

Cleartex

Cleartex Core

User guide

Version: 0.2.0



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Document revisions

Version	Date	Description
0.2.0	2026-09-16	• Updated images of front panel and IO modules. • Updated information about Main PWR and PoE PWR • Added information about LEDs and buttons
0.1.0	2026-09-09	First document version

1. Safety guidelines

1.1 Intended use

National and international standards, regulations and safety measures must always be taken into account.

Device described in this manual is intended for industrial applications.

Product can be used only in original condition. Modifications and extensions are not permitted.

Cleartex excludes liability for damage of any kind resulting from the use of Cleartex products in any intended way.

1.2 Protection against electrostatic discharge

Electrical assemblies can be damaged by electrostatic discharge (ESD) and must be handled accordingly:

- Do not touch connector contacts of interfaces
- Do not touch connector contacts of connected cables
- Do not touch connector contacts during connecting of interfaces
- Always connect all interfaces only in OFF state and zero voltage level

1.3 Operation

To minimize the risk of damage, death or injury, the equipment must be always properly grounded using CHASSIS pin on power connector.

The presence of aggressive gasses in the environment can result in malfunctions. In combination with high temperature and relative humidity, aggressive gasses - for example with sulfur, nitrogen and chlorine components - trigger chemical processes that can very quickly impair or damage electronic components. Blackened copper surfaces and cable ends in existing installations are indicators of aggressive gasses.

2. Device description

2.1 Technical data

	Specification
	Main properties
Cooling	Integrated cooling fans. Air intake on top. Exhaust on front panel.
Operating system	Windows 11 (64-bit), Windows 10 (64-bit), Linux Ubuntu, Linux Mint, other Linux distributions
Operating temperature	0 to 60°C (non-condensing humidity)
Storage temperature	-20 to 80°C (non-condensing humidity)
Transport temperature	-20 to 80°C (non-condensing humidity)
Enclosure	Aluminium
Weight	3.15 kg
Mounting	DIN rail mounting, 6 mounting orientations
Power voltage	19-24 VDC, PSU rated 10 A recommended
Power consumption	Depending on processor option and load, power consumption ranges from approximately 100 to 140 W.
Lifetime	45000 h (max. temperature 45 °C)
	Dimensions
Width	202 mm
Depth	206 mm
Height	77.2 mm
	Controller
CPU	Option 1: Intel Core i3-14100, 4 cores up to 4.7GHz Option 2: Intel Core i5-14400, 10 cores (6P+4E) up to 4.7GHz Option 3: Intel Core i7-14700, 20 cores (8P+12E) up to 5.4GHz Option 4: Intel Core i9-14900, 24 cores (8P+16E) up to 5.8GHz Other options available (e.g. T-series low power variants)
RAM	16, 32 or 64 GB DDR5
Graphics	NVIDIA Quadro T1000, GDDR6 4GB
Interfaces	4×USB 3.2 Gen1 2×Gigabit Ethernet 1×PoE port (PoE+ 802.3at, up to 30 W) 2×DisplayPort 1×audio line-out optional I/O module (Inputs, outputs, advanced communication, etc.)
	Storage
HDD	256, 512 GB or 1 TB SSD

