrofit of pipework parts.

Flow control -

Differential pressure control mode or flow rate control mode to suit various application requirements.

Display/HMI -

The Vertiv™ CoolChip CDU121 is provided with a 7" touch screen display with easily navigable intuitive menu structure.

Temperature and RH sensor - Room temperature and humidity are constantly monitored and utilized to determine dew point in the room for CDU dew point control mode.

Reservoir - Reservoir tank is used for system make up and to maintain system threshold pressure.

Water tanks and expansion tanks -

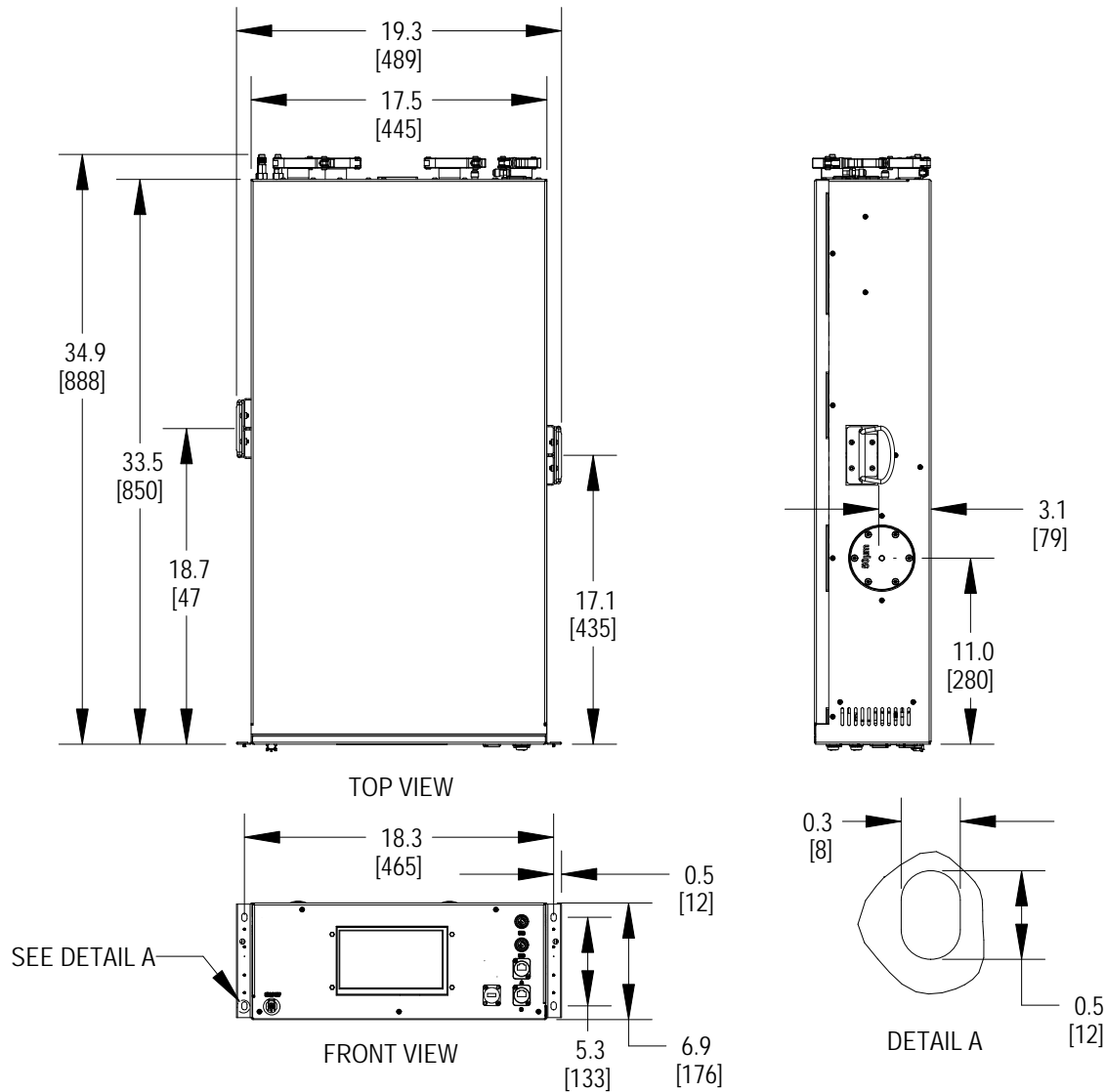
This unit is equipped with a built-in water tank with a capacity of 1.5 liters for convenient water replenishment. The expansion vessel can be maintained without stopping the unit.

Optional accessories -

This equipment is available with pressure relief valves of 3 bar or 4 bar for selection. Filters of 50µm or 25µm are available for selection.

COOLCHIP CDU

CABINET DIMENSIONAL DATA AC & DC UNIT



DIMENSIONS :

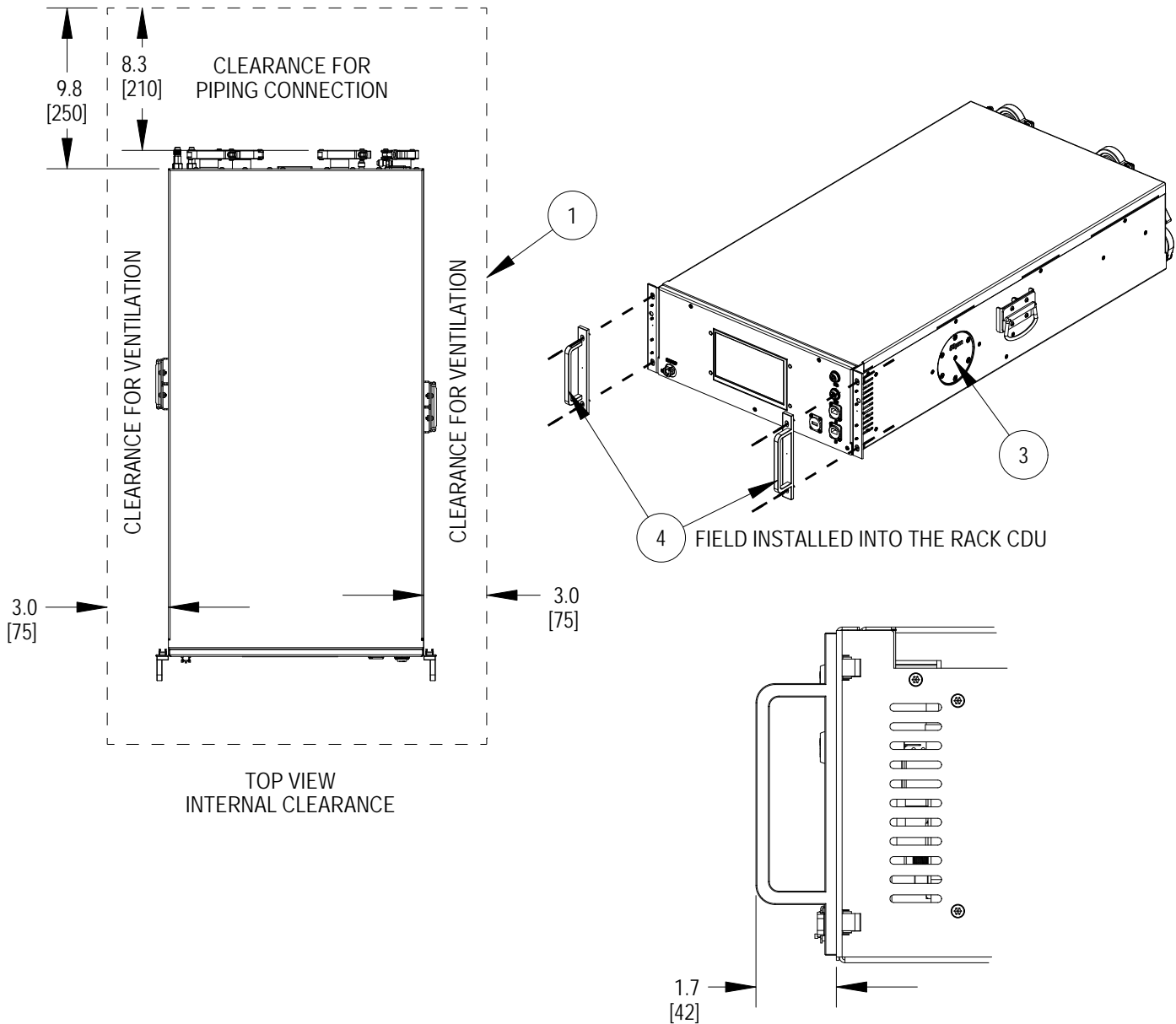
DIMENSIONS	HEIGHT		WIDTH		DEPTH	
	IN.	MM	IN.	MM	IN.	MM
SHIPPING CABINET	17.36	441	26.22	666	43.15	1096

