



USER MANUAL

Issue 1

**NEW
PRODUCT**



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KD10

**PROCESS RECORDER
WITH TOUCH SCREEN**

SUBJECT TO CHANGE WITHOUT NOTICE

This datasheet superseded all previous versions – please keep for future reference

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1. General specification

1.1. Purpose of the recorder

The KD10 screen recorder is used as a data collection station in systems measurement and control. It is used to measure, visualize, and control parameters of technical processes in various industries e.g. food and chemical. and papermaking. It can also be used as a standalone measuring and recording device.

The KD10 screen recorder is designed to measure voltage, current, temperature, resistance changes, and other quantities converted into a signal or electrical parameter. Communication interfaces (Ethernet, RS-485) can also be used as a source of measurement data. It contains all the processes appropriate for the measurement system: measurement of input signals, their processing, visualization and archiving of data, signaling and communication with the environment.

Processed measurement data is saved in internal memory and on an SD card.

1.2. Device characteristics

- Intuitive operation via touchscreen and Linux-based graphical user interface;
- 5.6" TFT color LCD screen, 640x480 pixels;
- communication interfaces: Ethernet 10/100 Base-T, Modbus TCP/IP Slave, Modbus TCP/IP Master, RS-485 Modbus Slave, RS-485 Modbus Master (depending on the version);
- IP54 housing protection from the user's side;
- time zone selection, automatic summer/winter time change, synchronization with time server;
- recording archive data on an SD card;
- server WWW and FTP;
- digital signature for archived data stored in SQLite3 or CSV format;
- alarm and audit log;
- ability to update firmware;
- dedicated visualization in the form of, among others: digital, analogue and trend displays;
- extensive mathematical functions.

1.3.Safety of use

Attention! Removing the recorder's casing during the warranty period will invalidate the warranty. Before removing the recorder's casing, turn off the power and disconnect the measuring circuits.

- The assembly and installation of electrical connections should be performed by a qualified person.
for the installation of electrical devices.
- Before powering up the recorder, check that the connections are correct.
- The device is intended for installation and use in industrial electromagnetic environmental conditions.
- The building installation should have an on/off switch or circuit breaker located near the device and easily accessible to the operator and appropriately marked.

1.3.1. Warning and information signs

One or more of the following symbols may be used on the recorder and in the materials supplied with the device:

	Note: Please pay attention to the description in the device's user manual.
	Protective conductor clamp.
	Warning: the device is live.
	Protection of electrostatic sensitive systems (ESD).
	Waste electrical and electronic equipment (WEEE). Dispose of in accordance with law.

1.3.2. Operational safety

The KD10 recorder meets the safety requirements for electrical measuring instruments for automation according to PN-EN 61010-1 and the requirements for immunity to disturbances occurring in an industrial environment according to PN-EN 61000-6-2 and PN-EN 61000-6-4.

Incorrect connection of power supply, communication interfaces, measurement signals, and the use of equipment that does not comply with the description in this manual and the above standards may result in damage to the recorder.

1.3.3. Notes on device installation

The KD10 recorder is subject to various interference sources from the power supply network, either continuously or pulsed, which overlap with the measured signal (mainly due to the operation of other devices). High-intensity interference is particularly dangerous to the device's operation, as it can sporadically cause erroneous measurement results or accidental alarm triggering. The main factor preventing this is the recorder's installation on the site in such a way that the level of the above-mentioned interference is reduced to a value below the immunity threshold of the device.

In this regard, it is recommended to follow the following recommendations:

- do not power the recorder from the mains near devices that generate high impulse interference in the power supply network and do not use common grounding circuits with them;
- signal cables should be shielded;
- the connections of communication interface circuits should be individually shielded, with twisted cables;
- all cable screens should be grounded on one side at the recorder;
- avoid sharing a ground wire with other devices;
- apply the general rule that wires (bundles) carrying different signals should be routed as far from each other as possible, and intersections of such bundles should be made at an angle of 90°;
- do not disassemble the recorder's casing. Any repairs or changes to the device's equipment should be performed by authorized persons;
- the assembly and installation of electrical connections should be performed by a person authorized to install electrical devices;
- device security measures may be less effective in the event of operation contrary to the manufacturer's instructions and the principles of good engineering practice;
- place the supplied ferrite filter on the power cable (near the recorder).

1.3.4. ESD precautions

The semiconductor elements used in the construction of the recorder may be damaged. as a result of static electricity discharge (ESD).