Table 1: Technical data

2.2 Operating system

- Windows 10 IoT
- Windows 11 IoT
- Linux Mint
- Without operating system

2.3 Dimensions

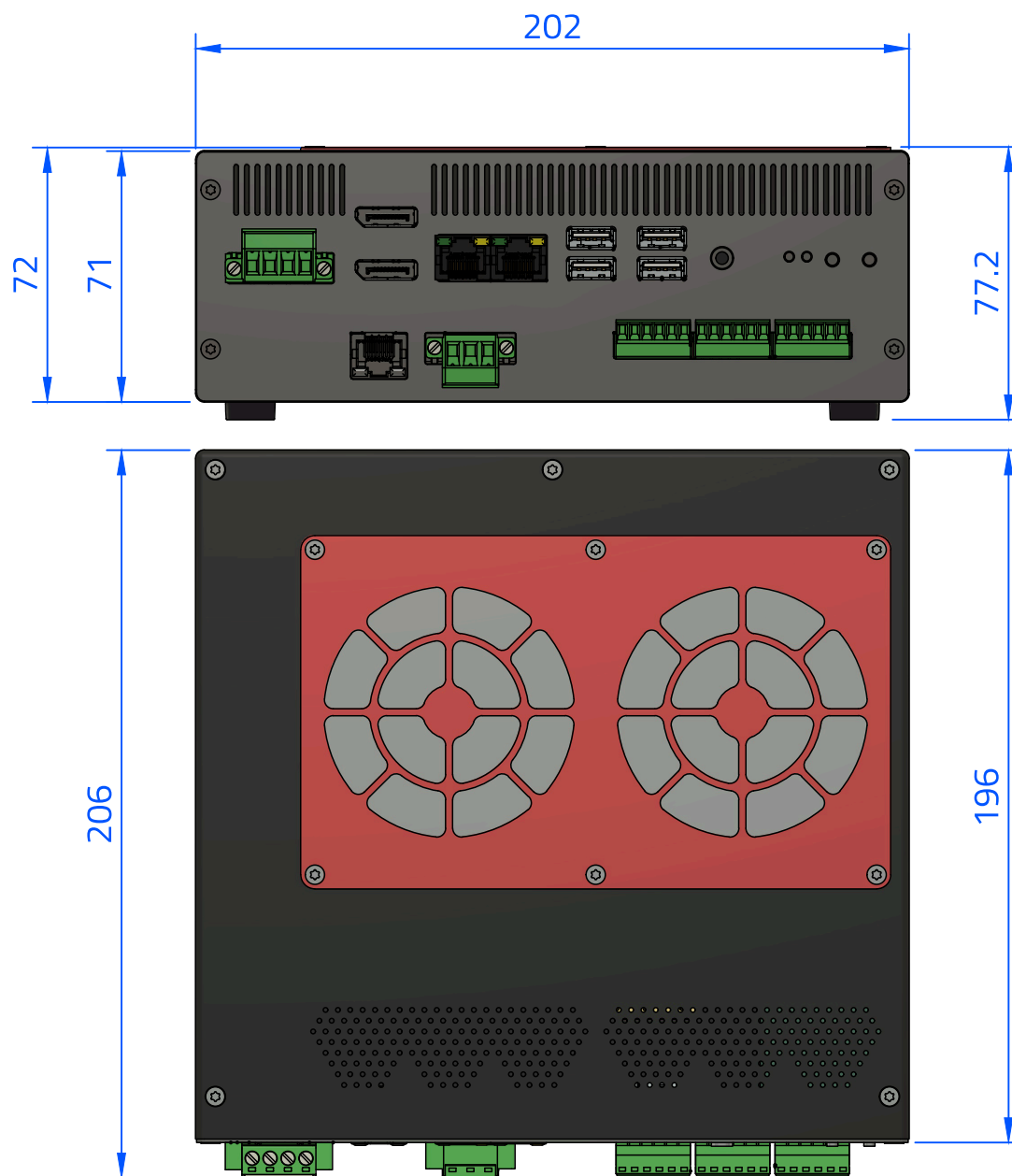


Image 1: PC dimensions

2.4 Interfaces

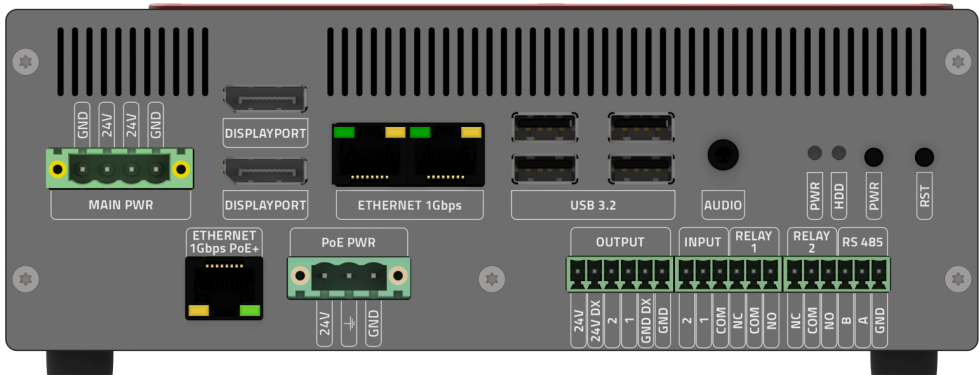


Image 2: PC interfaces (with IO-1 module)

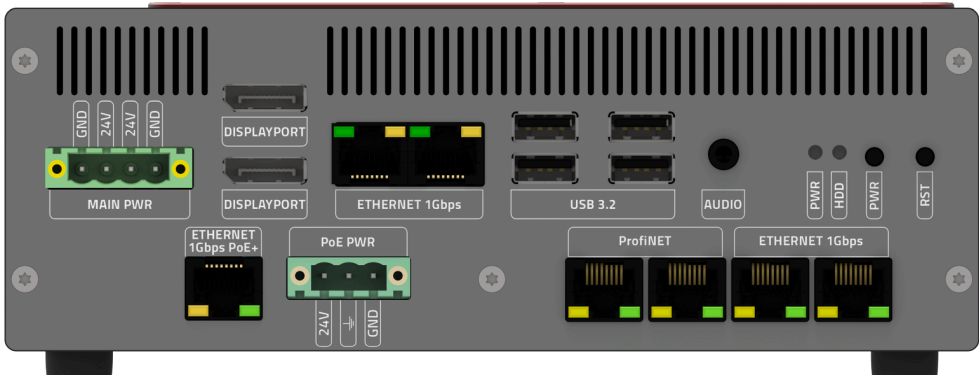


Image 3: PC interfaces (with IO-2 module)

Main unit interfaces are listed in table below. Number specifies quantity of given interface available.

	Quantity
USB 3.2 Gen1	4
Gigabit Ethernet	2
PoE+ port (802.3at, up to 30 W)	1
DisplayPort	2
Audio line-out	1
I/O expansion	1 (optional module)

Table 2: Interfaces table

2.4.1 Power connectors

Main PWR: Power input: 19-24 VDC, PSU rated 10 A recommended, mating connector Phoenix PN# 1778001.
Max. power consumption: refer to corresponding table in chapter [Technical data \(page 7\)](#)

PoE PWR: Separate power input dedicated to the PoE+ port, independent from the Main PWR connector. Mating connector Phoenix PN# 1777992.

2.4.2 Status LEDs and buttons

Two status LEDs and two buttons are located on the front panel:

- **PWR LED:** power status indicator
- **HDD LED:** storage activity indicator
- **PWR button:** power on/off
- **RST button:** hardware reset

2.4.3 I/O expansion

The slot for installing I/O expansion modules is located under the front panel. Modules are not interchangeable — the module type must be selected at order time according to application requirements. The modules themselves are described in a separate chapter [I/O Modules \(page 12\)](#).

