In-Row Coolant Distribution Unit

TP-C1200



User Manual

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Arvane Thermal and the TP-C1200 are fictional. This manual is a portfolio sample. All specifications are mock data.

SAFETY INFORMATION

These symbols appear on the unit, its packaging and in this manual.

i	Read this manual before you install, operate or service the unit.
!	Caution. Read the manufacturer's documentation for this step.
⚡	Hazardous voltage inside. Qualified electricians only.
P	Pressurized fluid. Isolate and depressurize before opening any fitting.
°C	Hot surface. Return pipework can reach 50 °C.
kg	Heavy. 1,320 kg filled. Move only with rated equipment.
PE	Protective earth terminal.
~	Alternating current.
SN	Serial number. Quote it on every support request.
MFR	Manufacturer. Name and address are on the nameplate, with the build date.
%RH	Humidity limit for operation and storage.
WEEE	Do not dispose of with general waste. See Recycling.

WARNING No modification of this equipment is allowed. Only Arvane-trained technicians may open the electrical panel. There are no user-serviceable parts behind the upper door.

SAFETY INFORMATION

Read every warning on this page before you work on the unit. They apply to installation, operation and service.

DANGER Hazardous voltage. The unit is fed from two 400-480 VAC supplies. Isolate and lock out both feeds, A and B, before you open the upper door.

WARNING Pressurized fluid. The server loop runs at up to 10 bar and the facility loop at up to 16 bar. Close the isolation valves and depressurize before you loosen any fitting.

WARNING Heavy equipment. The unit weighs 1,150 kg dry. Move it only with a rated pallet jack or skates and at least two trained people. Never tilt it more than 10°.

CAUTION Hot surfaces. Return pipework and the heat exchanger can reach 50 °C at full load. Wear gloves.

CAUTION Coolant handling. PG25 is low-toxicity but slippery. Wear eye protection and gloves. Clean spills at once and follow the coolant safety data sheet.

NOTICE Install the unit in line with local electrical, mechanical and building codes. Do not connect it to an extension cord or a multiple socket outlet.

DISCONNECTING POWER

To power the unit down, turn off both input isolators on the top of the unit, then open the upstream breakers for feeds A and B. The isolators are the recognized disconnect devices. Keep them reachable at all times.

RECYCLING

At end of life, return the unit to Arvane Thermal for recycling, or follow local rules for electrical and electronic waste. Drain coolant first and dispose of it as the safety data sheet directs. Never pour coolant into a drain.

ABOUT THIS MANUAL

This manual helps you install, commission, operate and maintain the TP-C1200 In-Row Coolant Distribution Unit. It is written for facility engineers, mechanical installers and data center operators.

INTENDED USE

The TP-C1200 moves heat from a direct-to-chip server coolant loop into a facility water loop. It is designed for data center halls and continuous, 24/7 operation.

NOT INTENDED FOR

- Potable water systems
- Refrigerant or two-phase cooling
- Outdoor installation or unheated spaces
- Coolants not listed in Section 3

USEFUL LIFE

The design life of the unit is 15 years with the maintenance in Section 9. Pumps and filters are wear parts and are replaced on the schedule.

FAILURE CONDITIONS AND WHAT HAPPENS

Facility water stops	Supply temp rises. The unit raises an alarm within 10 seconds. Servers throttle on their own limits.
One pump fails	The standby pump takes over. A warning is raised. No loss of cooling.
One power feed fails	The unit transfers to the other feed. Pumps keep running.
Leak inside the unit	The internal leak sensor raises an alarm and, if enabled, stops the pumps.
Controller fails	Pumps hold their last speed. The status light turns red.

MITIGATION

For critical rows, run two CDUs per row (N+1 at the row level) or keep a spare pump module and filter set on site. Size ride-through time with Arvane during design.

CONVENTIONS

Bold text names a screen, button or label on the unit. Numbers in circles, like (3), match the callouts on the drawings. Warnings follow ANSI Z535.6 color coding: red for DANGER, orange for WARNING, yellow for CAUTION.

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ALSO IN THIS MANUAL

Safety information, symbols, intended use, failure conditions and recycling come before Section 1. Keep this manual with the unit, and the latest revision is always at arvane.example.

NOTICE Before you start, check the nameplate on the front of the unit. The model and serial number must match your order and this manual.