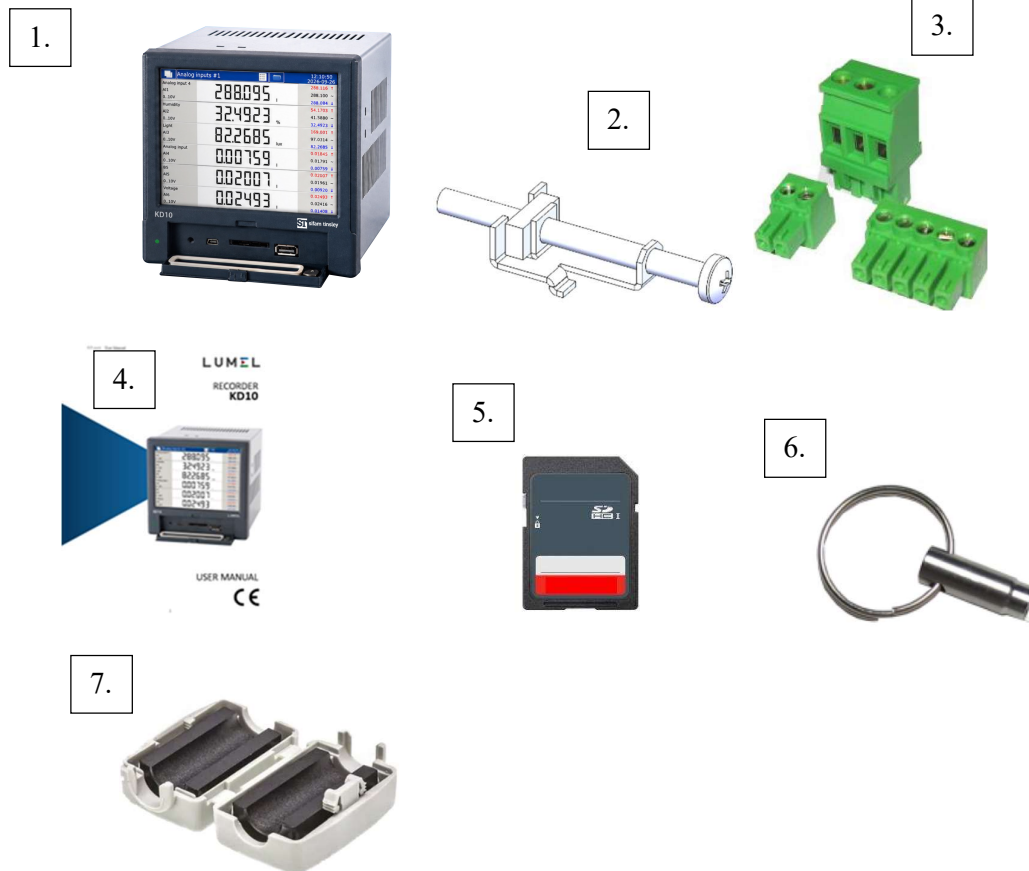
To prevent this from happening during service work, please follow these recommendations:

- dismantle devices only in an area protected against electrostatic discharge;
- in the work area, use conductive materials to dissipate electrostatic charges;
- for storing electronic components and packages, use only antistatic packaging;
- do not keep materials susceptible to generating electrostatic charges in the work area.

1.4. Recorder kit

The set includes:

- | | |
|--------------------------------------|---|
| 1. KD10 recorder | 1 pc. |
| 2. Bracket for mounting in the board | 1 set (4 pcs.) |
| 3. Plug set | 1 set (quantity depends on the execution) |
| 4. Quick start guide | 1 pc. |
| 5. SD memory card | 1 pc. |
| 6. Key | 1 pc. |
| 7. Ferrite filter | 1 pc. |



1.5.Construction of the recorder

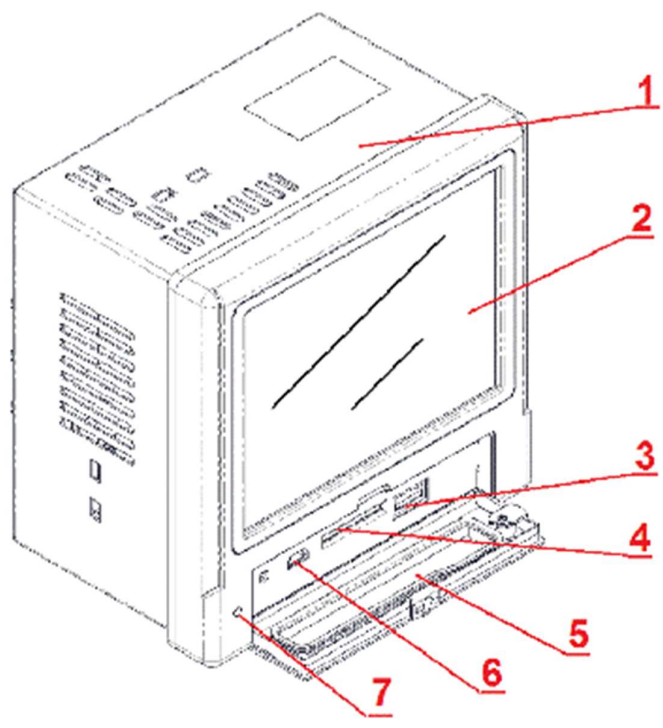


Figure 1: Device structure.

Element	Description
1	Recorder housing
2	LCD touch screen
3	USB Host
4	SD card slot
5	Door with lock
6	USB Device
7	LED diode

1.5.1. Screen

5.6-inch TFT color LCD screen, 640x480 pixel resolution, with touch panel.

1.5.2. RS-485 interface

The KD10 recorder has one or two (depending on the version) serial ports in RS-485 standard used for communication within computer systems and with other devices. The asynchronous MODBUS communication protocol is implemented on the serial link. The transmission protocol describes how information is exchanged between devices via a serial link. The implemented protocol is compliant with the Modicon PI-MBUS-300 Rev G specification.

Configuration for the RS-485 Modbus Slave serial port is in section 3.5. Configuration for the RS-485 Modbus Master serial port is in section 3.3.5.

Parameter	Description
ID	0xEF
Meter address	Values range from 1 to 247
Transmission speed	1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s, 19200 bit/s, 38400 bit/s, 57600 bit/s, 115200 bit/s, 230400 bit/s. (115200 bit/s – default)
Operating mode	Modbus RTU
Information Unit	8N2, 8E1, 8O1, 8N1. (8N2 – default)
Maximum response time	600 ms
Maximum number of registers read	122 registers – 2 bytes
Implemented functions	03, 04 – reading registers (common address space) 17 – device identification

Reading 4 16-bit integer registers, starting from the register with address 00 01 of float type (2x16 bits).

Task:

Device address	Function	Register address	Number of registers	Sum of the CRC checksum
01	04	00 01	00 04	20 0B

Answer:

Device address	Function	Number of bytes	Register values				Sum of the CRC checksum
			01	02	03	04	
01	04	08	00 0A	00 0B	00 63	00 64	AND 39

Function 03 – reading n-registers:

Read 4 16-bit registers, starting from register address 00 01.

Task:

Device address	Function	Register address	Number of registers	Sum of the CRC checksum
01	03	00 01	00 04	15 C9

Answer:

Device address	Function	Number of bytes	Value from the register				Sum of the CRC checksum
			01	02	03	04	
01	04	08	70 A4	41 CD	00 00	41 A2	55 CB

Function 17 – Device identification:

Task:

Device address	Function	Register address
01	11	C0 2C

Answer:

Device address	Function	Number of bytes	Device ID	Device status	Sum of the CRC checksum
01	11	02	IF	FF	A7 7C

1.5.3. Ethernet interface

The KD10 network parameter recorder is equipped with an Ethernet interface, enabling connection of the meter to a local or global network via an RJ45 socket. Implemented network services supported via the Ethernet interface include: web server, FTP server, and Modbus Slave TCP/IP.

Attention! Detailed information on configuring the interface on the device is described at the point 3.11. *Ethernet Configuration*.

Obtaining access to Ethernet services requires connecting the KD10 recorder to the network via RJ45 socket operating in accordance with the TCP/IP protocol located on the rear of the housing.

Description of the meaning of the diodes of the RJ45 socket of the meter:

- yellow diode- when no data is being transmitted it lights up continuously, otherwise it does not light up;
- green diode- lights up irregularly when KD10 is properly connected to the mains, otherwise it does not light up.

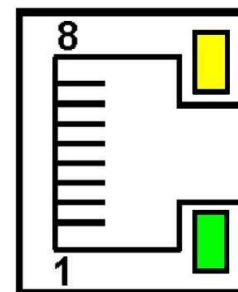


Figure 2: Ethernet

To connect KD10 to the network, it is recommended to use a twisted pair cable:

- U/FTP – twisted pair with each pair foiled;
- F/FTP – twisted pair with each pair foiled and additionally foil-shielded cable;
- S/FTP (formerly SFTP) – twisted pair with each pair foiled and additionally with a mesh screen;
- SF/FTP (formerly S-STP) – twisted pair with each pair additionally foiled in a foil screen and from the net;

Core No.	Signal	Core color according to standard	
		THIS/THIS 568A	THIS/THIS 568B
1	TX+	white and green	white and orange
2	TX-	green	orange
3	RX+	white and orange	white and green
4	EPWR+	blue	blue
5	EPWR+	white and blue	white and blue
6	RX-	orange	green
7	EPWR-	white-brown	white-brown
8	EPWR-	brown	brown

Twisted-pair cable categories according to the European standard EN 50171, minimum: Class D (Category 5) – for high-speed local area networks, covers applications using a frequency band up to 100 MHz. For the Ethernet interface, a Category 5 STP (shielded) twisted-pair cable should be used with an RJ45 plug with wire colors (in accordance with the colors described in the table) in the following standard:

- EIA/TIA 568A for both plugs with the so-called straight KD10 connection to a network hub or network switch;
- EIA/TIA 568A for the first pin and EIA/TIA 568B for the second pin in the so-called interlaced (cross) connection used, among others, when directly connecting the N100 meter to a computer.

1.5.4. USB interface

The recorder has two USB interfaces: USB Host and USB Device.

Using the USB Host interface, the user can copy files between the SD card and the device connected to the USB Host. The USB Device acts as a service port.

1.5.5. SD memory card

The standard data storage medium in KD10 is an SD card with a capacity of up to 32 GB.

Archived data (depending on the configuration) as well as alarm and audit logs are saved on the SD card.

All archived data and log files are first saved to the recorder's internal memory. After a pre-defined portion of the records has been saved or after a user-configured time has elapsed, they are transferred to the SD card.

If the KD10 does not have an SD card installed during operation, all files (currently being written and those that have already been completed) are saved in the internal memory. Once the card is mounted, all completed files will be transferred from internal storage.

Note: In the event of a power outage, a maximum of 1 MB of data stored in the internal memory is guaranteed to be retained.

1.5.6. Rear panels of the recorder

The rear panel of the recorder for the version with 18 universal measurement inputs is shown in the figure below (Figure 3).

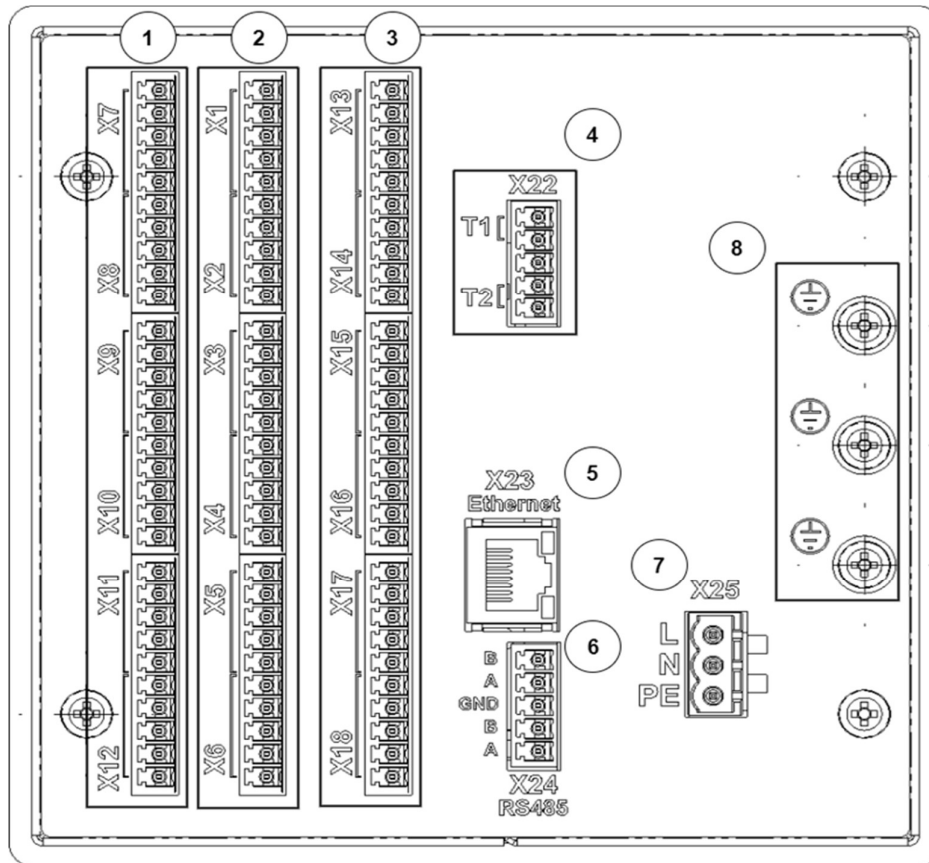


Figure 3: Rear panel of the 18-channel recorder

Element	Description
1	Slot 1 – 6 programmable measurement inputs (x7 ... x12)
2	Slot 2 - 6 programmable measurement inputs (x1 ... x6)
3	Slot 3 - 6 programmable measurement inputs (x13 ... x18)
4	Temperature and resistance measurement inputs (x22)
5	Ethernet communication interface (x23)
6	RS-485 Modbus Slave communication interface (x24)
7	KD10 recorder power supply (x25)
8	Grounding terminals for connecting PE wires

The rear panel of the recorder for versions with 12 universal measurement inputs and an expansion card (Slot 3), which differs depending on the version, is shown in the figure below (*Figure 4*).

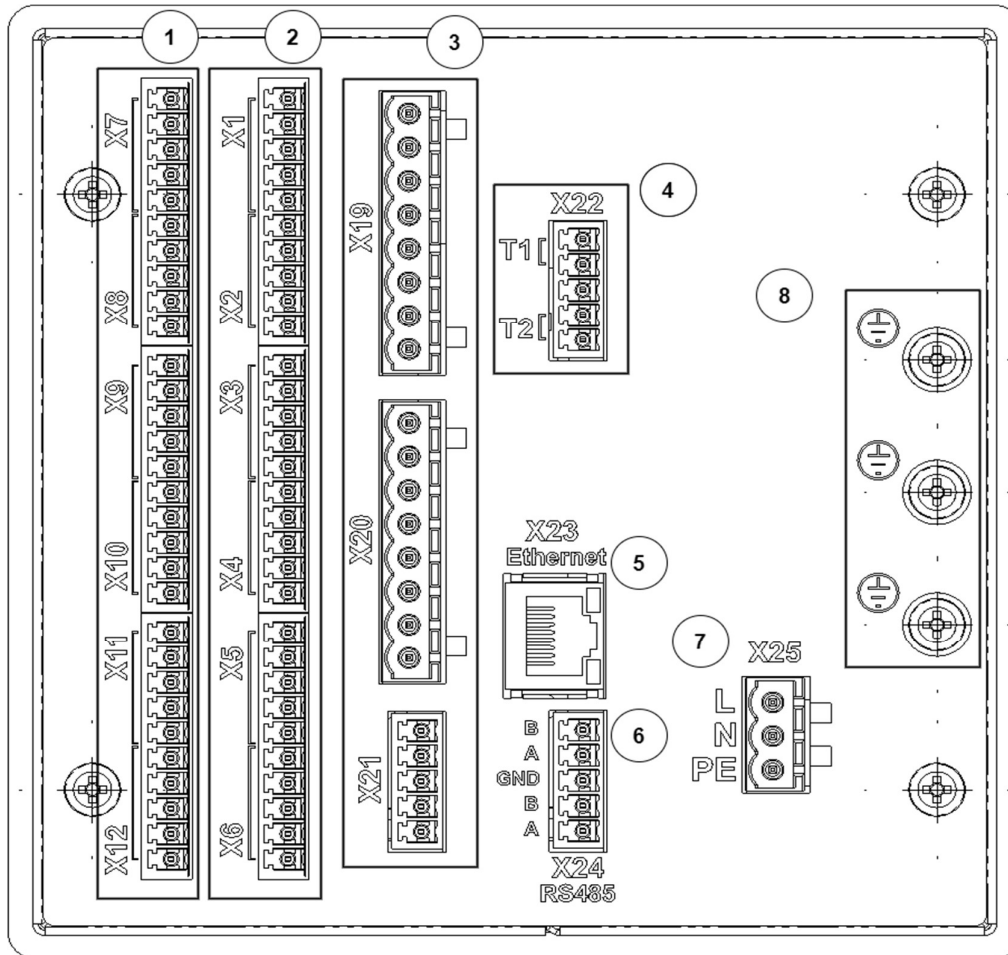


Figure 4: Rear panel of a 12-channel recorder with expansion cards

Element	Description
1	Slot 1 – 6 programmable measurement inputs (x7 ... x12)
2	Slot 2 - 6 programmable measurement inputs (x1 ... x6)
3	Slot 3 with 4 possible expansion cards (by order code): <ul style="list-style-type: none"> • 8 relay outputs (x19, x20) and RS-485 Modbus Master (x21) • 6 binary inputs (x20), 4 relay outputs (x19) and RS-485 Master (x21) • 6 binary inputs (x20), 3 analog outputs (x19) and RS-485 Master (x21) <ul style="list-style-type: none"> • 4 binary inputs (x21), 6 analog outputs (x19, x20)
4	Temperature and resistance measurement inputs (X22)
5	Ethernet communication interface (X23)
6	RS-485 Modbus Slave communication interface (X24)
7	KD10 recorder power supply (X25)
8	Grounding terminals for connecting PE wires

The rear panel of the recorder for versions with 6 universal measurement inputs and an expansion card (Slot 2), which differs depending on the version, is shown in the drawing (Figure 5).