2.5 Temperature/humidity

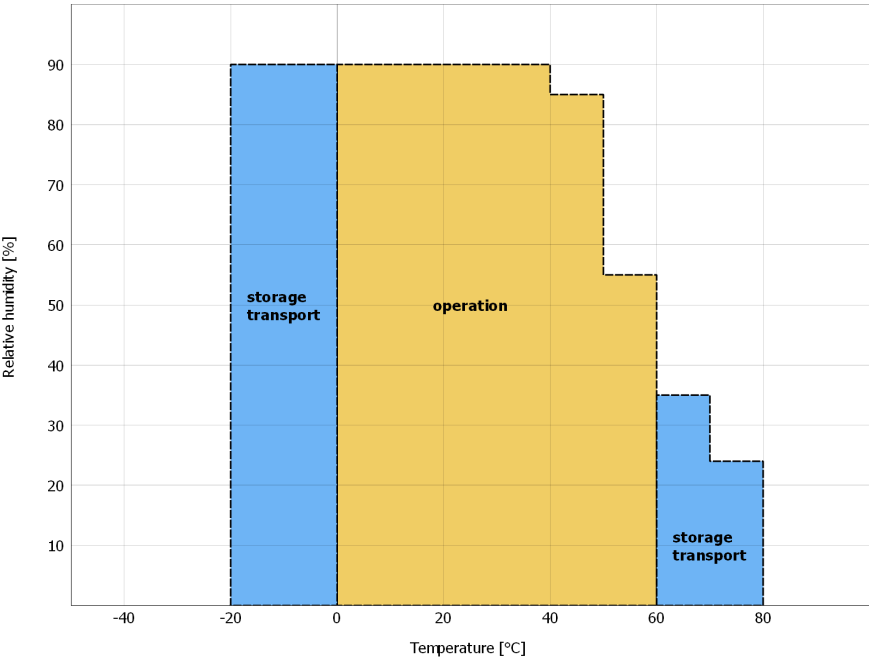


Image 4: Temperature and humidity

3. I/O Module Options

Device can be expanded using different modules described in this chapter. Customer modules can be developed - contact Cleartex for more information.

3.1 IO-1 (DI, DO, relays, RS485)

Module have separate power, two inputs, two outputs and two relays. The module additionally provides RS485 interface.

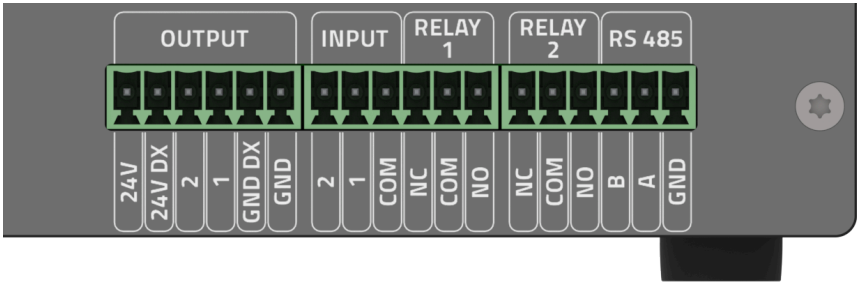


Image 5: IO-1 - inputs, outputs, relays, RS485

I/O characteristics:

- **Outputs:** 24 V, 150 mA output current, configurable as PNP, NPN or PUSH-PULL
- **Inputs:** opto-isolated, maximum voltage 24 V
- **Relays:** maximum switching voltage and current 0.3 A at 125 VAC / 1 A at 30 VDC

I/O module interface consists of three separate connectors. Connectors are marked A, B, C when viewed from back of device.

Mating connectors: Phoenix PN# 1757051.

Connector	Pin	Descripton
A	24V	Main unit PWR (can be used to bypass main unit PWR to I/O module PWR)
	24V_DX	I/O module PWR
	OUT2, OUT1	I/O outputs
	GND_DX	I/O module GND
	GND	Main unit GND (can be used to bypass main unit GND to I/O module GND)
B	IN1, IN2	I/O inputs
	IN_COM	Inputs common
	NC1, COM1, NO1	Pins of relay 1
C	NC2, COM2, NO2	Pins of relay 2
	485_B, 485_A, 485_GND	485 communication lines

Table 3: Default I/O module pins description

3.2 IO-2 (ProfiNET, ethernet)

Module provides two ProfiNET and two 1 Gbps ethernet connectors.