1 · PRODUCT DESCRIPTION

The TP-C1200 cools a full row of high-density AI racks. It takes facility water on one side and clean, filtered server coolant on the other. A plate heat exchanger moves the heat between the two loops without them ever mixing.

Three variable-speed pumps run N+1. Duplex filters change over while the unit runs. Two power feeds keep the pumps running if one fails. Every reading shows on the front touchscreen, in TP-View, and in your building management system.



FEATURES

- 1,200 kW cooling at 6 K approach
- Supply temperature held to ±0.5 K, 25 to 45 °C
- Three EC pumps, N+1, hot-swap from the front
- Duplex 50 µm filters with live changeover
- Internal expansion tank, 120 L
- Leak sensor in the base tray
- Dual A/B power with internal transfer
- 10" touchscreen with trends and alarm history
- BACnet/IP, Modbus TCP and RTU, SNMPv3, REST API
- Signed firmware, updated from TP-View
- Front service only, sits in a standard row
- CE, UKCA, RoHS, REACH

HOW IT FITS IN YOUR SYSTEM

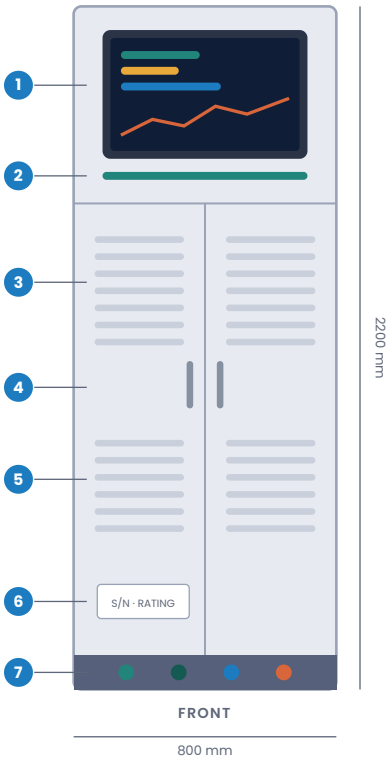
Cold plates (CPUs and GPUs) → **TP-M48** (Rack manifold) → **TP-C1200** (Heat exchanger) → **Facility water** (32 °C in, 44 °C out) → **Dry coolers** (Your plant)

WHAT IS IN THE BOX

TP-C1200 unit	1, on a shipping skid, drained and capped
Leveling feet and seismic brackets	1 set
Door keys	2
Flexible connector kit, DN100	Optional, TP-FLEX-100
Quick start card and this manual	1 each
Factory test report	With serial numbers of the unit and pumps

2 · CONTROLS AND CONNECTIONS

Front of the unit. All controls and service points are reached from the front.

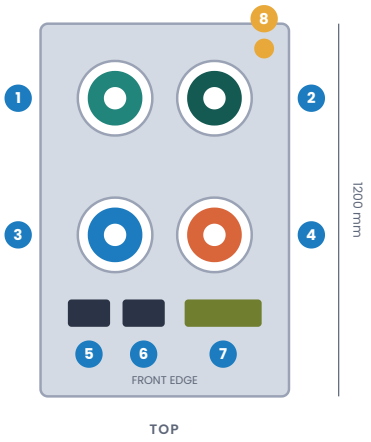


	Item	What it does
1	**Touchscreen**	10" color screen. Shows status, trends, alarms and setup.
2	**Status light**	Green: normal. Amber: warning. Red: alarm. Off: no power.
3	**Lower doors**	Behind them: pumps P1 to P3, filters F1 and F2, expansion tank.
4	**Door handles**	Keyed. Doors open 120° for service.
5	**Air vents**	Cooling air for pump motors and drives. Keep 1,000 mm clear.
6	**Nameplate**	Model, serial, ratings and build date.
7	**Fill and drain ports**	Behind the kick plate. Color coded to match the loops.

⚠ **CAUTION** Do not block the air vents. The pump drives need the airflow to stay inside their temperature rating.

2 · CONTROLS AND CONNECTIONS

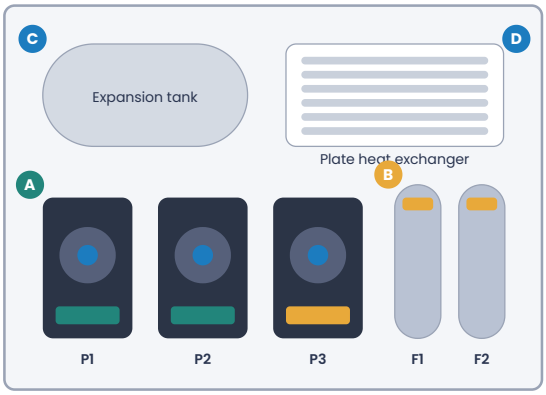
Top of the unit. Every pipe, power and network connection enters from above.



TOP

	Item	What it is
1	**FW in**	Facility water supply. DN100 grooved. Teal label.
2	**FW out**	Facility water return. DN100 grooved. Dark teal label.
3	**TCS supply out**	Coolant to the row header. DN100 flanged. Blue.
4	**TCS return in**	Coolant from the row header. DN100 flanged. Red.
5	**Power A**	Cable gland for feed A, 400-480 VAC 3-phase.
6	**Power B**	Cable gland for feed B, 400-480 VAC 3-phase.
7	**Network**	RJ45 for BMS, RJ45 for management, RS-485 terminal.
8	**Relief outlet**	Pressure relief valve outlet. Pipe to a drain or catch tank.

BEHIND THE LOWER DOORS



A	**Pumps P1 to P3.** Two run, one stands by. Green tag: running. Amber tag: standby.
B	**Filters F1 and F2.** One in service, one ready. Changeover lever on top.
C	**Expansion tank.** Takes up coolant volume as it warms.
D	**Plate heat exchanger.** Where the two loops exchange heat.

3 · SPECIFICATIONS

THERMAL

Cooling capacity	1,200 kW at 6 K approach
Capacity at 4 K approach	850 kW
TCS supply temp	25 to 45 °C
Supply stability	±0.5 K
Design rack ΔT	10 K
FW supply temp	Up to 35 °C

HYDRAULICS

TCS flow	Up to 1,800 L/min
External head	2.5 bar at full flow
FW pressure drop	0.6 bar at full flow
Filtration	Duplex, 50 µm
Expansion tank	120 L
Max pressure, TCS / FW	10 bar / 16 bar
Connections	TCS DN100 flanged; FW DN100 grooved

APPROVED COOLANTS

PG25	Propylene glycol 25%, inhibited. Default.
Treated water	With Arvane-approved inhibitor package
Not approved	Ethylene glycol, untreated water, dielectric fluids

ELECTRICAL

Input	2x 400-480 VAC, 3-phase, 50/60 Hz
Draw	Up to 15 kW, typical 6 kW
Transfer	Internal, A to B
Protection	Per-pump breakers, surge protection

CONTROLS

Local	10" touchscreen
Network	BACnet/IP, Modbus TCP, SNMPv3, REST
Serial	Modbus RTU, RS-485
Logs	12 months on board

PHYSICAL AND ENVIRONMENTAL

Size	800 W x 1200 D x 2200 H mm
Weight	1,150 kg dry, 1,320 kg filled
Floor loading	13.7 kN/m² filled
Clearance	1,000 mm front, 50 mm sides
Ambient	10 to 40 °C, 5 to 90% RH
Altitude	Up to 2,000 m
Noise	Under 65 dBA at 1 m
Storage	-10 to 50 °C, drained

4 · SITE PREPARATION

Confirm every item on this page before the unit arrives. Most install delays start here.

FLOOR AND SPACE

- Floor rated for 13.7 kN/m², or a spreader plate per your structural engineer.
- 800 mm row position at the end of the row, in line with the racks.
- 1,000 mm clear in front for door swing and pump removal.
- Clear path from the loading dock: 900 mm wide doors, 2,300 mm tall.

FACILITY WATER

- Supply up to 35 °C, about 1,500 L/min at full load.
- DN100 supply and return stubs above the unit position, with isolation valves.
- Strainer upstream, 500 µm or finer.
- Water treatment in line with your plant spec.

POWER

- Two independent 400-480 VAC 3-phase feeds, A and B.
- Each feed sized for 15 kW, with upstream breakers and lockout.
- Protective earth to the unit's PE terminal.

NETWORK

- One port on your BMS network, one on your management VLAN.
- IP addresses or DHCP reservations for both.
- BMS point names agreed. See Section 8.

DRAINAGE

- Floor drain or catch tank within reach of the relief outlet.
- Leak rope routed under the unit position. See TP-LX manual.

SITE READINESS CHECKLIST

☐ Floor rating confirmed	☐ FW stubs and valves in place
☐ Delivery path measured	☐ FW flushed and treated
☐ Feeds A and B installed and labeled	☐ Network ports live, IPs assigned
☐ Drain or catch tank in place	☐ Leak rope installed and tested

5 · INSTALLATION

> ⚠ **WARNING** The unit weighs 1,150 kg dry. Use a rated pallet jack or skates and at least two trained people. Never lift by the pipe stubs.

Step 1. Unpack

a. Check the crate tilt and shock labels. Note any damage on the delivery receipt.
b. Remove the crate walls. Leave the unit on its skid.
c. Check contents against Section 1.

Step 2. Move into position

a. Roll the unit to its row position on skates.
b. Keep it upright. Never tilt more than 10°.
c. Remove the skid bolts and lower the unit onto its feet.

Step 3. Level and fix

a. Level front to back and side to side, within 2 mm.
b. Fit the seismic brackets if your site requires them.
c. Lock the leveling feet.

Step 4. Connect facility water

a. Fit flexible connectors to FW in (1) and FW out (2).
b. Match the teal labels on the unit to your supply and return.
c. Leave your isolation valves closed.

Step 1. Connect the row headers

a. Fit flexible connectors to TCS supply (3) and return (4).
b. Blue to the supply header, red to the return header.
c. Torque flange bolts to 80 Nm in a star pattern.

Step 2. Connect power

a. Qualified electrician only. Both feeds locked out.
b. Bring feed A to gland (5) and feed B to gland (6).
c. Connect PE first. Check phase rotation.

Step 3. Connect network

a. BMS port and management port at (7).
b. RS-485 only if you use Modbus RTU.
c. Pipe the relief outlet (8) to a drain.

> **TIP** Take a photo of every label after connection. It saves time at commissioning.

6 · COMMISSIONING

Commissioning is done by an Arvane engineer with your team. This page is the record of what happens and in what order.

> ⚠ **CAUTION** Wear eye protection and gloves when filling. Have absorbent pads ready at every fill and bleed point.

Step 1. Flush the headers

a. Flush the row headers with clean water before connecting racks.
b. Run until the filter shows no debris.
c. Drain and refill with PG25.

Step 2. Fill

a. Connect the TP-FILL cart to the fill port 7 , blue side.
b. Fill to 1.5 bar static. Watch the screen.
c. Open bleed valves at the high points until coolant runs clear.

Step 3. Pressure test

a. Raise the TCS loop to 15 bar, 1.5x working pressure.
b. Hold 30 minutes. Pass: no drop on the trend.
c. Return to 1.5 bar static.

Step 1. Start up

a. Turn on isolators A and B. Wait for the home screen.
b. Open FW isolation valves slowly.
c. Press **Pumps > Start**. Two pumps run, one stands by.

Step 2. Set the setpoints

a. Supply temp: 38 °C (or as designed).
b. Differential pressure: as set in your design.
c. Alarm limits: see Section 7.

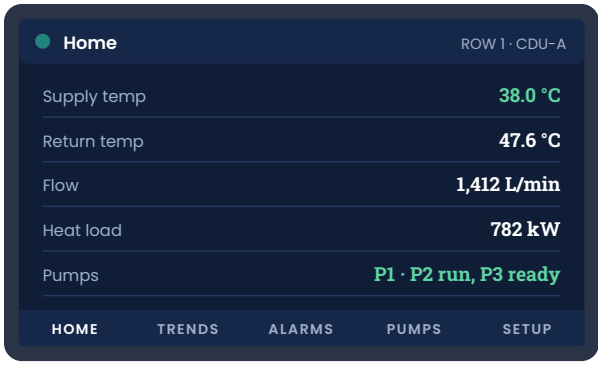
Step 3. Prove it

a. Run at load, on servers or a TP-LB120 load bank.
b. Pull pump P1 from service. Standby takes over.
c. Switch off feed A. The unit stays running on B.
d. Confirm every BMS point updates.

SIGN-OFF

Commissioned by (Arvane)	_____ Date _____
Accepted by (customer)	_____ Date _____
Unit serial	_____

7 · OPERATION AND ALARMS



Home screen

The unit runs on its own once commissioned. The touchscreen is for checking status, changing setpoints and handling alarms.

Screen	What it is for
Home	Live temps, flow, heat load and pump state.
Trends	Any reading over 1 hour to 12 months.
Alarms	Active alarms, history, acknowledge.
Pumps	Run state, hours, start, stop, rotate duty.
Setup	Setpoints, limits, network. PIN protected.

CHANGING A SETPOINT

1. Tap **Setup** and enter the supervisor PIN.
2. Tap **Setpoints > Supply temp**.
3. Enter the new value. Range: 25 to 45 °C.
4. Tap **Apply**. The change is logged with your user name.

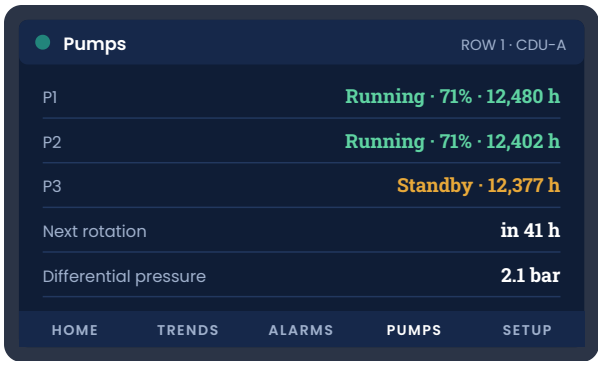
NOTICE Change supply temp in steps of 1 K or less. Large steps can trip server thermal limits before the loop settles.

PUMP ROTATION

Duty rotates every 168 hours so all three pumps wear evenly. To rotate now, tap **Pumps > Rotate duty**.

To take a pump out for service, tap the pump and choose **Lock out**. The unit will not let you lock out a pump if fewer than two would be left running.

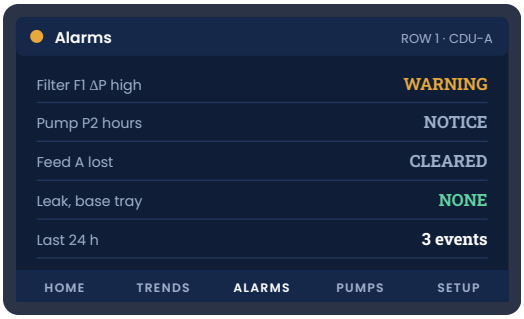
Run hours show on each pump. Plan replacement at 40,000 hours. See Section 9.



Pumps screen

7 · OPERATION AND ALARMS

Every alarm shows on the screen, turns the status light amber or red, and goes to TP-View and your BMS. Acknowledge on the **Alarms** screen. An alarm clears on its own when the condition is gone.



Alarm	Trigger (default)	Level	What to do
Supply temp high	Supply 2 K over setpoint for 30 s	Alarm	Check FW supply temp and flow. Check FW valve position.
Supply temp low	Supply 3 K under setpoint	Warning	Check FW valve. Risk of condensation at the racks.
Flow low	TCS flow under 60% of design	Alarm	Check isolation valves on the row. Check filters.
Filter ΔP high	Filter pressure drop over 0.5 bar	Warning	Change over to the standby filter. Replace the element.
Pump fault	Pump drive reports a fault	Warning	Standby pump is running. Replace the pump module.
Two pumps failed	Fewer than two pumps available	Alarm	Call Arvane support now.
Feed lost	Feed A or B missing	Warning	Unit runs on the other feed. Restore power.
Pressure low	TCS static under 0.8 bar	Alarm	Look for a leak. Top up with TP-FILL.
Pressure high	TCS over 9 bar	Alarm	Check for a closed valve. Relief valve opens at 10 bar.
Leak detected	Base tray sensor wet	Alarm	Pumps stop if set to. Find the source before restart.
Coolant check due	Sample date passed	Notice	Take a coolant sample. See Section 9.
Comms lost	No BMS poll for 5 min	Notice	Check the BMS network link.

8 · BMS AND NETWORK INTEGRATION

The unit speaks BACnet/IP, Modbus TCP, Modbus RTU and SNMPv3, and has a REST API for TP-View and your own scripts. Use the same point names in every system.

BACnet	Modbus	Point	Unit
AI-1	40001	TCS supply temp	°C
AI-2	40002	TCS return temp	°C
AI-3	40003	TCS flow	L/min
AI-4	40004	TCS supply pressure	bar
AI-5	40005	TCS return pressure	bar
AI-6	40006	FW supply temp	°C
AI-7	40007	FW return temp	°C
AI-8	40008	Heat load	kW
AI-9	40009	Filter ΔP, in service	bar
AI-10	40010	FW valve position	%
BI-1	10001	Pump P1 running	0/1
BI-2	10002	Pump P2 running	0/1
BI-3	10003	Pump P3 running	0/1
BI-4	10004	Feed A healthy	0/1
BI-5	10005	Feed B healthy	0/1
BI-6	10006	Leak, base tray	0/1
MI-1	40020	Alarm level	0-3
AV-1	40101	Supply temp setpoint (write)	°C

NETWORK DEFAULTS

BMS port	DHCP
Mgmt port	192.168.10.20
BACnet device ID	Serial number
Modbus unit ID	1
RS-485	19,200 baud, 8N1
SNMP	v3 only, auth + priv

SECURITY

- Change the default PIN and web password at commissioning.
- Keep the management port on its own VLAN.
- Firmware is signed. Unsigned files are refused.
- No cloud connection is needed or made.

9 · MAINTENANCE

Every task below can be done with the row running. Log each one in TP-View so the next person knows what was done.

When	Task	Who
Weekly	Check the home screen and alarm history	Operator
Monthly	Check filter ΔP. Look for drips at the top connections	Operator
Quarterly	Take a coolant sample and send it for testing	Operator / Arvane
Quarterly	Clean air vents. Check door seals	Operator
Every 6 months	Replace filter elements, or sooner on a ΔP warning	Technician
Yearly	Check torque on flange bolts. Test feed transfer	Technician
Yearly	Calibrate temperature and pressure sensors	Arvane
Every 5 years	Replace pump modules, or at 40,000 hours	Arvane
Every 5 years	Replace coolant, unless sample results say sooner	Arvane

CHANGING A FILTER ELEMENT

1. Open the lower left door.
2. Move the changeover lever to the standby filter, F2. Flow carries on.
3. Close the F1 isolation handles. Open the F1 vent into a bucket.
4. Unscrew the F1 bowl. Remove the old element.
5. Fit a new TP-FLT-50 element. Refit the bowl hand-tight.
6. Open F1 isolation slowly and vent the air.
7. Leave F2 in service. F1 is now the standby.

CAUTION The filter bowl is under loop pressure until you vent it. Never unscrew a bowl with the isolation handles open.

TIP Keep two spare elements on site. A ΔP warning can come early after new servers are added.

9 · MAINTENANCE

REPLACING A PUMP MODULE

1. On the screen, tap **Pumps**, pick the pump, choose **Lock out**.
2. Confirm the other two pumps are running.
3. Turn the pump's breaker off behind the upper door. Technician only.
4. Close the pump's suction and discharge valves.
5. Unplug the drive cable. Undo the four slide bolts.
6. Slide the module out on its rails. It weighs 38 kg. Two people.
7. Slide in the new TP-PMP-1200. Refit bolts and cable.
8. Open the valves slowly. Bleed the pump at its vent.
9. Breaker on. On the screen, choose **Return to service**.

> ⚠ **WARNING** The pump drive holds a charge for 5 minutes after its breaker opens. Wait before you unplug the drive cable.

TAKING A COOLANT SAMPLE

1. Use the sample kit that ships with the unit.
2. Open the sample valve on the return side for 5 seconds to clear it.
3. Fill the bottle to the line. Close the valve.
4. Label with date, serial and loop hours.
5. Send to Arvane. Results come back in TP-View.

Check	In range
Glycol	23 to 27%
pH	8.0 to 10.0
Conductivity	Under 3,000 µS/cm
Particles	None visible
Inhibitor	Within supplier range

10 · TROUBLESHOOTING

If the unit does not work as expected, check connections and valve positions first. Most issues are outside the unit.