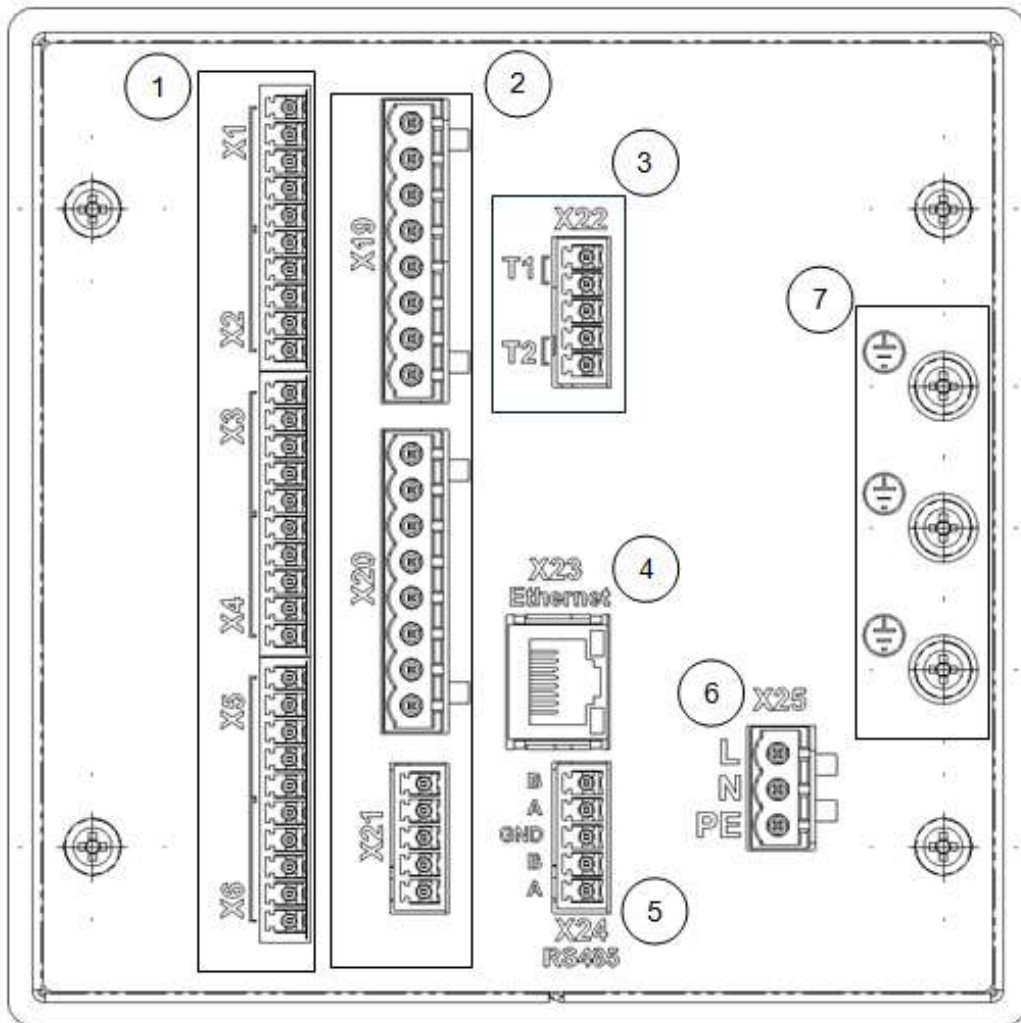


Figure 5: Rear panel of a 6-channel recorder with expansion cards

Element	Description
1	Slot 1 – 6 programmable measurement inputs (x1 ... x6)
2	Slot 3 with 4 possible expansion cards (by order code): <ul style="list-style-type: none"> • 8 relay outputs (x19, x20) and RS-485 Modbus Master (x21) • 6 binary inputs (x20), 4 relay outputs (x19) and RS-485 Master (x21) • 6 binary inputs (x20), 3 analog outputs (x19) and RS-485 Master (x21) <ul style="list-style-type: none"> • 4 binary inputs (x21), 6 analog outputs (x19, x20)
3	Temperature and resistance measurement inputs (X22)
4	Ethernet communication interface (X23)
5	RS-485 Modbus Slave communication interface (X24)
6	KD10 recorder power supply (X25)
7	Grounding terminals for connecting PE wires

The rear panel of the recorder for the versions with 12 universal measurement inputs without an expansion card is shown in the figure below (*Figure 6*).

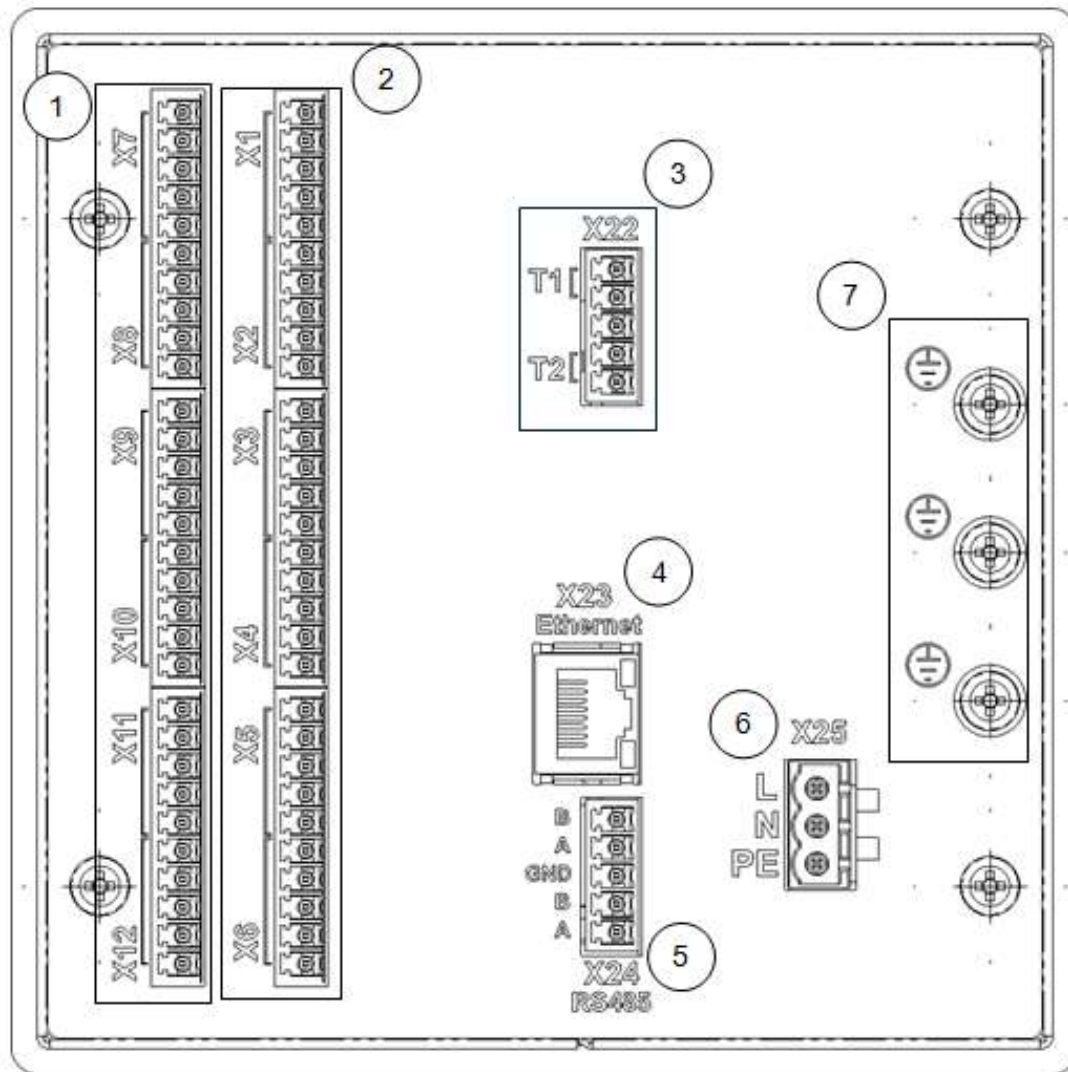


Figure 6: Rear panel of a 12-channel recorder without an expansion card

Element	Description
1	Slot 1 – 6 programmable measurement inputs (x7 ... x12)
2	Slot 2 - 6 programmable measurement inputs (x1 ... x6)
3	Temperature and resistance measurement inputs. (X22)
4	Ethernet communication interface (X23)
5	RS-485 Modbus Slave communication interface (X24)
6	KD10 recorder power supply (X25)
7	Grounding terminals for connecting PE wires

1.6.Connection diagrams

1.6.1. Universal measurement input card

1.6.1.1. Voltage signal connection diagram

Detailed measurement ranges are presented in row 14 of the “measuring ranges” table in section 9.1.

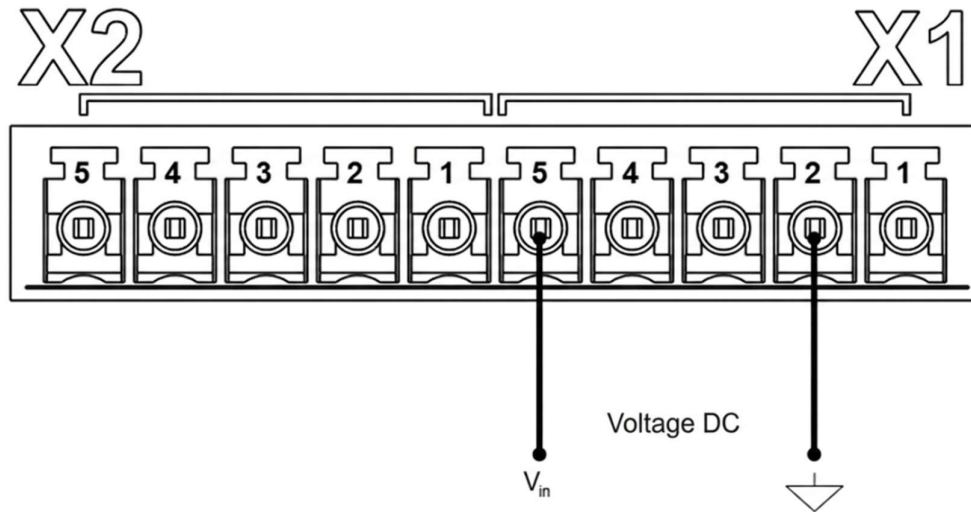


Figure 7: Connection diagram for DC voltage signals

1.6.1.2. Current signal connection diagram

Detailed measurement ranges are presented in rows 15 and 16 of the “measuring ranges” table in section 9.1.

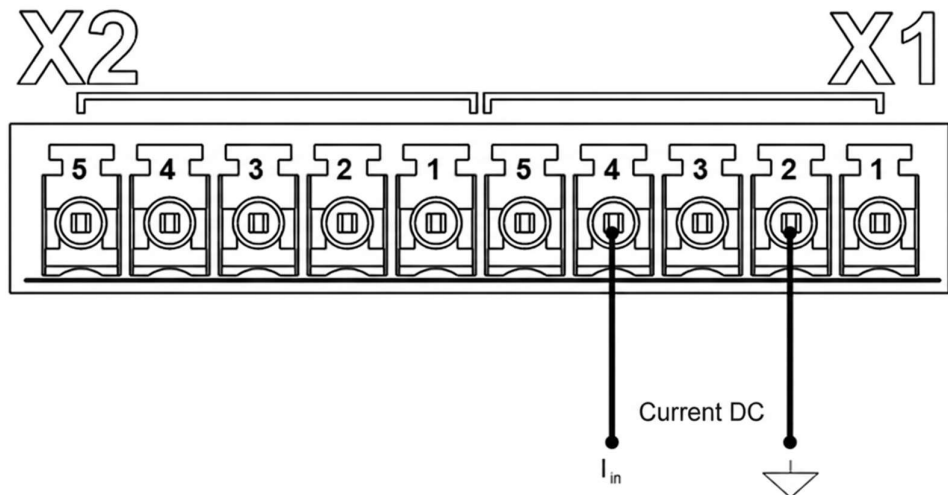


Figure 8: DC current signal connection diagram

1.6.1.3. Thermocouple connection diagram

Detailed measurement ranges are presented in lines 5-10 of the “Measurement ranges” table in section 9.1.