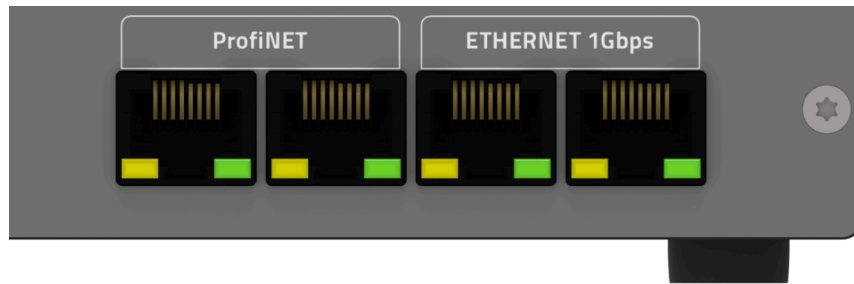


Image 6: IO-2 - profinet + ethernet

4. Installation

Device is mounted on a DIN rail. Six mounting orientations are possible in total.



Image 7: Three mounting orientations shown; rotating the device 180° around the rail gives the remaining three.

5. Communication protocols

This chapter provides the technical description and communication protocols for a device consisting of two primary components:

- Main Unit
- IO Module

5.1 Main Unit

Main unit provides following interfaces and services for communication with external and in-built devices:

- Physical Ethernet interface
- Modbus TCP server
- UDP Discovery protocol

5.1.1 Physical ethernet

Two ethernet sockets on main unit provides physical ethernet interface for connection with external networks and devices. Interfaces are displayed in network settings and support DHCP or static IP configuration.

5.1.2 Modbus TCP Server

The Modbus TCP server is used for reading main unit device information. Implemented functions are 0x3 and 0x6 from protocol definition: <https://www.modbus.org/file/secure/modbusprotocollspecification.pdf>.

- IP: dynamic, according to network configuration
- Port: 502
- Slave Address: 1

! Address used in the tables is physical address on the bus.

Read-only registers (function 0x3)		
Address	Name	Description
40100	Firmware Version	Upper byte: Major, Lower byte: Minor (e.g., 0x0102 = v1.2)
40101	Build Number	Build number of the current firmware (decimal)

Table 4: Main Unit Read-only Modbus TCP Registers

Writable registers (function 0x6)		
Address	Name	Description
40001	IO Outputs	Reserved
40102	Boot Mode	0 = Application, 1 = Bootloader, 0xA5A1 triggers DFU mode

Table 5: Main Unit Writable Modbus TCP Registers

5.1.3 UDP Discovery Protocol

Discovery Protocol enables device discovery over the network using an XML-based message. The device periodically broadcasts message in following format over UDP:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
  <zeroconf version="1.0">
    <device type="C006_0600_1.0.0"
      mac="xx:xx:xx:xx:xx:xx"
      serial="SERIAL_NUMBER"
      userstring="USER_STRING"
      firmware="FW_VER"
      mode="bootloader">
      <ip version="4"
        address="192.168.0.2"
        netmask="255.255.255.0"
        gateway="192.168.0.1" />
      <protocols>
        <protocol type="ETHIO" port="6008"/>
        <protocol type="TFTP_FWIMG" port="69"/>
      </protocols>
    </device>
  </zeroconf>
```

5.2 IO-1 module

The IO Module provides additional IO interfaces and acts as a Modbus TCP server.

Modbus TCP Server properties:

- Static IP: 192.168.200.1
- Port: 502
- Slave Address: 1

Address	Name	Description	Read/write
40001	Output Status	Bit 0: Digital Out 1, Bit 1: Digital Out 2, Bit 2: Relay 1, Bit 3: Relay 2	Read/write
40002	Input Status	Bit 0: Input 1, Bit 1: Input 2	Read

Table 6: IO-1 Module Modbus TCP Registers

6. Directives and declarations

6.1 CE marking

All directives applicable to the respective product and their harmonized EN standards are met.



6.2 EMC Directive

Requirements of EMC Directive 2014/30/EU are met:

- EN 61131-2:2007** Programmable controllers - Part 2: Equipment requirements and tests
- EN 61000-6-2:2005 + AC:2005** Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- EN 61000-6-4:2007 + A1:2011** Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

7. Ordering

Example ordering number:
CC-32G-i5.14400-512-001-W11

Breakdown:

