DECRYPTUM

DECRYPTUM PR 2080TI/12 4U

USER MANUAL

CMNO LTD. 2020

DECRYPTUM

Congratulations on purchasing your DECRYPTUM Professional Computing Device. We are pleased to welcome you as a customer. These user instructions contain all safety information and instructions necessary for using your **DECRYPTUM PR 2080TI/12 4U**.

Before using your device, please familiarise yourself with all relevant information. Only use the device in the manner described and for the applications indicated. If you pass on the device, be absolutely sure to also pass on all instructions and other relevant documents.

OVERVIEW

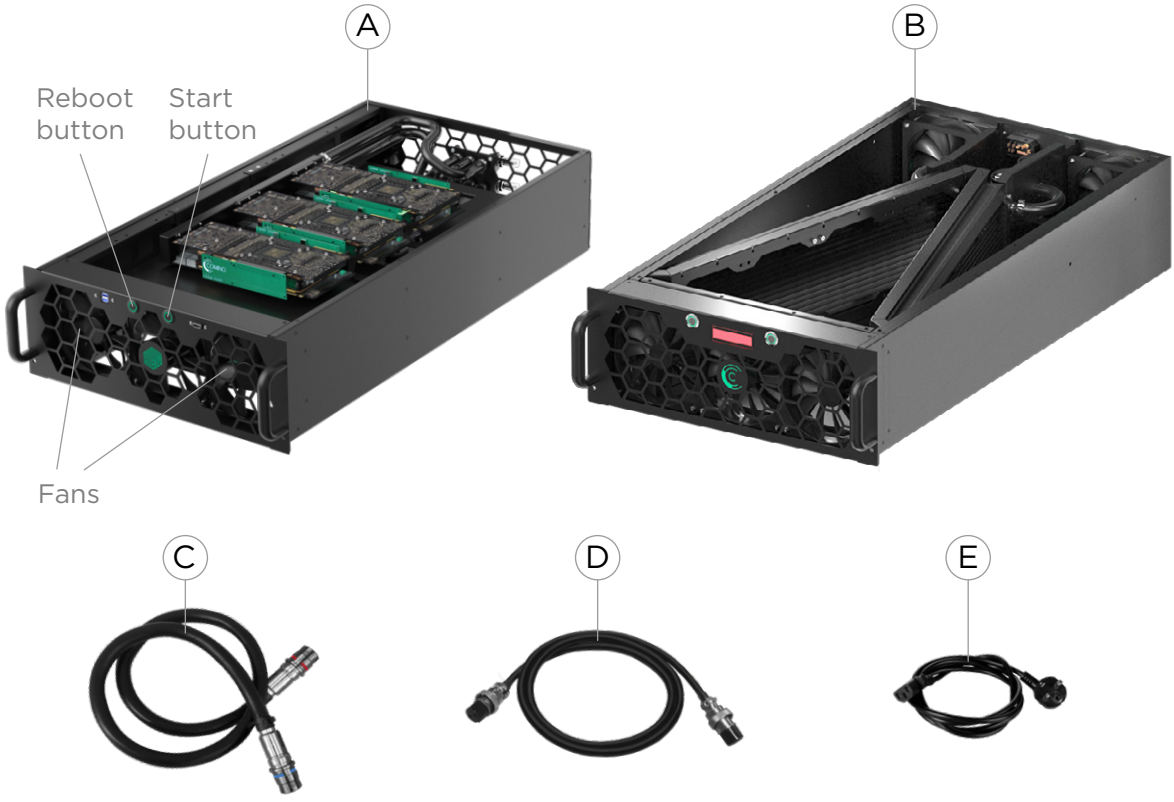
1. UNPACKING AND CHECKING THE CONTENTS

1.1 Unpack the devices — computing unit and cooling unit (freecooler).

1.2 Check if the package contains all of the components ordered (Pic.1):

- DECRYPTUM PR 2080TI/12 4U main unit **x1** (A)
- Freecooler **x1** (B)
- Tubings with Quick Disconnect Couplings **x2** (C)
- Switching Cable **x1** (D)
- Power Supply **x3** (E)

1.3 Make sure that both devices are not visibly damaged. If there is visible damage, do not use the devices and contact the manufacturer.

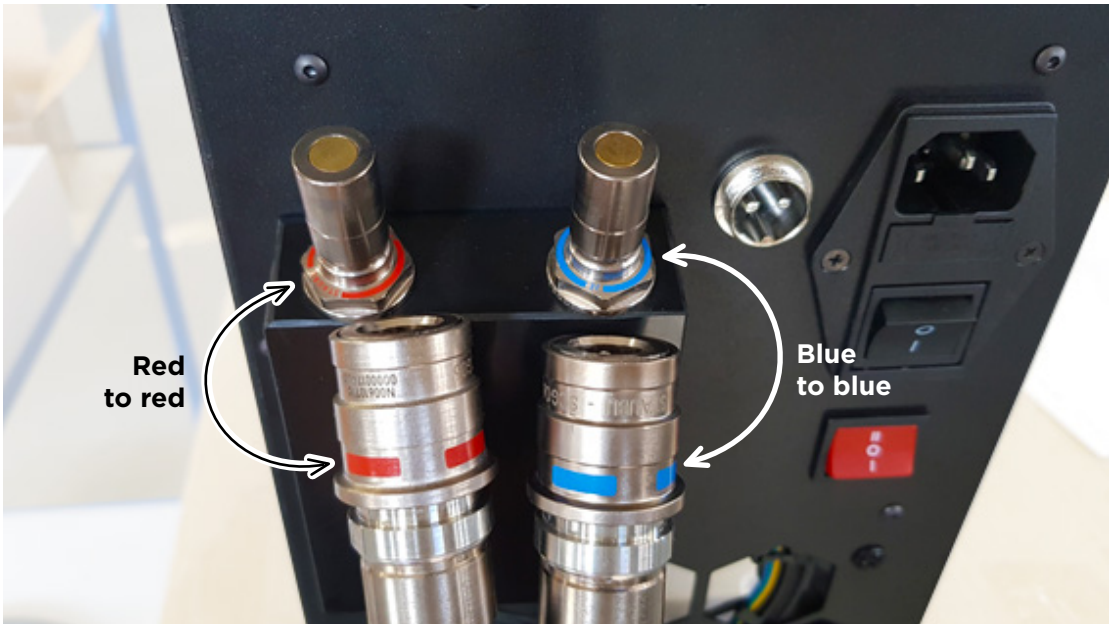


Pic.1

2. SETTING UP

2.1 Place both devices in a 4U rack or on an even horizontal surface. When installing in a 4U rack, it is advisable to place the freecooler under the main unit.

2.2 Connect the devices with hoses in accordance with the color coding on the Quick Disconnect Couplings (QDC) (see Pic.2). Respectively connect blue to blue and red to red QDC on the devices and hoses. QDC should be installed tightly, until a typical click.