What you see	Likely cause	What to do
Screen is off, status light off	No power on either feed	Check isolators A and B and the upstream breakers.
Status light red, supply temp high	Facility water too warm or too little	Check FW supply temp and flow at your plant. Check the FW valve is open.
Flow low on one rack only	Rack valves closed or a hose kinked	Check that rack's TP-V valves in TP-View. Check tray hoses.
Flow low on the whole row	Filter blocked or a header valve closed	Check filter ΔP. Change over the filter. Check header valves.
Pressure keeps dropping	Small leak somewhere in the loop	Check the leak rope map in TP-View. Inspect joints from the CDU outward.
Noise from a pump	Air in the pump	Bleed the pump at its vent. If noise stays, lock it out and call support.
BMS shows no data	Network or protocol setting	Check the BMS link light on port 7. Check device ID and IP in Setup.
Condensation on pipes	Supply temp below room dew point	Raise the supply setpoint. Keep it above dew point plus 2 K.

NOTICE If a problem stays after these checks, call Arvane support with the unit serial number and a photo of the Alarms screen.

11 · SERVICE PROCEDURE AND SPARE PARTS

REPLACEMENT POLICY

Units found faulty on arrival are replaced, subject to availability, within 5 business days. Pumps and controllers are covered by advance replacement for the warranty term.

RETURN AND REPAIR

The TP-C1200 has no user-serviceable parts behind the upper door. To return a part or the unit, get a Return Material Authorization (RMA) number first. Include:

- Model number
- Serial number
- A full description of the problem
- Photos of the Alarms screen and the install

CONTACT

Arvane Thermal
Port Calder, CA (fictional company)
Support: support@arvane.example
Web: arvane.example

SPARE PARTS

Part	Description	Stock
TP-PMP-1200	Pump module, EC, with drive	Recommended on site
TP-FLT-50	Filter element, 50 µm, pack of 2	Recommended on site
TP-SNS-T	Temperature sensor	Optional
TP-SNS-P	Pressure sensor	Optional
TP-GSK-100	Flange gasket set, DN100	Recommended on site
TP-KEY	Door key, pair	Optional
PG25-200	Coolant, 200 L drum	Recommended on site

TIP The spares kit for one row (TP-SPK-ROW) holds one pump, four filter elements and a gasket set.

12 · CLEANING AND SAFETY INSTRUCTIONS

- Clean the outside with a dry or damp cloth only.
- Do not use solvents such as thinners or acetone. They remove labels.
- Do not block the air vents.
- Do not install near heat sources such as boilers or radiators.
- Wipe up coolant spills at once. Glycol is slippery.
- Use only parts and accessories Arvane specifies.
- If smoke or a burning smell appears, turn off both isolators and call Arvane support.
- Do not use the unit if the frame or pipework is damaged.
- Do not touch electrical connections with wet hands.
- Power the unit only from supplies that match its nameplate.
- Do not install in dusty areas or where humidity stays above 90%.
- Keep the floor around the unit clear. It is a service area.

⚠ **CAUTION** If liquid gets inside the upper door, turn off both isolators and call Arvane support. Running with liquid on the electrical panel can cause fire or shock.

13 · LIMITED WARRANTY

Arvane Thermal warrants each TP-C1200 to be free of defects in material and workmanship for five (5) years from the date of shipment. Arvane will, at its option, repair or replace any part that proves defective under normal use, if Arvane is notified within 30 days of the defect being found. Pump modules and controllers are covered by advance replacement for the full term.

This warranty does not cover damage from misuse, neglect, alterations, coolants not approved in Section 3, power problems, installation not in line with this manual, or repairs by anyone other than Arvane or its authorized partners. Filter elements, gaskets and coolant are wear items and are not covered. The warranty applies to the original end customer and is not transferable.

ARVANE'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE INVOICE VALUE OF THE PRODUCT. ARVANE IS NOT LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM THE USE OR SALE OF ITS PRODUCTS. NO OTHER WARRANTY, EXPRESSED OR IMPLIED, IS GIVEN, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Sample warranty text for a fictional product. Not a real offer of warranty.

arvane
THERMAL

Cooling for racks that run hot.

Arvane Thermal · Port Calder, CA (fictional company)
arvane.example · support@arvane.example

UM-TPC1200 · Rev A · Nov 2026
Fictional company and product. Portfolio sample. Mock data throughout.