WEIGHTS:

WEIGHT	DRY		OPERATING		SHIPPING	
	LBS.	KG	LBS.	KG	LBS.	KG
STANDARD CABINET - AC VERSION	119.05	54	131.6	59.7	196.21	89
STANDARD CABINET - DC VERSION	115.74	52.5	128.3	58.2	190.7	86.5

COOLCHIP CDU

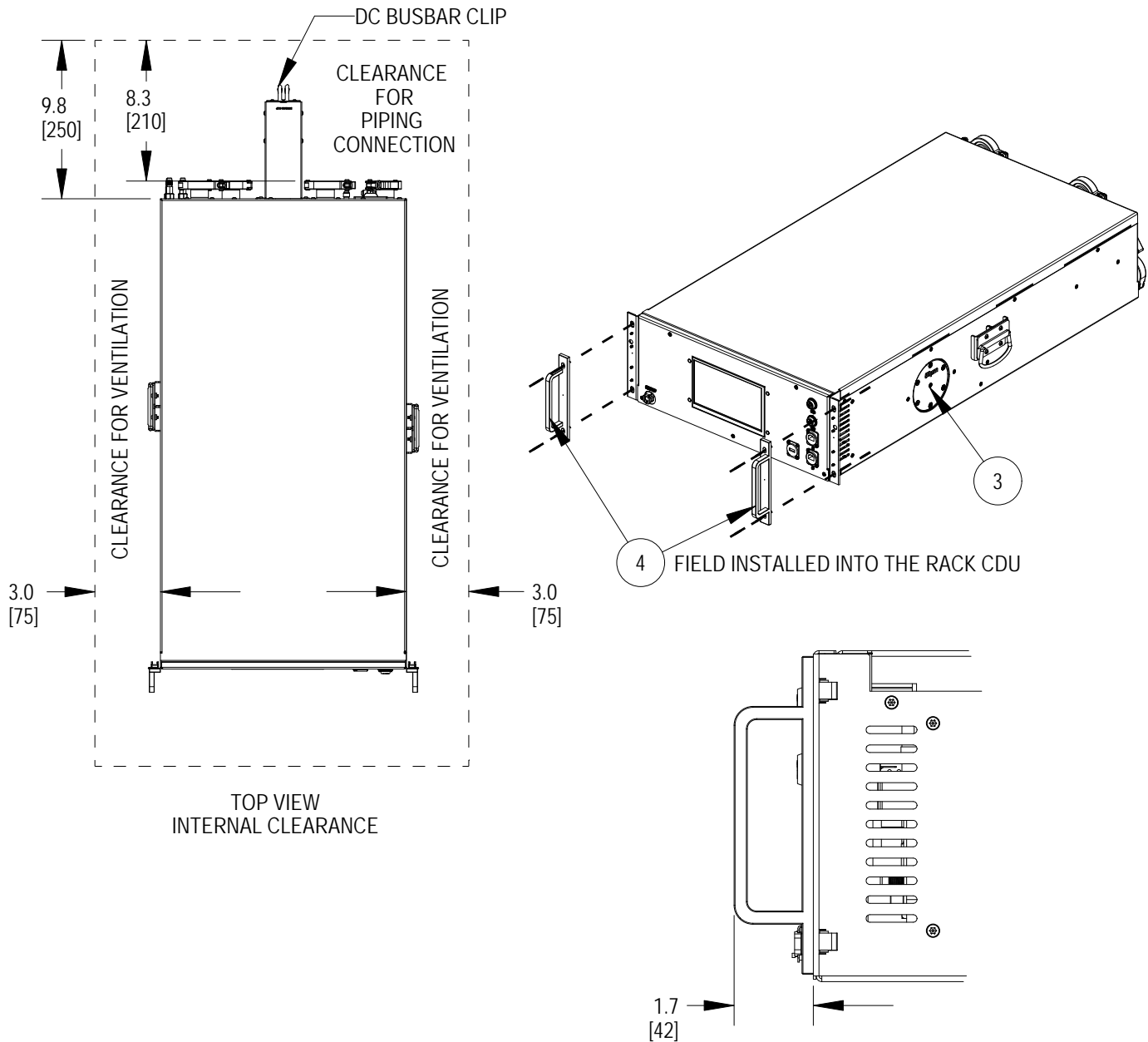
CABINET DIMENSIONAL DATA RACK INSTALLED CLEARANCES AC UNIT



ITEM	DESCRIPTION
1	THE SERVER CABINET USED IN THIS SUBMITTAL DRAWING IS A REFERENCE
2	COOLCHIP CDU121 (AC)
3	50 μ m SECONDARY FILTER (25 μ m AS OPTION)
4	SIDE HANDLE FOR INSTALLATION, STAINLESS STEEL 304

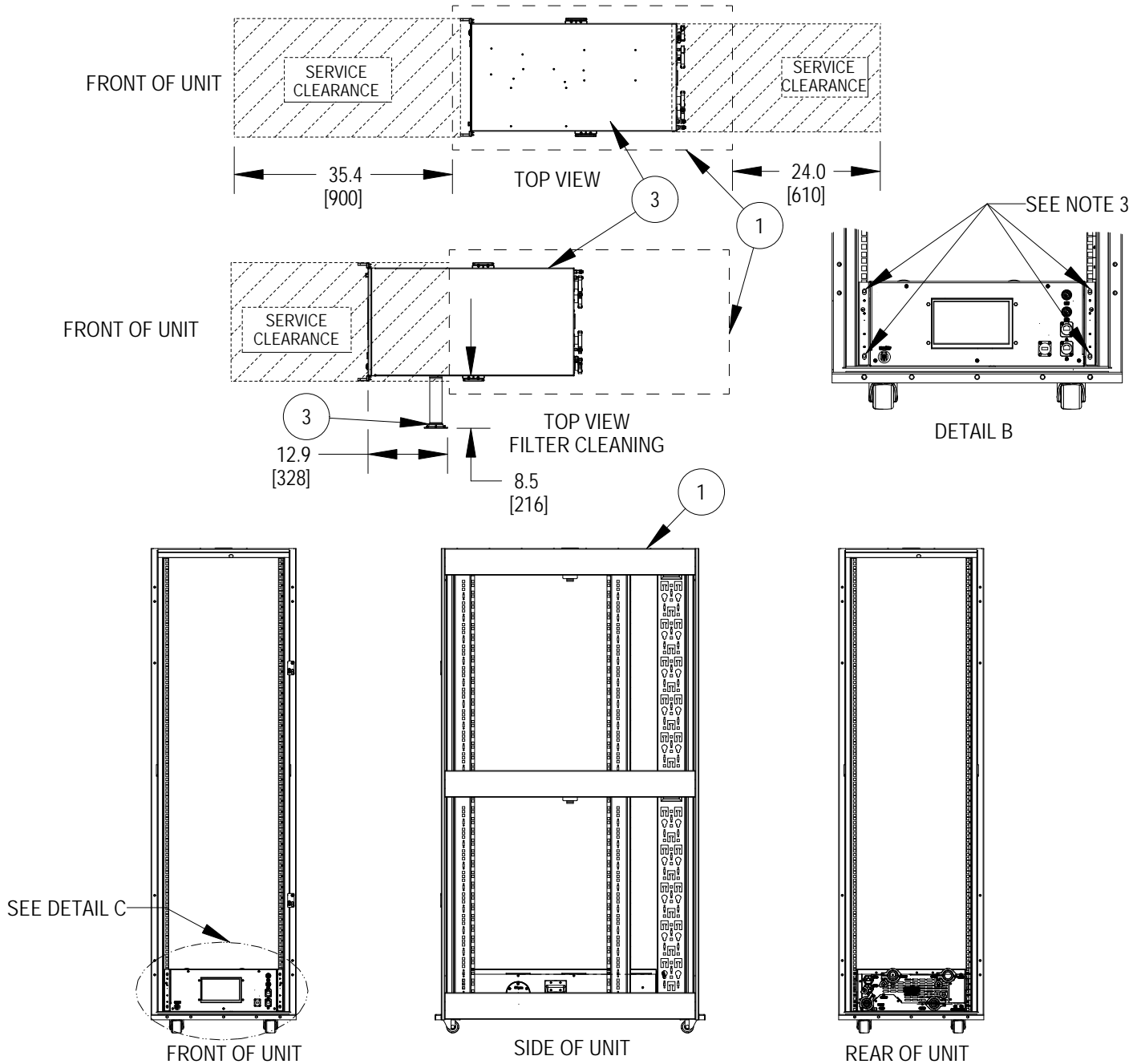
COOLCHIP CDU

CABINET DIMENSIONAL DATA RACK INSTALLED CLEARANCES DC UNIT



ITEM	DESCRIPTION
1	THE SERVER CABINET USED IN THIS SUBMITTAL DRAWING IS A REFERENCE
2	COOLCHIP CDU121 (DC)
3	50µm SECONDARY FILTER (25µm AS OPTION)
4	SIDE HANDLE FOR INSTALLATION, STAINLESS STEEL 304