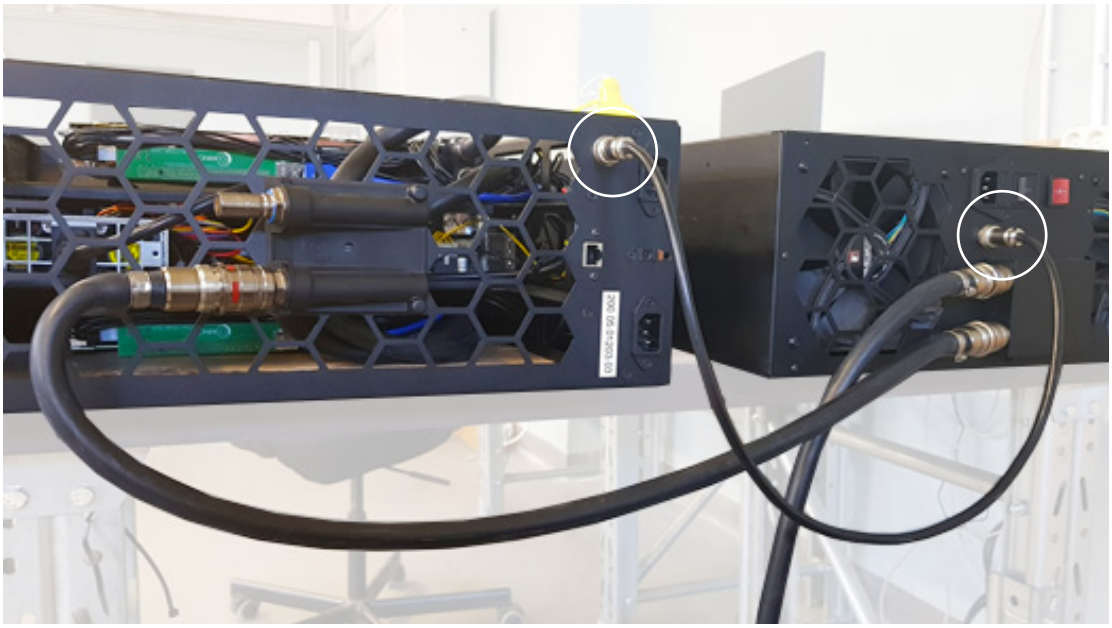


Pic.2

2. SETTING UP

2.3 Connect the freecooler to the main unit using the supplied switching cable (see Pic.3).

Please note that in rev 1.02, the sync cable connectors have 8 contacts. The cable must be securely connected to both freecooler and main unit, the metal retaining rings must be twisted on both sides to ensure the cable screen is in electrical contact with the grounded housing.



Pic.3

WARNING

IT IS FORBIDDEN TO TURN ON THE MAIN UNIT WITHOUT CONNECTING THE FREECOOLER TO IT!

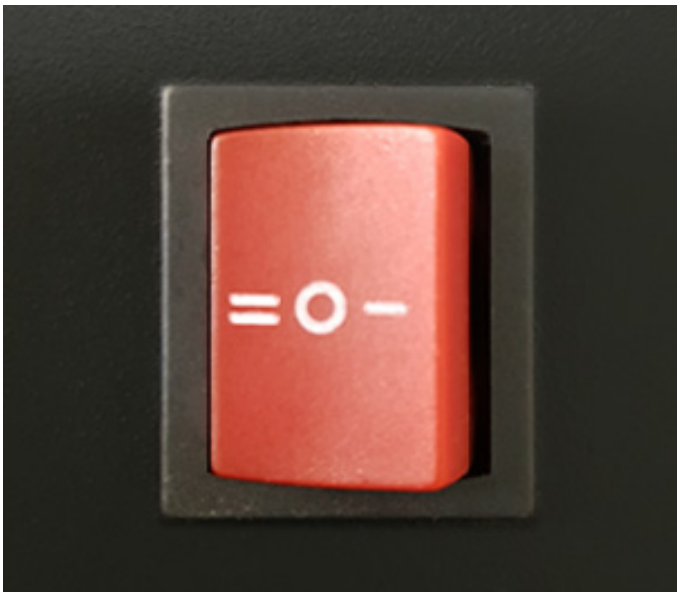
2.4 Connect a power cable to both units of the complex (freecooler and main unit) (see Pic.4)

Pic.4

WARNING

THE FREECOOLER MUST BE CONNECTED TO ELECTRICAL GRID BEFORE TURNING ON THE COMPUTING UNIT. AN UNCONNECTED FREECOOLER UNIT CAN CAUSE DAMAGE TO THE COMPLEX!

2.5 Applicable only for rev 1.01. Set the 3-position button (see Pic.5) on the free-cooler to position Ⅰ if the air temperature in the operating room is <18°C, to position Ⅱ if the temperature is >18°C. Please note that in rev 1.02 coolers are controlled by the built-in controller instead of 3-position button.



Pic.5

2.6 Applicable only for rev 1.01. Make sure that the freecooler power button is in position Ⅰ

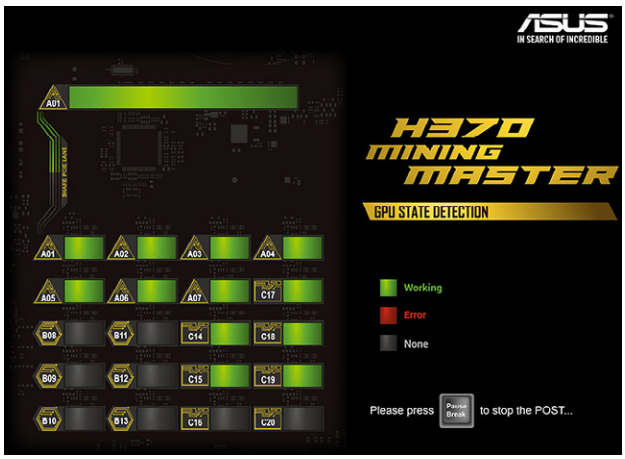
2.7 Connect the monitor and keyboard to the computing unit.

3. STARTING UP THE DEVICE

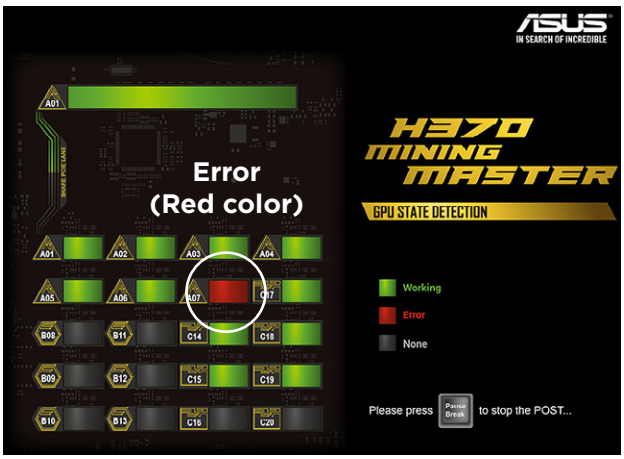
3.1 Push the start button on the front panel of the main unit to switch the device on. The freecooler should turn on automatically. Fans should start rotating. If for some reason the freecooler does not start, immediately turn off the main unit.

3.2 A diagnostic screen saver for card definition in the BIOS should appear on the connected monitor (see Pic.6).

3.3 Make sure all 12 cards are displayed in green, if any card is marked in red (see Pic.7) find the faulty card according to the connection slot numbers in the BIOS screen.



Pic.6



Pic.7

WARNING

TO REPAIR A FAULTY GPU, DISCONNECT THE MAIN UNIT FROM THE POWER SUPPLY.

3. STARTING UP THE DEVICE

DANGER

IT IS STRONGLY FORBIDDEN TO START REPAIRING A DEVICE WHICH IS CONNECTED TO ELECTRICAL GRID.

THE LIST OF ACTIONS IN CASE OF GPU FAILURE

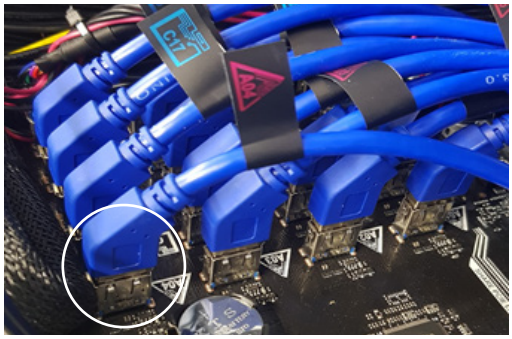
3.4.1 Try to re-plug the motherboard — GPU connecting cable (see Pic. 6-7). The number on the cable and on the card corresponds to the number displayed in the BIOS diagnostic message.

3.4.2 Re-plug the GPU riser. Do it after carefully removing the protective adhesive tape from the Pci-e connector.

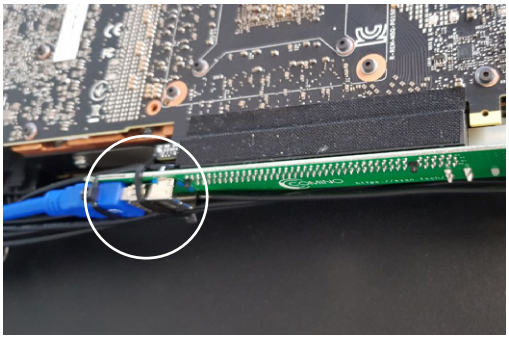
3.4.3 Check the condition of the riser/GPU power cables.

3.4.4 Disconnect the main unit and reconnect power.

3.4.5 If none of the abovementioned steps help, contact your Comino representative for troubleshooting.



Pic.8



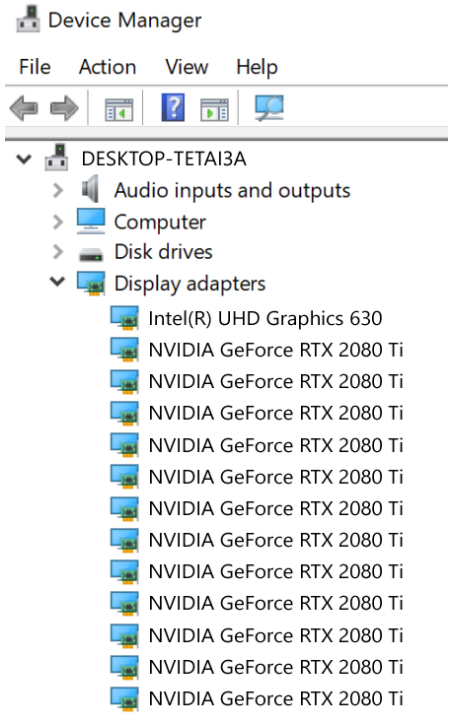
Pic.9

After each of the above mentioned steps, connect the computing unit to the electrical grid and try to switch it on.

3. STARTING UP THE DEVICE

3.5 In case all the cards were initially determined correctly, wait for the pre-installed operational environment to load.

3.6 After loading the OS, go to the device manager (right button click on the “My computer” icon or right button click on the “Start” icon in the lower left part of the Windows desktop) and make sure that all 12 cards are displayed correctly without errors (see Pic.10).



Pic.10

3.7 If in the manager any GPU is marked with a yellow triangle, delete it from the devices list by pressing the right button on an erroneously working GPU — (RMB on the faulty GPU — remove the device) and reboot the operating system.

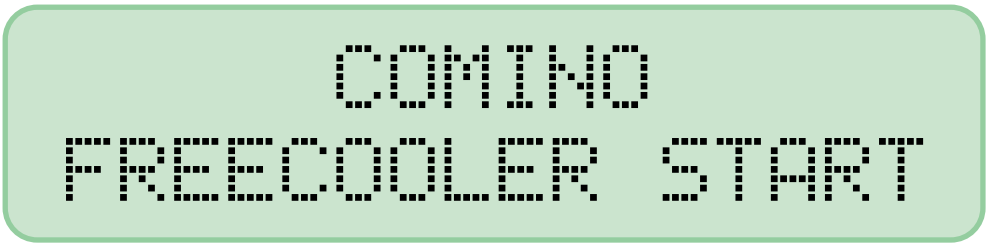
3.8 If after rebooting and re-installing the drivers automatically the card in the device manager continues to display with an exclamation mark, you should contact your Comino representative to fix the problem.

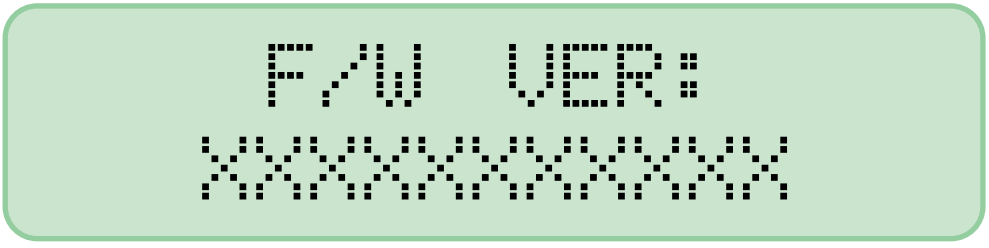
4. FREECOOLER OPERATION (rev. 1.03)

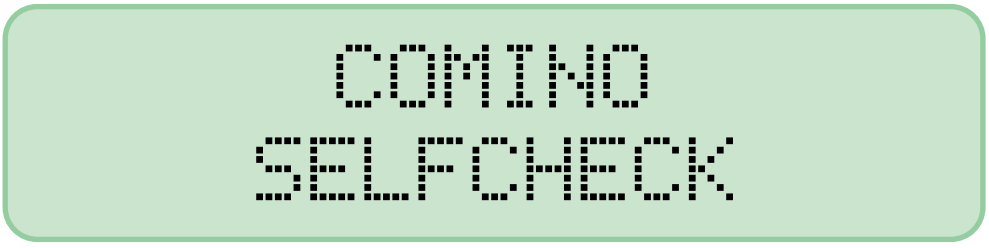
4.1 Starting, self-diagnostic and errors

The preliminary stage, performed only when freecooler is powered first time or after power loss recovery. In case of performing a Computing unit regular shutdown without removing the connection voltage, the freecooler automatically goes into standby mode until it is turned on again.

Self-diagnostic.
When freecooler is powered, the self-diagnostic procedure begins and the display successively shows:

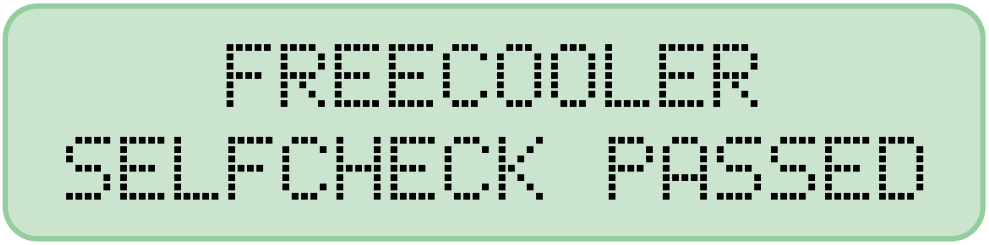




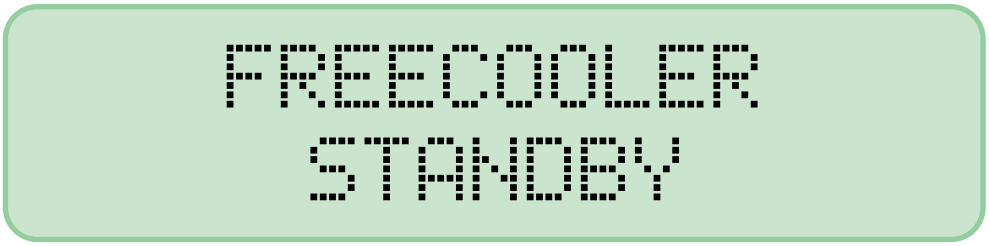


4. FREECOOLER OPERATION

Upon successful completion of the self-diagnostic procedure, the display successively shows:

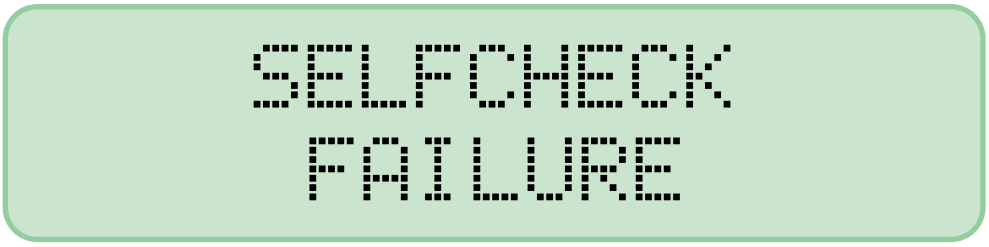


Further on, the unit goes into standby mode.



Self-diagnostic errors.

In case of error detection or occurrence, the display cyclically shows information about the error itself and the following message and proceed to error display:

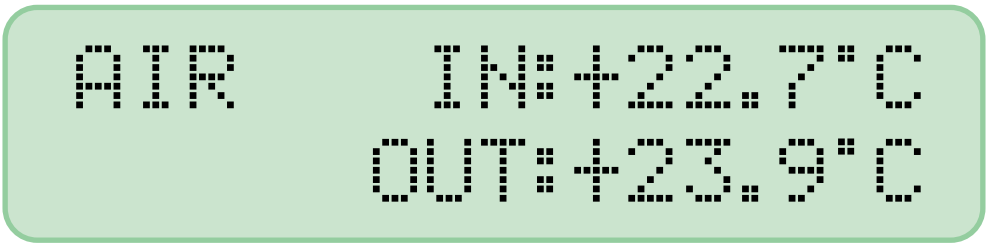


4.2 Main part

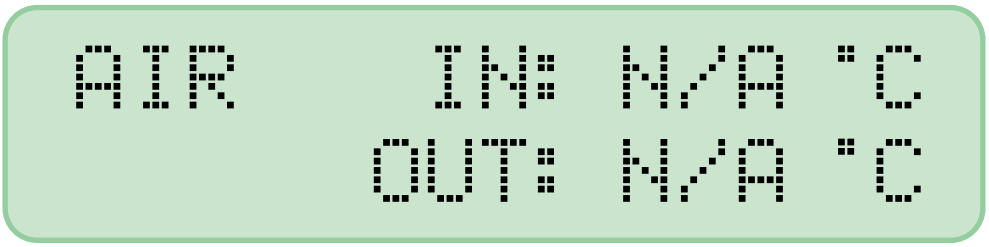
The execution of the main part begins when a power-on confirmation signal from the Computing Unit is received. This signal informs freecooler about the motherboard complex start and the launch of the entire system. When switching to this operating mode, all connected fans and pumps go into operating mode and are set to 100%. The freecooler controls the working order of internal components and acceptable operating modes, the display shows information according to the User's choice. For the sake of convenience, the displayed information can be scrolled using the illuminated buttons of the cooling module.

Information available for showing on the display:

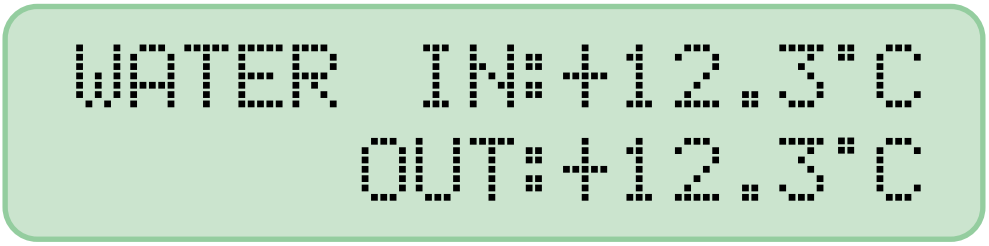
- T °C of air inlet and outlet of the system (2 sensors):



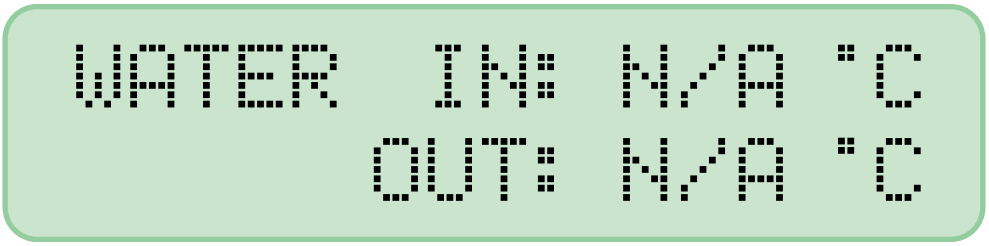
- T °C of air with disconnected sensors or out of range values:



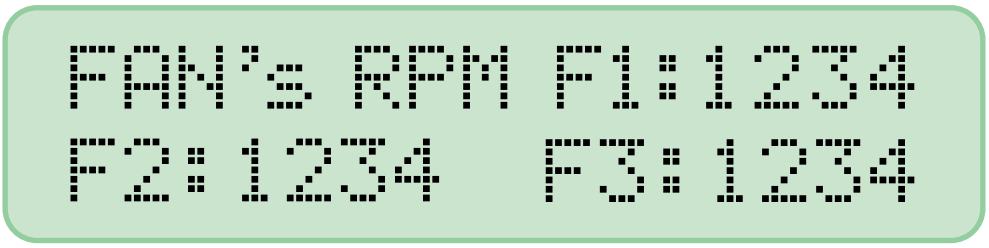
- T °C of cooling liquid inlet and outlet of the system:



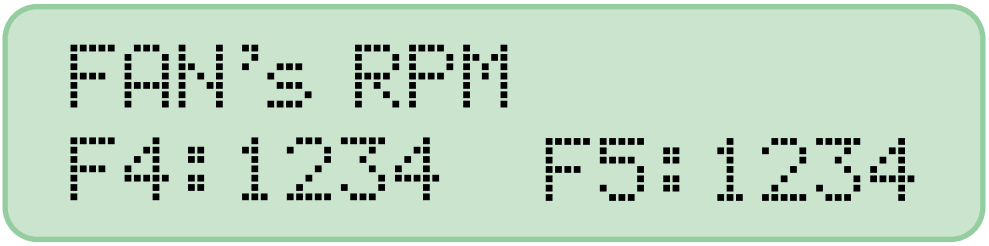
- T °C of cooling liquid with disconnected sensors or out of range values:



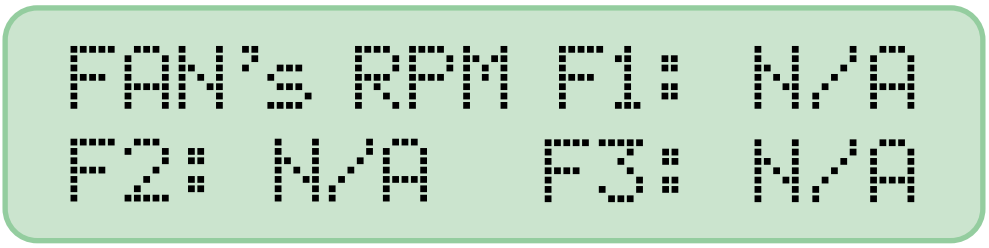
- RPM of front fans 1-3:

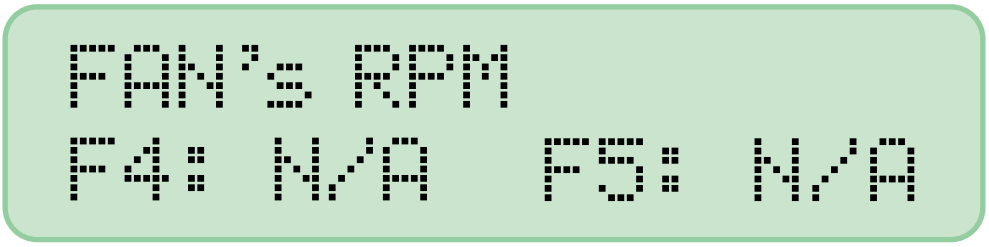


- RPM of backside fans 4-5:

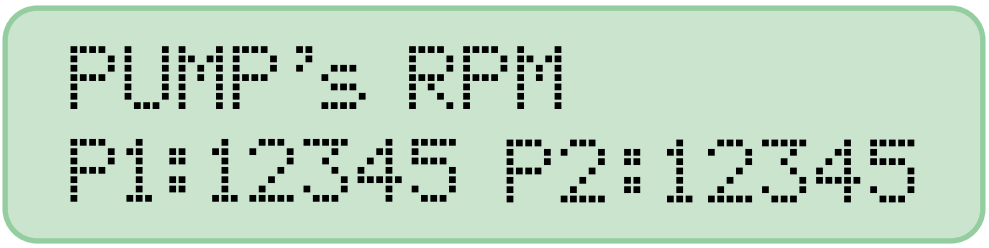


- Fans signal loss or in case of out of range values:

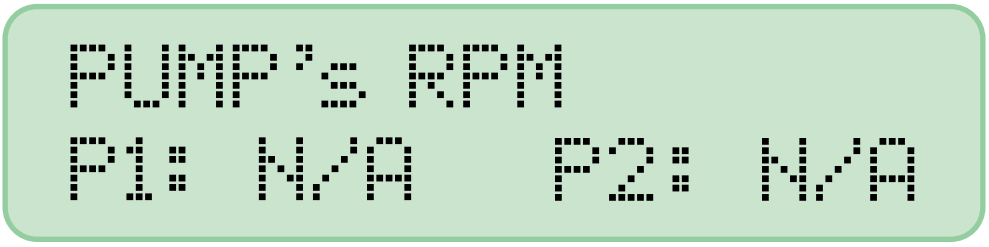




- RPM of pumps 1-2:



- Pump signal loss or in case of out of range values for pumps:



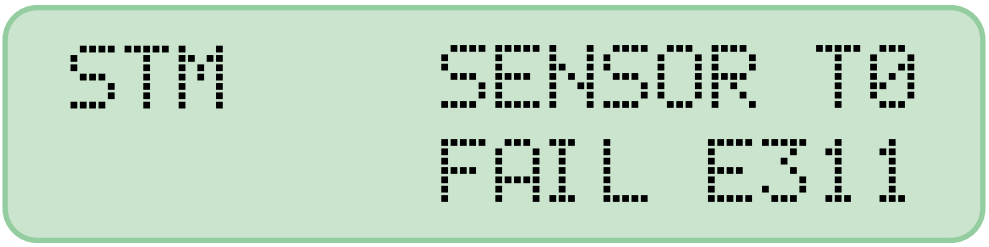
4.3 Possible accidents during operation and self-diagnostic

If an alarm occurs, the System continues to work, information with a description and an alarm code is displayed, and a warning sound signal is turned on.

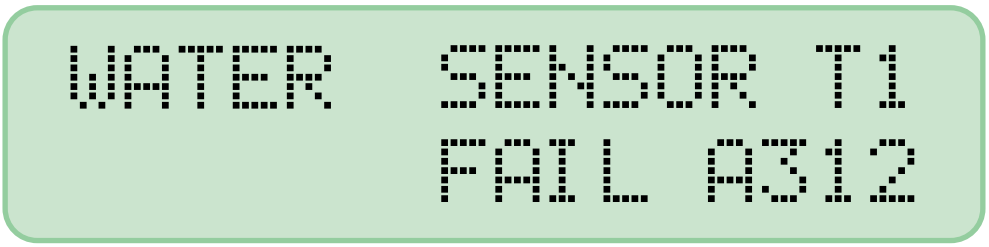
In case of an error, the operation of the Computing Unit is stopped by the freecooler command with or without delay, depending on the emergency nature. The freecooler blocks the possibility of Computing unit manual control, information with a description and an error code is provided on the display, and an audible alarm.

Temperature sensors accidents

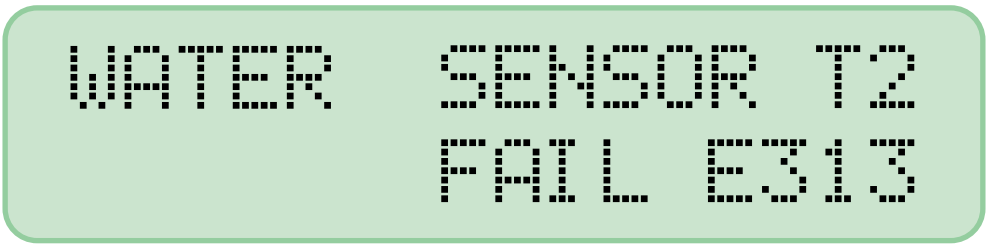
- Error: T0 sensor fault (Built-in to STM32):



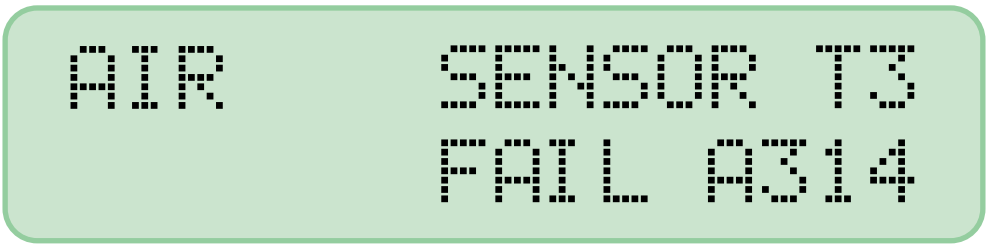
- Alarm: T1 sensor fault (Liquid inlet):



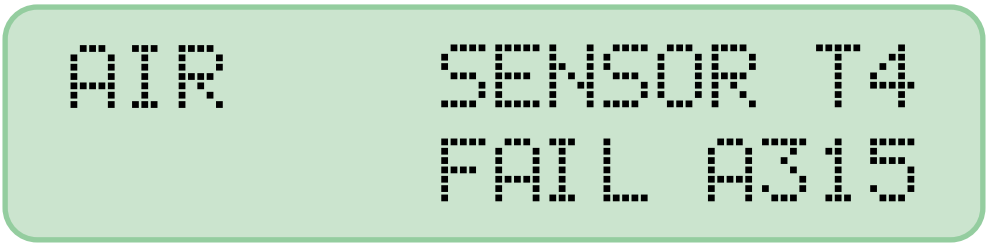
- Error: T2 sensor fault (Liquid outlet):



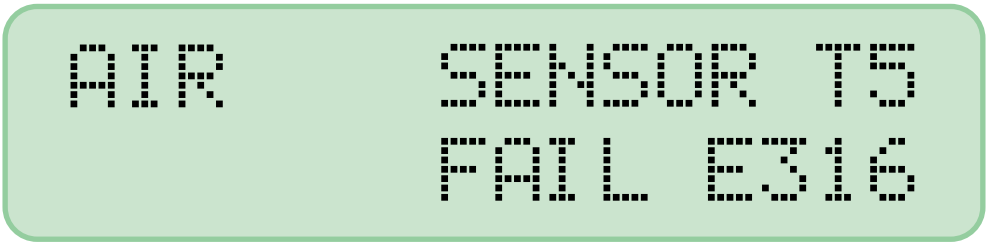
- Alarm: T3 sensor fault (Air inlet):



- Alarm: T4 sensor fault (Air outlet):

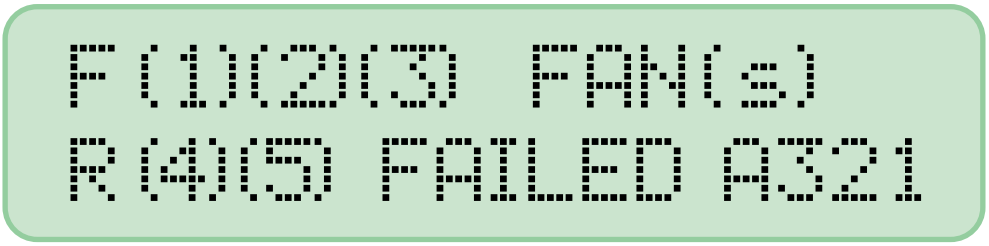


- Error: T5 sensor fault (Built-in I2C):

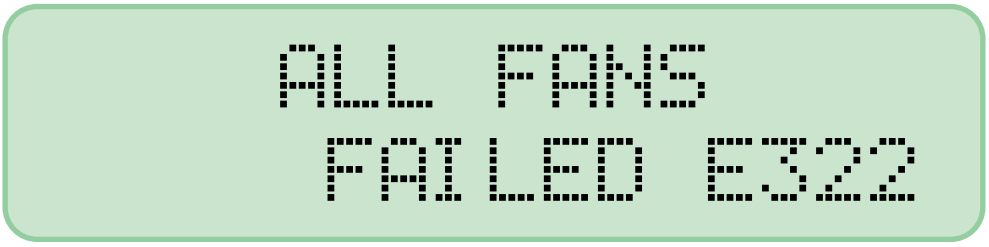


Fans and pumps.

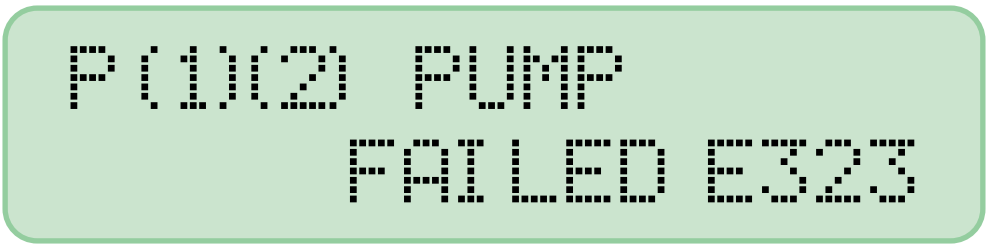
- Alarm: 1-4 fans fault:



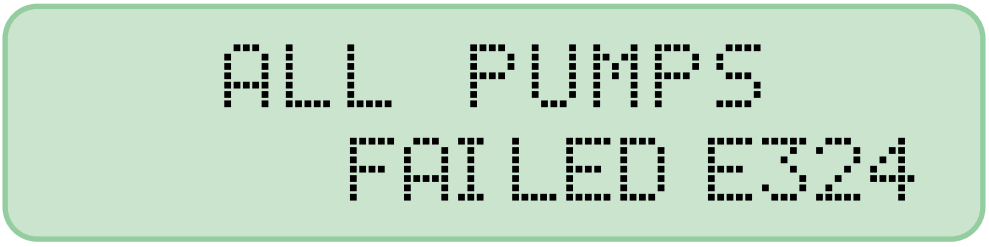
- Error: all 5 fans fault:



- Error: 1 pump fault:

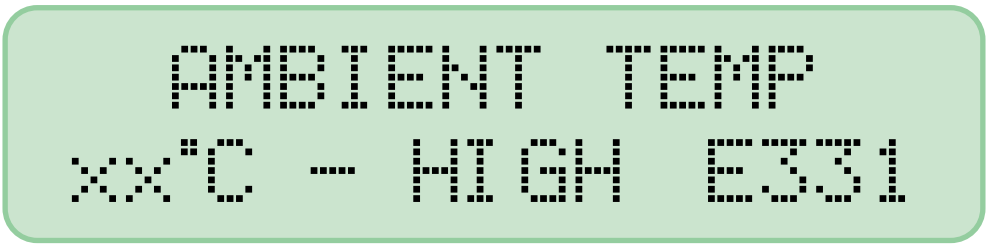


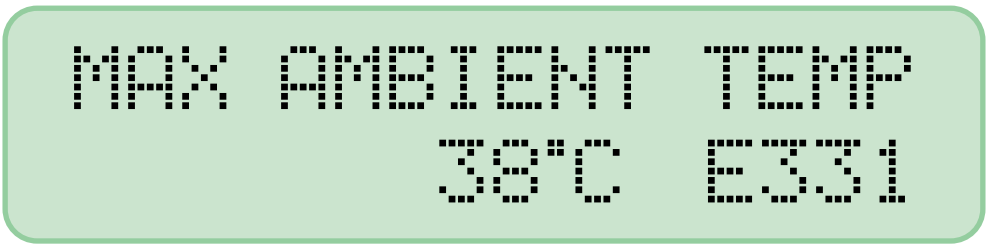
- Error: both pumps fault:



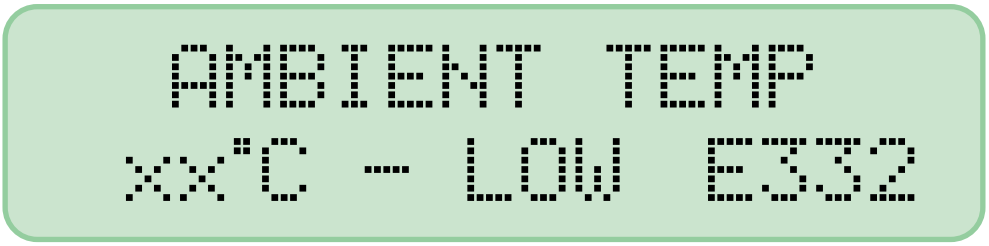
Operational reasons

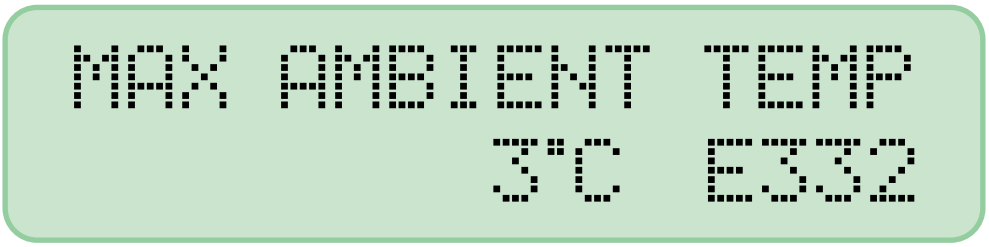
- Error: T3 excess allowed maximum (Air inlet):





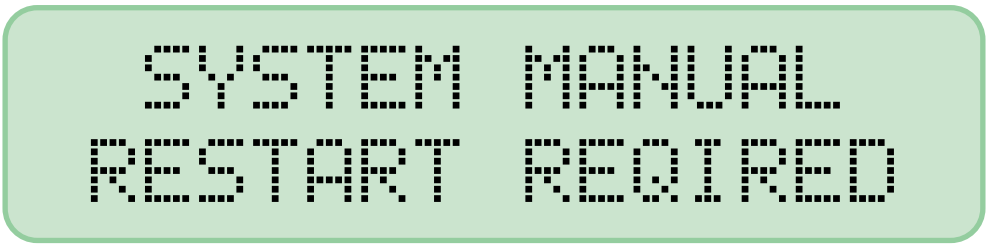
- Error: T3 below allowed minimum (Air inlet):





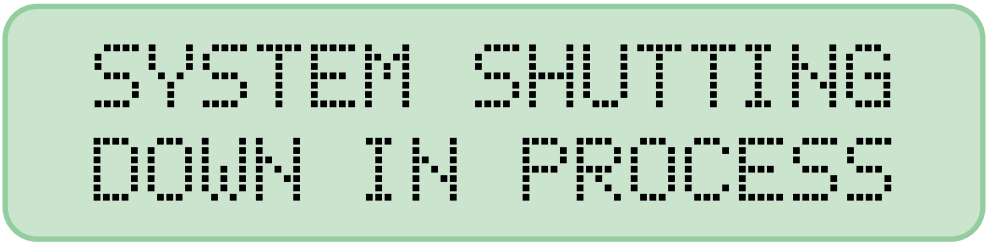
- Error: T2 excess allowed maximum (Liquid outlet):

- Error: No signal from the Computing unit:



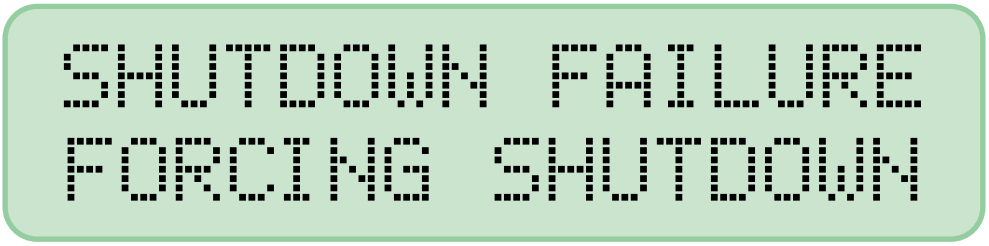
4.4 **Shutdown procedure**

- Normal (the computing unit is switched off by user)

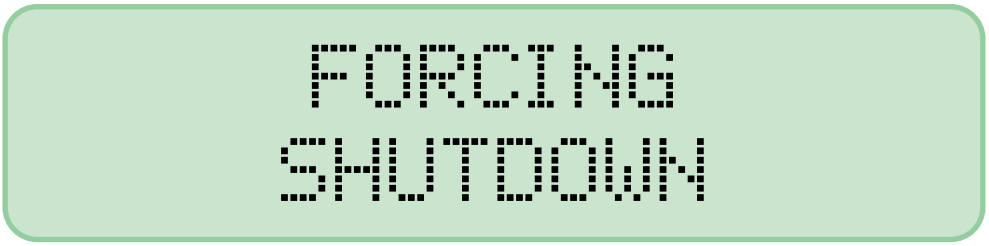


Via Computing Unit command.

- Delayed:



- Emergency:



With further computing unit reboot.

It is performed only when the computing unit is switched off due to accidents with unacceptable coolant or ambient air temperatures.

The preceding light and sound alarms remain, freecooler blocks the possibility of Computing unit manual control until the cause of the shutdown disappears.

4.5 Usage of Freecooler Control Buttons

When you press the **left button**, the screen scrolls to the left.
When you press the **right button**, the screen scrolls to the right.
By simultaneously pressing and holding **both buttons** for 2 seconds sound alarm goes off.

Freecooler Control Buttons illumination:

- **In the process of self-diagnostics:**
  the backlight of both buttons flashes simultaneously with a delay of 1 second on / 1 second off.
- **In case of error or accident:**
  the button illumination flashes alternately 1 sec on / 1 sec off.
- **In normal mode:**
  the backlight of both buttons shines continuously.
- **In standby mode:**
  the backlight of the buttons goes out slowly for 2 seconds. / slowly turns on for 2 seconds.

4.6 Sound alerts

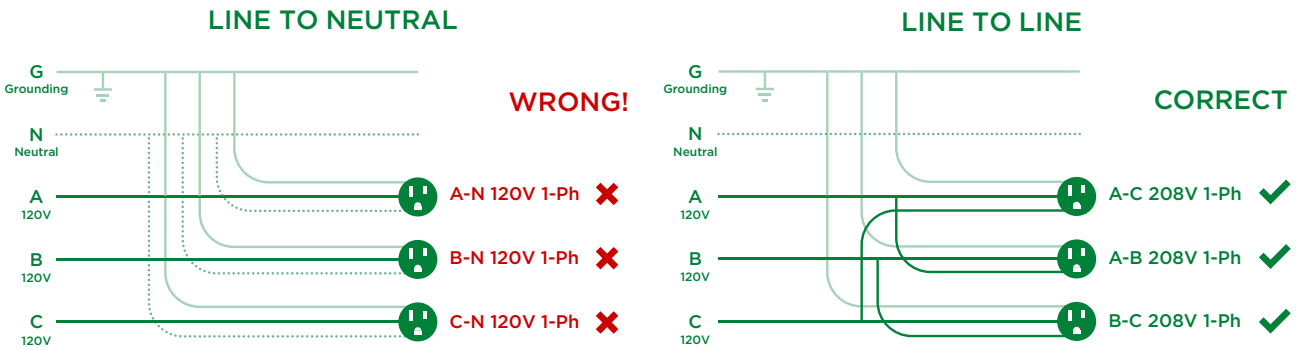
In case of error: intermittent sound signal. It is possible to disable the sound by simultaneously holding both of the buttons for 2 seconds.
In case of an accident: continuous sound signal. It is disabled only when the Computing unit is completely turned off.

5. POWER SUPPLY UNIT

5.1 Your system includes Comino Energia power supply unit (PSU) containing 3 power modules (PM), 1600W each.

Each PM supports line to line 208V AC connection (US standard) (see Pic.11)

US Standard 3-Phase Connection Scheme



Pic.11

IMPORTANT

Electricity works must be coordinated with a certified electrician. Unauthorized works can cost you your life.

The created line-to-line connection must only be used to connect Decryptum PR 2080Ti/12 4U and must not be used in everyday life.

5. POWER SUPPLY UNIT

ATTENTION

EACH POWER MODULE SHALL OPERATE WITHIN LIMITED INPUT VOLTAGE RANGE AS DEFINED IN TABLE 1.

5.2

	MIN	RATED	MAX	UNITS
AC input voltage	200	200-240	264	VAC
Frequency	47	50-60	63	Hz
DC input voltage	192	240-336	400	VDC
Input current	<10A@200-240VAC/160-340VDC @full load			

Table 1

5.3 **Starting Current**

Maximum starting current for each PM is 35A. Please consider this when designing your power supply network.

5.4 **Branch circuit breakers**

If one branch is supplying 2 or 3 PMs, please use C25 circuit breaker.

For supplying each PM separately, please install C16 circuit breaker in each branch.

5. POWER SUPPLY UNIT

5.5 Line Fuse

Each PM is supplied with a fast blow type fuse in the live line input wire. It protects PM from short circuit inside PM.

Line fuse is resistant to starting current or inner protection circuits. In case line fuse is blown up, please check internal components of the PM for damages or contact the developer.

5.6 Efficiency

Power Supply Unit is certified with 80 Plus Platinum level certificate of efficient energy use. Maximum efficiency reaches 94% at 50% load.

5.7 Grounding

The output connector ground pins should be connected to the safety ground (power supply enclosure). This grounding should be well designed to ensure passing the max allowed common mode noise levels. The power supply should be provided with a reliable protective earth ground. All secondary return circuits should be connected to protective earth ground.

5.8 LED Indicators

PM front panel is supplied with a LED-lamp to indicate its status (see Pic 12).

Check Table 2 (next page) for details.

Pic.12

5. POWER SUPPLY UNIT

LED COLOR	POWER SUPPLY STATUS
Green	Normal operation, status OK.
Green, flashing (approximately every second)	Standby mode.
Green, slow flashing (approximately every 3 seconds)	Low power mode (saves energy).
No color	No input power
Orange, flashing (approximately every second)	⚠ **Attention required!** Warning events: high temperature warning, fan fail warning, over current warning.
Orange	⚠ **Attention required!** AC cord unplugged or DC power lost.
Orange	⚠ **Attention required!** Power supply critical event causing a shutdown: UVP, OVP, OCP, OTP*.

* — Under Voltage Protection, Over Voltage Protection, Over Current Protection, Over Temperature Protection.

Table 2

6. POWER MODULES REPLACEMENT

6.1 Comino Energia Power Modules are server-oriented hot swap power modules. They work in parallel meaning all the workload is divided among them. In case one of the PMs is redundant or out of order the system continues working as the workload is divided between the remaining working PMs.

To replace the PMs unplug the power cord, hold the blue lever and pull it (see Pic.13). Pull out the non-working PM. Replace it with working PM and plug the power cord. Check that the green LED-indicator is on. Under normal conditions (20ºC) a non-working module can be replaced within 15 minutes from its failing safe without shutting down the entire system.

Pic.13

7. LIQUID COOLANT

7.1 Your device contains liquid for cooling system. It is a viscous, nearly odorless colorless liquid with very low toxicity.

INFORMATION ON INGREDIENTS

INGREDIENTS	CONCENTRATION
Distilled Water	75%
Propylene glycol	25%

The freezing point is -10°C (14°F).

The flash point is 118°C (244°F).

WARNING

LIQUID COOLANT MUST BE USED IN COOLING SYSTEMS ONLY. DO NOT USE IN BEVERAGES, FOOD, OR IN ANY OTHER APPLICATION.

7.2 **Maintenance**

It's recommended to replace the coolant at least every 2-3 years, or immediately if there is any change in color or clarity. To replace the coolant please contact the manufacturer.

WARNING

THE COOLING SYSTEM'S PUMP CAN NOT BE RUN DRY FOR ANY PERIOD OF TIME. NEVER POWER-ON THE COMPUTING DEVICE OR COOLING SYSTEM WITHOUT SUFFICIENT LIQUID IN THE RESERVOIR. DRY-RUNNING MIGHT DAMAGE THE PUMP AND IS NOT COVERED BY COMINO PRODUCT WARRANTY.

7. LIQUID COOLANT

7.3 Handling coolant

WARNING

MAY CAUSE IRRITATION TO THE SKIN AND TO THE EYES. ALWAYS WEAR PROTECTIVE GLOVES, CLOTHING, AND EYE PROTECTION WHEN CONTACTING WITH COOLANT. WASH HANDS THOROUGHLY AFTER HANDLING COOLANT. IN CASE OF EYE CONTACT RINSE THOROUGHLY WITH PLENTY OF WATER.

IF IRRITATION REMAINS, CONSULT A MEDICAL DOCTOR IMMEDIATELY.

WARNING

COOLANT IS ELECTRICALLY CONDUCTIVE. USE CAUTION WHEN REFILLING THE SYSTEM, AND KEEP ALL LIQUIDS AWAY FROM ELECTRONICS AND POWER CABLES.

7.4 Unfreezing the coolant

The freezing point of coolant is -10°C (14°F). It is highly **not recommended** to allow coolant freezing in the device. This might damage the system and is not covered by Comino product warranty. In case you see signs of freezing do not start up the device. Contact the manufacturer immediately.

DECRYPTUM

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