CABINET DIMENSIONAL DATA SERVICE CLEARANCES BOTH AC & DC VERSION

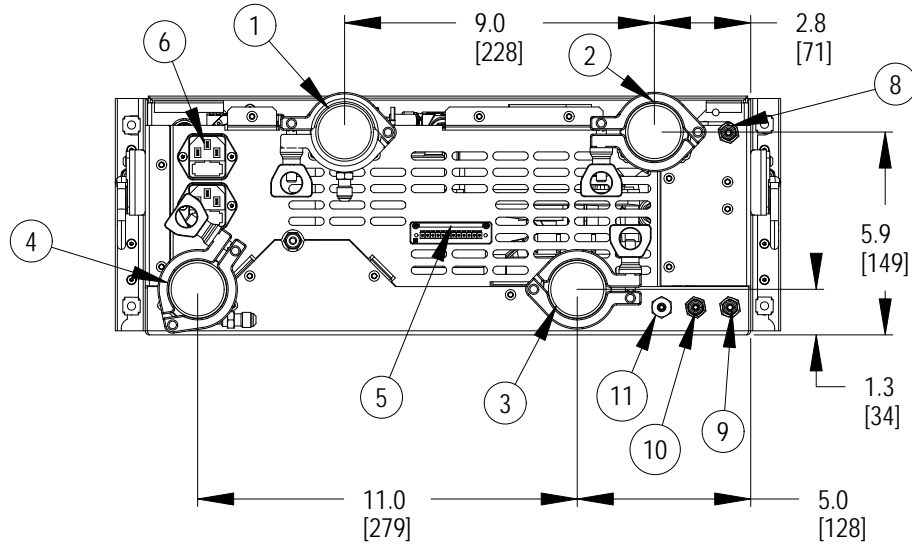


NOTES:

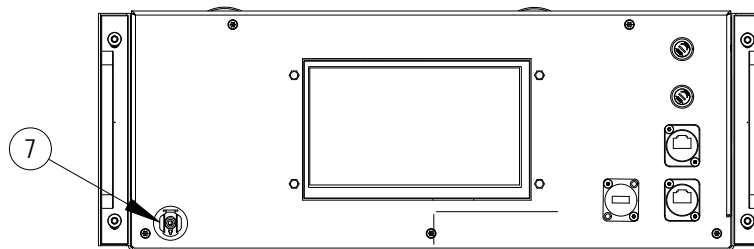
1. THE RACK (ITEM 1) IS SHOWN FOR REFERENCE ONLY.
2. THE COOLCHIP CDU121 (AC/DC) IS TO BE PLACED AT THE BOTTOM OF THE RACK. SUFFICIENT BRACKETS OR SHELVEING IN THE RACK SHOULD BE PRESENT TO SUPPORT THE UNIT.
3. THE 4 HOLE LOCATIONS SHOWN ARE TO BE USED TO SECURE THE UNIT TO THE RACK.

COOLCHIP CDU

CONNECTION LOCATION AC VERSION



REAR VIEW OF UNIT

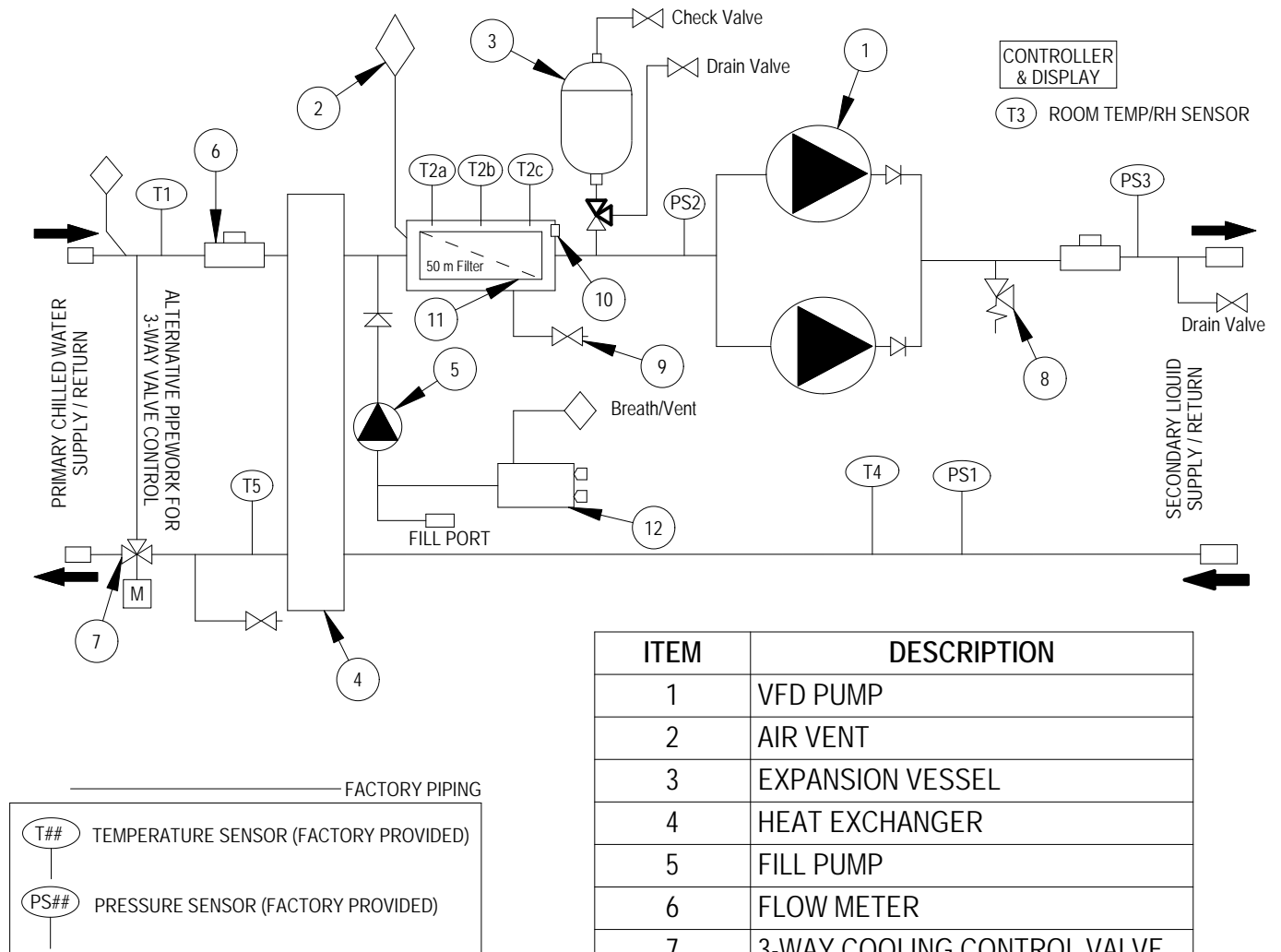


FRONT VIEW OF UNIT

ITEM	DESCRIPTION	CONNECTION SIZE
1	SECONDARY CIRCUIT SUPPLY	1.5IN SANITARY FLANGE
2	SECONDARY CIRCUIT RETURN	1.5IN SANITARY FLANGE
3	PRIMARY CIRCUIT RETURN	1.5IN SANITARY FLANGE
4	PRIMARY CIRCUIT SUPPLY	1.5IN SANITARY FLANGE
5	CONNECTORS FOR EXTERNAL TEMPERATURE/HUMIDITY SENSOR, EXTERNAL LEAK DETECTION TAPE RS485 AND CANbus COMMUNICATIONS	12 WAY CONNECTOR STRIP (SK1)
6	A AND B 1-PHASE IEC--C14 POWER INLET CONNECTIONS (FACTORY FITTED FUSES)	C14 - IEC CONNECTORS
7	WATER MAKE-UP CONNECTION	1/4IN X HOSE BARB 1/8IN ID, CUT-OFF TYPE RS-PMCD-BS32 WITH 3.24MM ID
8	SECONDARY CIRCUIT VENT	SCHRADER VALVE M8
9	SECONDARY CIRCUIT DRAIN	SCHRADER VALVE M8
10	BUILT-IN TANK CIRCUIT VENT	M8 NORMALLY OPEN
11	PRESSURE RELIEF VALVE VENT	BARBED CONNECTOR (NORMALLY OPEN)

COOLCHIP CDU

PIPING SCHEMATIC



ITEM	DESCRIPTION
1	VFD PUMP
2	AIR VENT
3	EXPANSION VESSEL
4	HEAT EXCHANGER
5	FILL PUMP
6	FLOW METER
7	3-WAY COOLING CONTROL VALVE
8	RELIEF VALVE
9	DRAIN VALVE
10	WATER LEVEL SENSOR
11	FILTER
12	BUILT-IN TANK

Notes:

1. Arrangement Diagram representation shown. Do not use for specific connection locations.
2. For each CoolChip CDU unit, a separate 500 micron filter is required in the facility chilled water supply from the chilled water source. The filter is field supplied and installed.
3. Unit isolation valves are required in the field piping of facility and secondary fluid connections to facilitate service. The isolation valves are field supplied and installed.

ELECTRICAL CONNECTION DC UNIT

For DC Input

The cable assembly busbar clip is used to connect the ORv3 busbar to achieve standardized connection of the OCP power distribution architecture. It is installed at the tail of the unit and the cable assembly is connected to the unit load.

Communication Options:

Ethernet redundant communication ports RJ45 (2) are provided on the bottom of the unit control panel, labeled ETHA & ETHB. Cat5e shielded cable should be used when wiring to these ports
Modbus over IP, Webserver, SNMP, CanBus, BACnet, Redfish, TCP/IP, SSH, DMTF compliant
RS-485 Modbus (terminals 8 & 9 on connector SK1).

Group Control Networking Cabling:

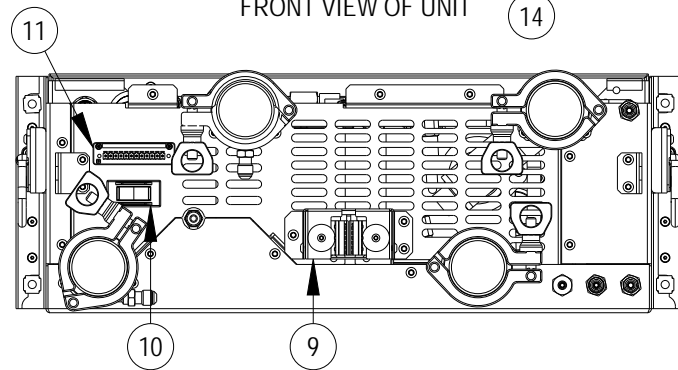
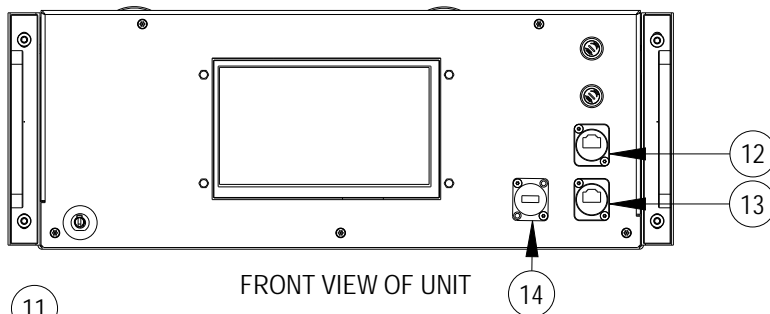
CANbus is used for communication between 4 CoolChip CDU121 units.
CANbus (terminals 10, 11 & 12 on connector SK1) cable requires 3 conductors terminals.
2 signal wires (CAN H and CAN L).
1 signal return path (GND).

Cable Type:

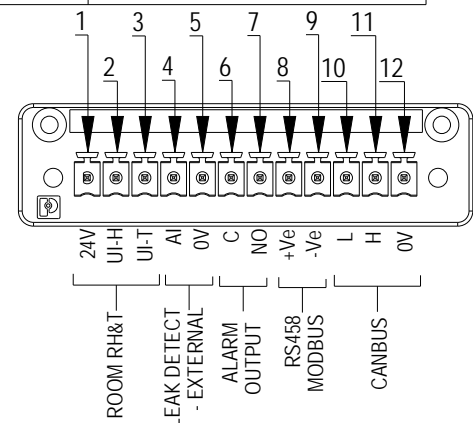
Beldon 3106A, or equivalent (1 pair +1, shielded 22AWG) is the recommended cable type to be used and pre-configured cable assemblies are provided with each CDU121 unit.

Leak Detection Tape:

A Leak detection tape (optional) can be connected to terminals 4 & 5 on SK1 for leak detection under the floor.



ITEM	DESCRIPTION
9	BUSBAR CLIP
10	BREAKER
11	TERMINAL POSITION FOR SK1
12	ETHERNET A
13	ETHERNET B
14	USB



NOTES :

REAR VIEW OF UNIT

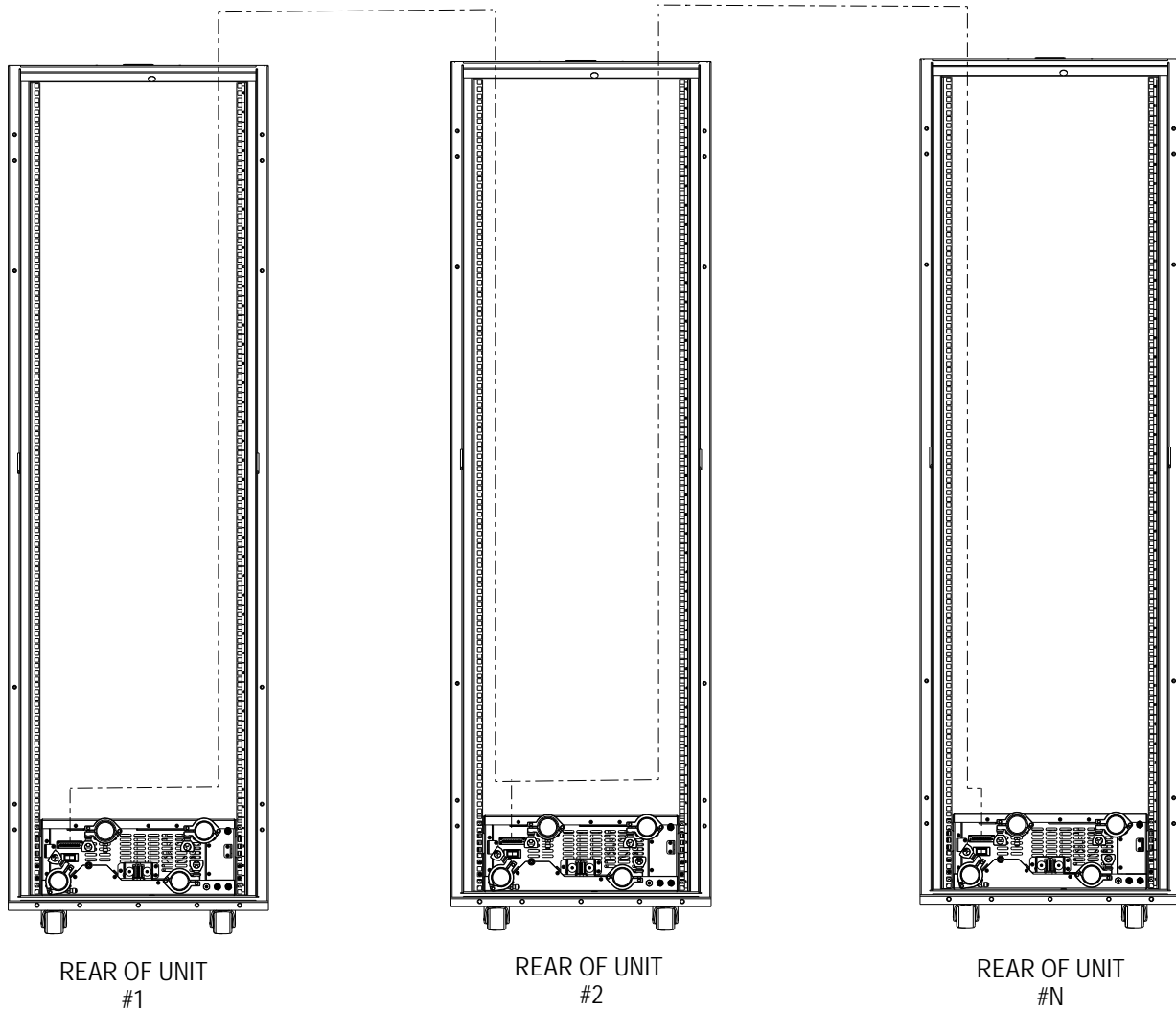
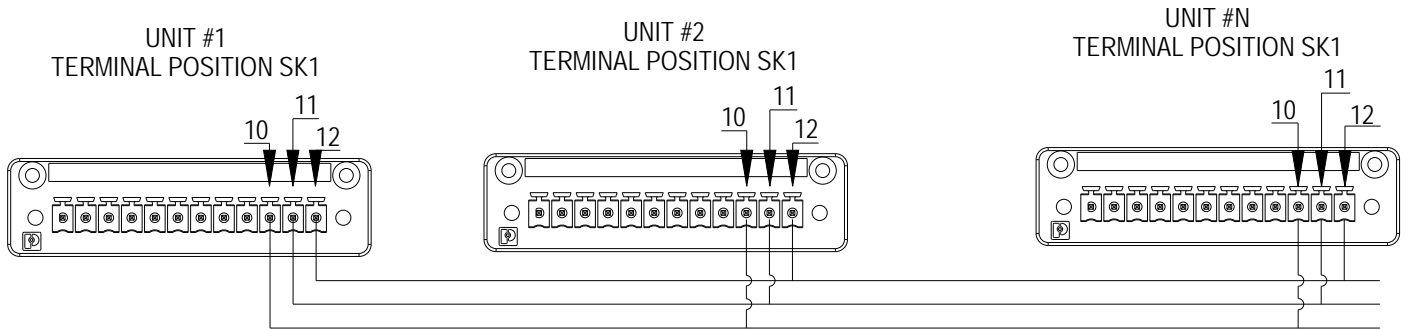
1. FACTORY PROVIDE 10A FUSE FOR 110-120V AC AND 200-240V AC INPUTS.

TERMINAL POSITION FOR SK1

ELECTRICAL CONNECTION DC UNIT COMMUNICATION WIRING

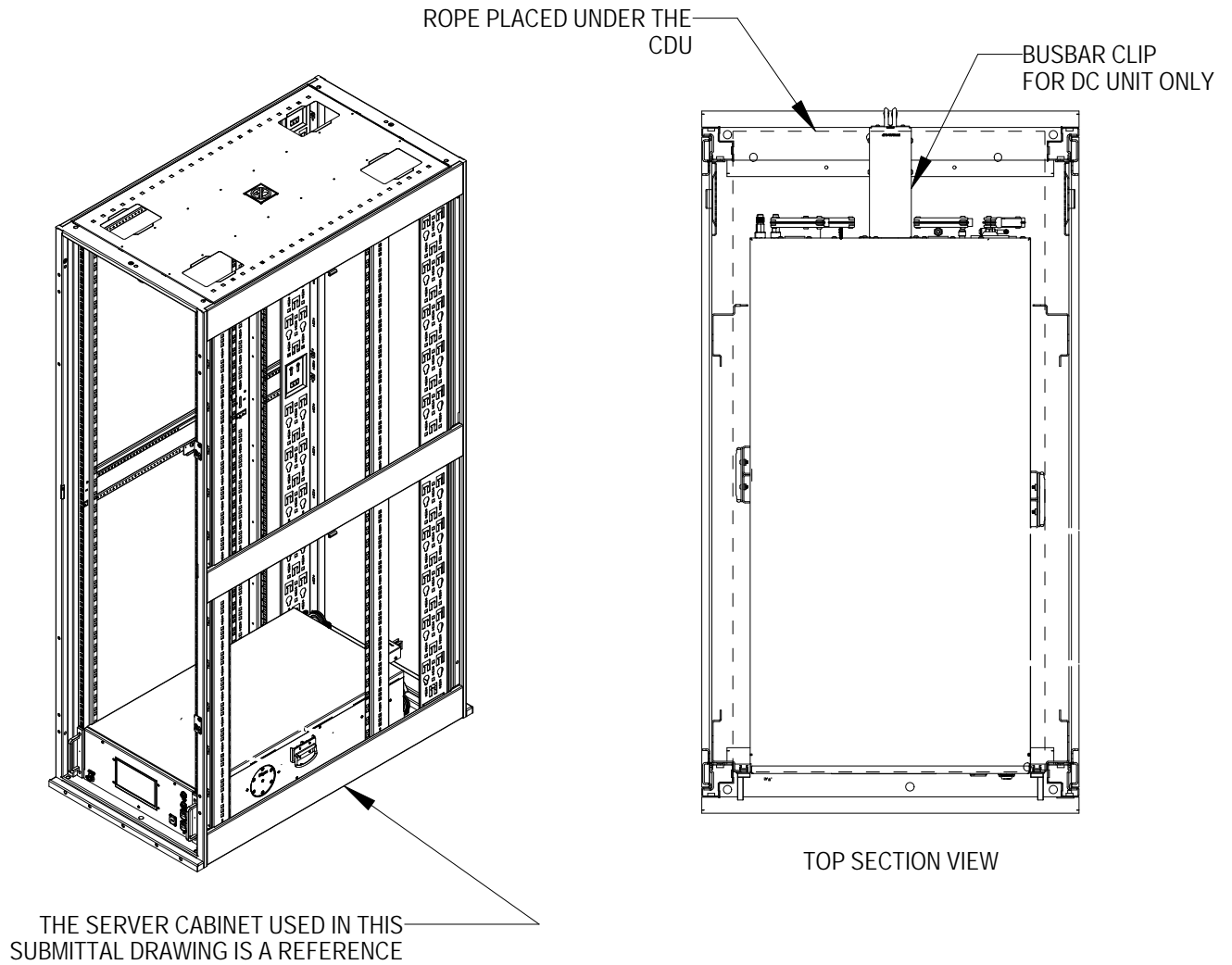
Connection Diagram for CANbus

Standard units can be connected/grouped/ teamed up to 4 units in a single group. More units can be connected upon factory request.



COOLCHIP CDU

LEAK DETECTION ROPE AC & DC UNIT

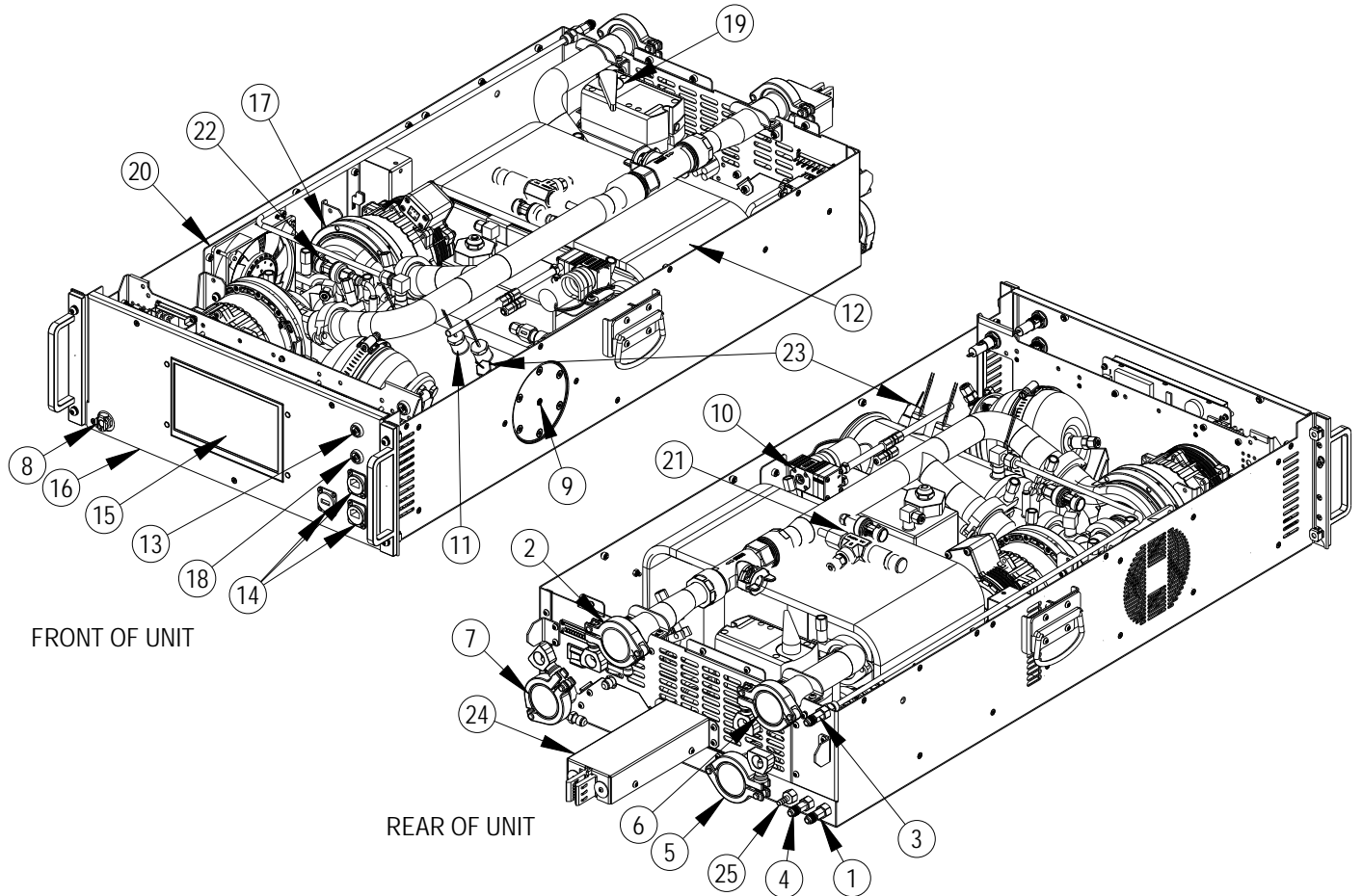


NOTES:-

1. SENSING LENGTH 10M (32.8 FT) OR 20M (65.6 FT).
2. PVC TWISTED PAIR WITH STAINLESS STEEL SENSING ELEMENTS.
3. 3.5MM (0.1 IN) OVERALL DIAMETER.
4. 3 M (9.8 FT) LEADER CABLE LENGTH.
5. CONNECTED TO TERMINALS 10 & 12 ON SK1.

COOLCHIP CDU

COMPONENT LOCATION DIAGRAM DC VERSION



FRONT OF UNIT

REAR OF UNIT

ITEM	DESCRIPTION
1	RESERVOIR/SECONDARY CIRCUIT DRAIN
2	SECONDARY CIRCUIT SUPPLY
3	RESERVOIR/SECONDARY CIRCUIT VENT
4	BUILT IN TANK VENT, NORMALLY OPEN
5	PRIMARY CIRCUIT RETURN
6	SECONDARY CIRCUIT RETURN
7	PRIMARY CIRCUIT SUPPLY
8	WATER MAKE UP CONNECTION
9	SECONDARY FILTER
10	FILL PUMP
11	SECONDARY SUPPLY TEMPERATURE SENSOR(REDUNDANCY)
12	HEAT EXCHANGER

ITEM	DESCRIPTION
13	FUSE FS2 FOR FILL PUMP
14	DUAL ETHERNET (RJ45) AND USB CONNECTIONS
15	CONTROLLER 7-INCH TOUCHSCREEN DISPLAY
16	REMOVABLE FRONT PANEL
17	SECONDARY CIRCUIT PUMPS
18	FUSE FS3 FOR DISPLAY
19	PRIMARY 3-WAY CIRCUIT CONTROL VALVE & ACTUATOR
20	COOLING FAN
21	PRESSURE RELIEF VALVE
22	PRESSURE SENSORS
23	LEVEL SENSOR
24	DC BUSBAR CLIP
25	PRESSURE RELIEF VALVE VENT



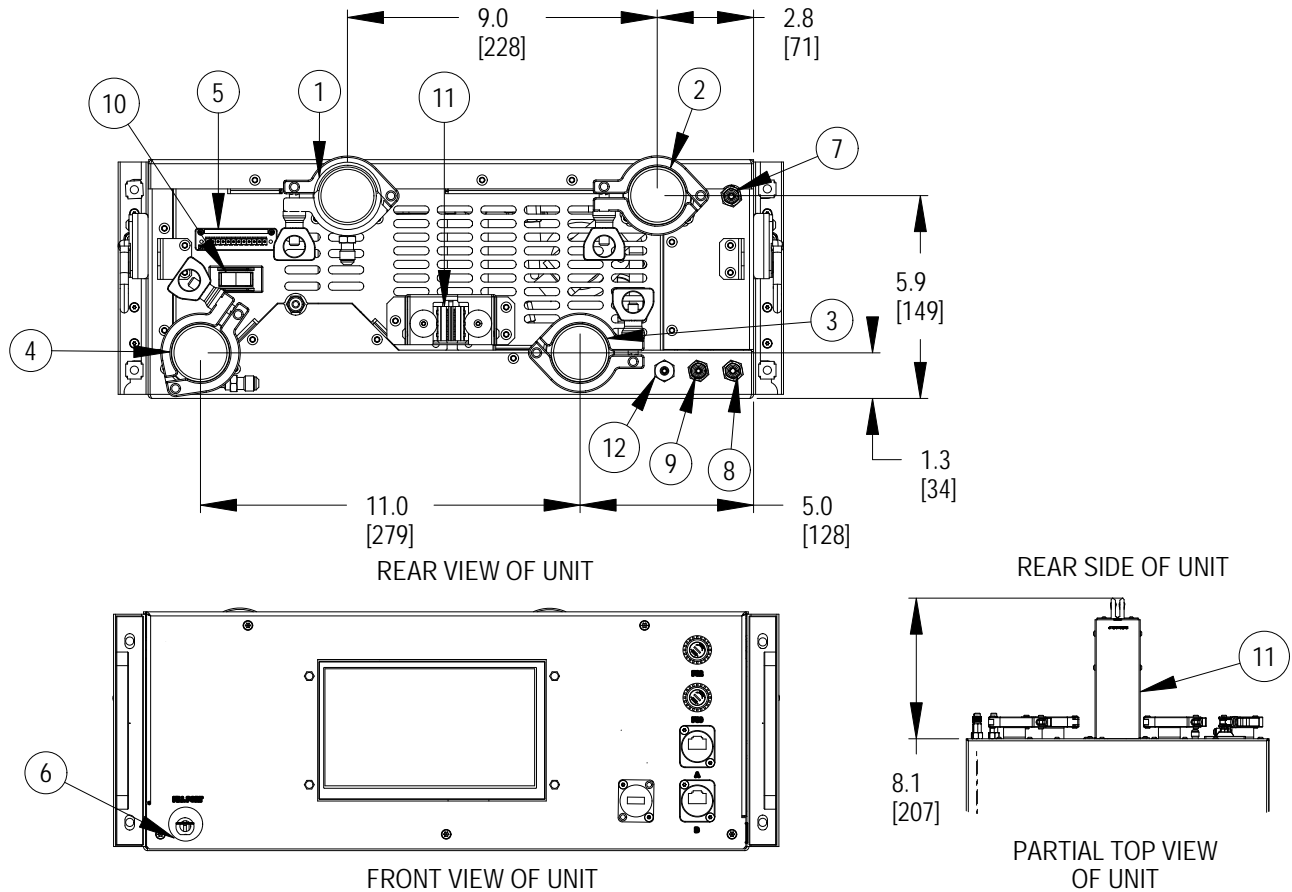
COOLCHIP CDU

SHIP LOOSE ACCESSORIES AC & DC VERSION

Sr. No	Description	Unit	Quantity for AC Unit	Quantity for DC Unit
1	Main Unit Coolchip CDU121	Each	1	1
2	Filling hoses, with quick-disconnect male connector	Each	1	1
3	Temperature and humidity sensor	Each	1	1
4	Side handle (stainless steel 304) for rac installation	Each	2	2
5	Exhaust and drain tool valve	Each	1	1
6	CoolChip CDU121 Installation and Commissioning Guide (printed)	Each	1	1
7	CoolChip CDU121 Installation and Planning Guide (printed)	Each	1	1
8	CoolChip CDU121 Installation and Maintenance Guide (printed)	Each	1	1
9	CoolChip CDU121 AC/DC Wiring Diagram (printed)	Each	1	1
10	Fixing Nut (for rack installation)	Each	4	4
11	Fixing Bolt (for rack installation)	Each	4	4
12	AC Power cord C13-C14, 15m (length), color black	Each	2	-
13	DC busbar clip fixing screw	Each	-	7
14	DC busbar clip bracket	Each	-	1
15	DC busbar clip shell (96.6 mm length)	Each	-	1

COOLCHIP CDU

CONNECTION LOCATION DC VERSION



ITEM	DESCRIPTION	CONNECTION SIZE
1	SECONDARY CIRCUIT SUPPLY	1.5IN SANITARY FLANGE
2	SECONDARY CIRCUIT RETURN	1.5IN SANITARY FLANGE
3	PRIMARY CIRCUIT RETURN	1.5IN SANITARY FLANGE
4	PRIMARY CIRCUIT SUPPLY	1.5IN SANITARY FLANGE
5	CONNECTORS FOR EXTERNAL TEMPERATURE/HUMIDITY SENSOR, EXTERNAL LEAK DETECTION TAPE RS485 AND CANbus COMMUNICATIONS	12 WAY CONNECTOR STRIP (SK1)
6	WATER MAKE-UP CONNECTION	1/4IN X HOSE BARB 1/8IN ID, CUT-OFF TYPE RS-PMCD-BS32 WITH 3.24MM ID
7	RESERVOIR/SECONDARY CIRCUIT VENT	SCHRADER VALVE M8
8	RESERVOIR/SECONDARY CIRCUIT DRAIN	SCHRADER VALVE M8
9	BUILT-IN TANK CIRCUIT VENT	M8 NORMALLY OPEN
10	CIRCUIT BREAKER	-
11	48V DC POWER INPUT	BUSBAR CLIP
12	PRESSURE RELIEF VALVE VENT	BARBED CONNECTOR (NORMALLY OPEN)

ELECTRICAL CONNECTION AC UNIT

For AC Input:

The dual power cord feature allows the unit to be powered by two separate power sources. The CDU will be supplied with two (2) detachable 6 ft (1.82 m) power cords that attach to two (2) IEC power inlets in the rear of the unit. Each power cord has a IEC 320-C14 plug at the opposite end.

Communication Options:

Ethernet redundant communication ports RJ45 (2) are provided on the bottom of the unit control panel, labeled ETHA & ETHB. Cat5e shielded cable should be used when wiring to these ports
Modbus over IP, Webserver, SNMP, CanBus, BACnet, Redfish
RS-485 Modbus (terminals 8 & 9 on connector SK1).

Group Control Networking Cabling:

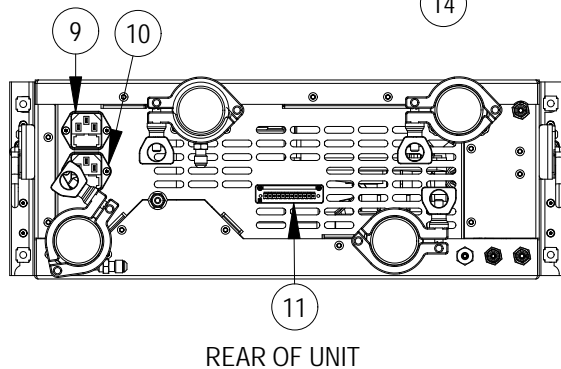
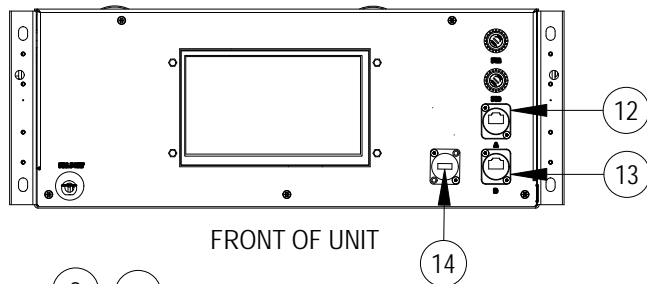
CANbus is used for communication between 4 CoolChip CDU121 units.
CANbus (terminals 10, 11 & 12 on connector SK1) cable requires 3 conductors terminals.
2 signal wires (CAN H and CAN L).
1 signal return path (GND).

Cable Type:

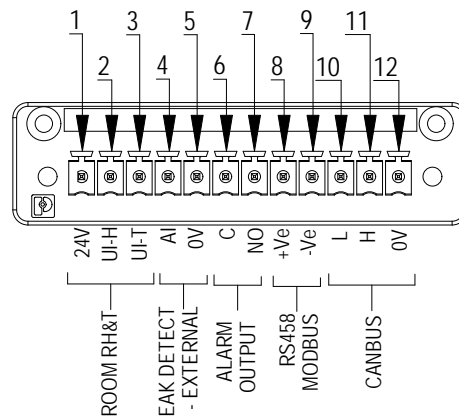
Beldon 3106A, or equivalent (1 pair +1, shielded 22AWG) is the recommended cable type to be used and pre-configured cable assemblies are provided with each CDU121 unit.

Leak Detection Tape:

A Leak detection tape (optional) can be connected to terminals 4 & 5 on SK1 for leak detection under the floor.



ITEM	DESCRIPTION
9	IEC POWER INLETS A
10	IEC POWER INLETS B
11	TERMINAL POSITION FOR SK1
12	ETHERNET A
13	ETHERNET B
14	USB



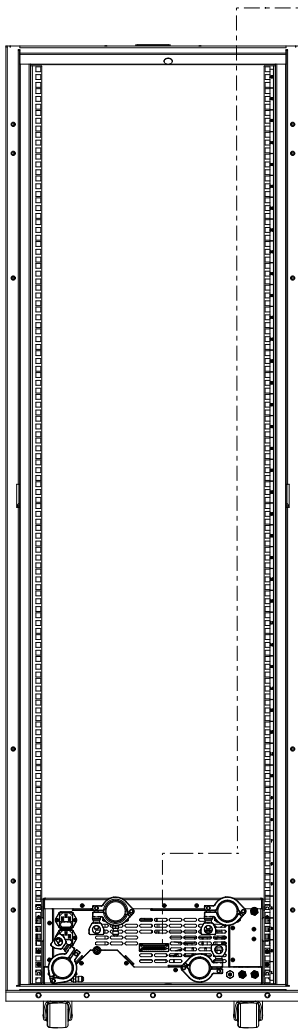
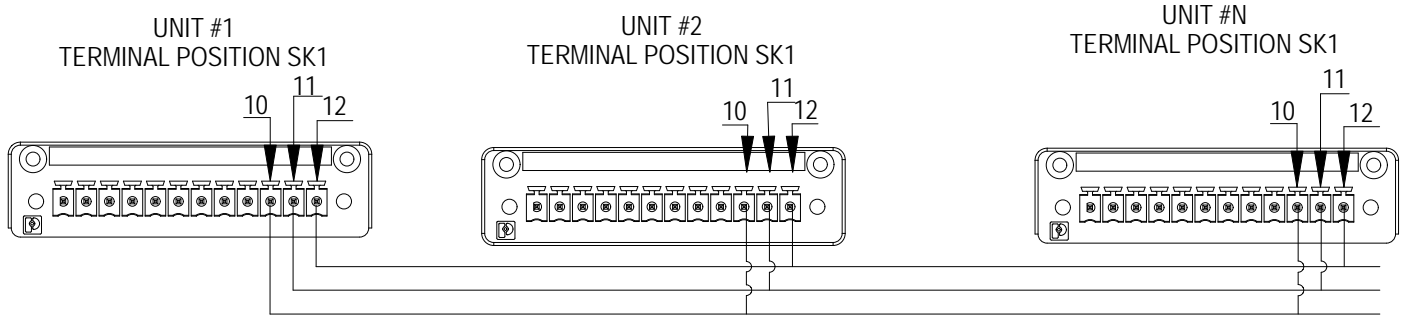
NOTES :

1. FACTORY PROVIDE 10A FUSE FOR 110-120V & 208-240V INPUT.

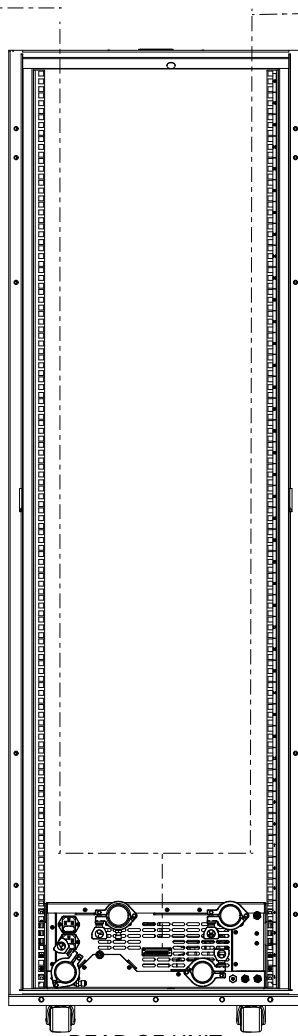
ELECTRICAL CONNECTION AC UNIT COMMUNICATION WIRING

Connection Diagram for CANbus

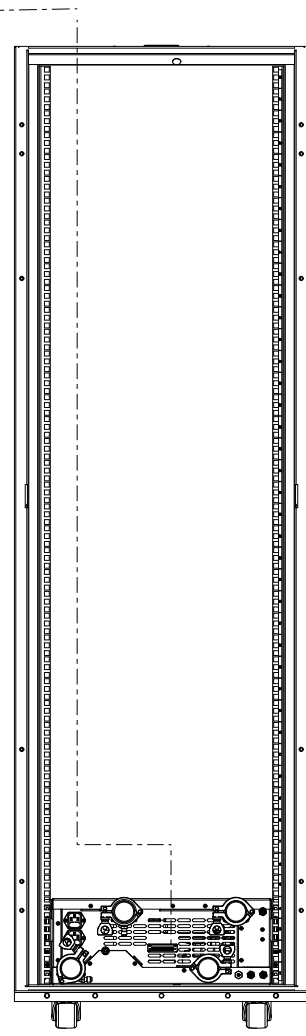
Standard units can be connected/grouped/ teamed up to 4 units in a single group. More units can be connected upon factory request.



REAR OF UNIT
#1



REAR OF UNIT
#2

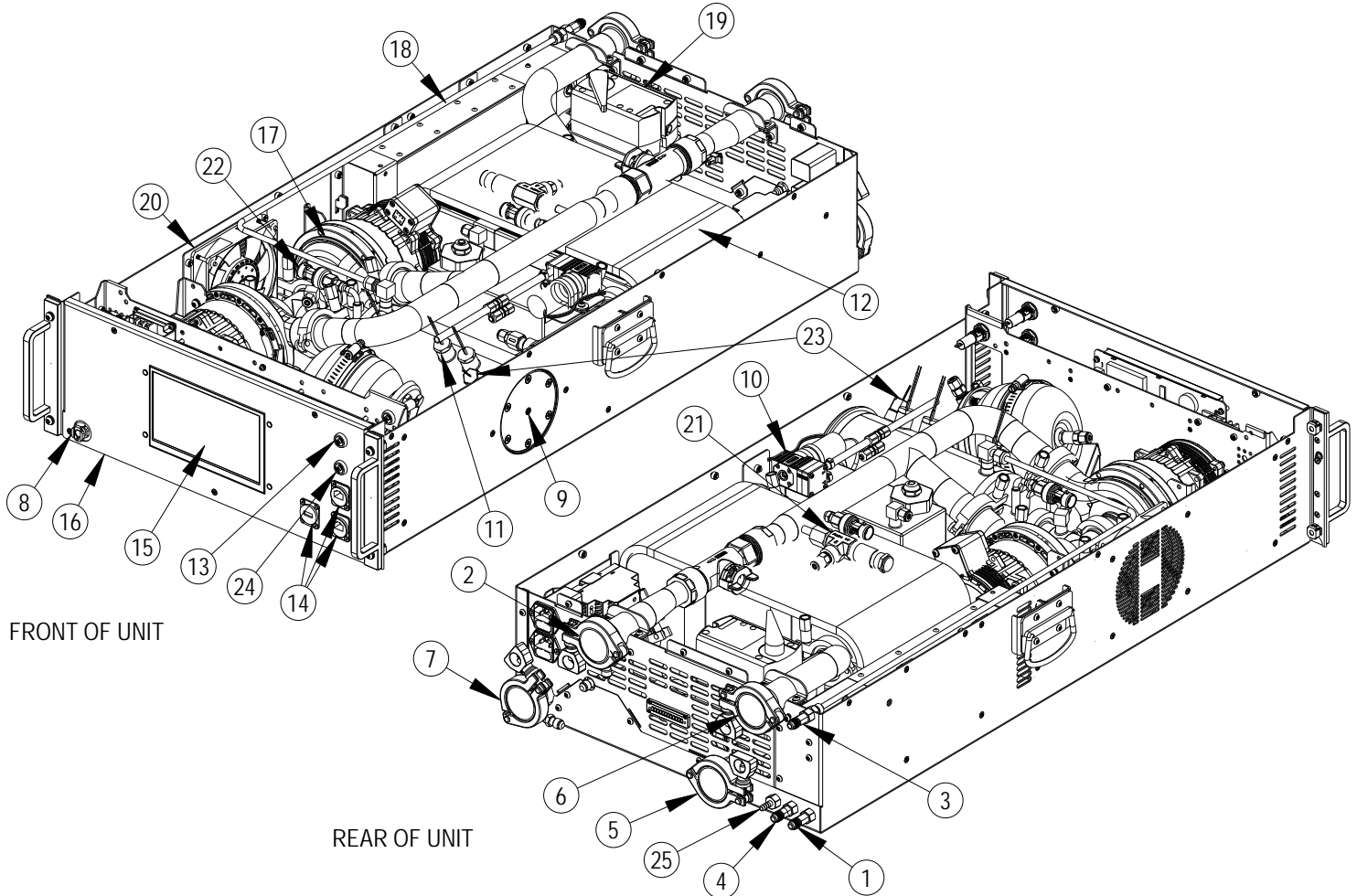


REAR OF UNIT
#N

COOLCHIP CDU

COMPONENT LOCATION DIAGRAM

AC VERSION



FRONT OF UNIT

REAR OF UNIT

ITEM	DESCRIPTION
1	RESERVOIR/SECONDARY CIRCUIT DRAIN
2	SECONDARY CIRCUIT SUPPLY
3	RESERVOIR/SECONDARY CIRCUIT VENT
4	BUILT IN TANK VENT, NORMALLY OPEN
5	PRIMARY CIRCUIT RETURN
6	SECONDARY CIRCUIT RETURN
7	PRIMARY CIRCUIT SUPPLY
8	WATER MAKE UP CONNECTION
9	SECONDARY FILTER
10	FILL PUMP
11	SECONDARY SUPPLY TEMPERATURE SENSOR(REDUNDANCY)
12	HEAT EXCHANGER

ITEM	DESCRIPTION
13	FUSE FS2 FOR FILL PUMP
14	DUAL ETHERNET (RJ45) AND USB CONNECTIONS
15	CONTROLLER 7-INCH TOUCHSCREEN DISPLAY
16	REMOVABLE FRONT PANEL
17	SECONDARY CIRCUIT PUMPS
18	PUMP 48 VDC POWER SUPPLY
19	PRIMARY 3-WAY CIRCUIT CONTROL VALVE & ACTUATOR
20	COOLING FAN
21	PRESSURE RELIEF VALVE
22	PRESSURE SENSORS
23	LEVEL SENSOR
24	FUSE FS3 FOR DISPLAY
25	PRESSURE RELIEF VALVE VENT

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Appendix C: Warranty and Contact Details

C.1 Limited Product and Service Warranty

Extended warranties, service, and maintenance programs are available in most locations, details available upon request. To obtain further details of limited warranty, also after sales service offerings, contact your local sales representative or technical support if you have any questions or problems during unit installation.

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Appendix E: Disposal Information

NOTE: Waste materials must be disposed of in a responsible manner in line with environmental regulations.

The de-commissioning and disposal of this product should be undertaken by qualified personnel in adherence to local and national safety regulations, particularly for protection of lungs, eyes, and skin from chemicals, dust, and so on. Approved lifting gear and power tools should be used and access to the work area must be restricted to authorized personnel.

The following steps are a guide only and should be adjusted to take into account local site conditions:

1. Disconnect the unit from electrical supply.
2. Drain and dispose of any heat transfer fluid through an approved recycling facility.
3. Remove unit to approved recycling facilities only.

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