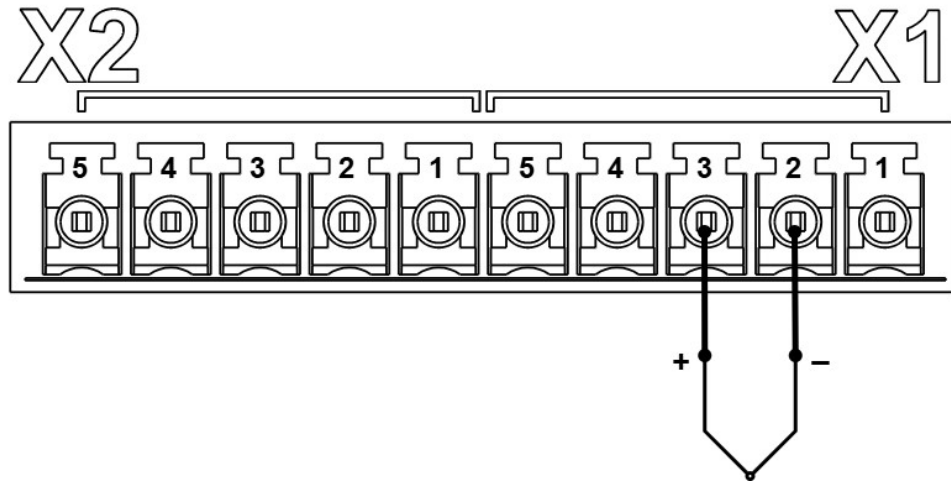


Figure 9: TC thermocouple connection diagram

1.6.1.4. Shunt connection diagram

Detailed measurement ranges are presented in lines 11-13 of the “measuring ranges” table in section 9.1.

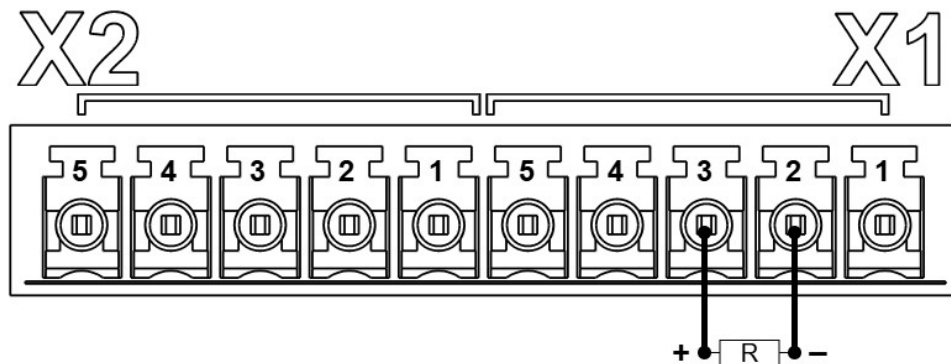


Figure 10: Shunt connection diagram

1.6.1.5. RTD resistive sensor connection diagrams

Detailed measurement ranges are presented in lines 1-4 of the “measuring ranges” table in section 9.1.

- RTD resistance sensor connection diagram - 3 wires
(manual and automatic compensation)

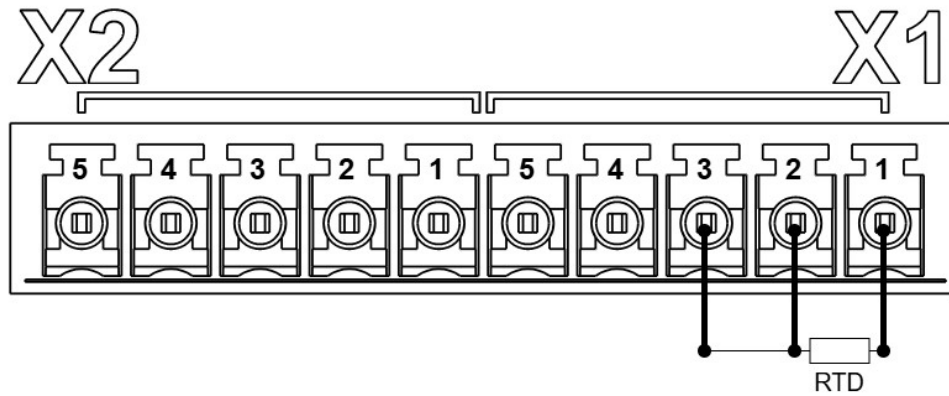


Figure 11: RTD resistance sensor connection diagram – 3 wires

- RTD resistance sensor connection diagram - 2 wires
(manual compensation)

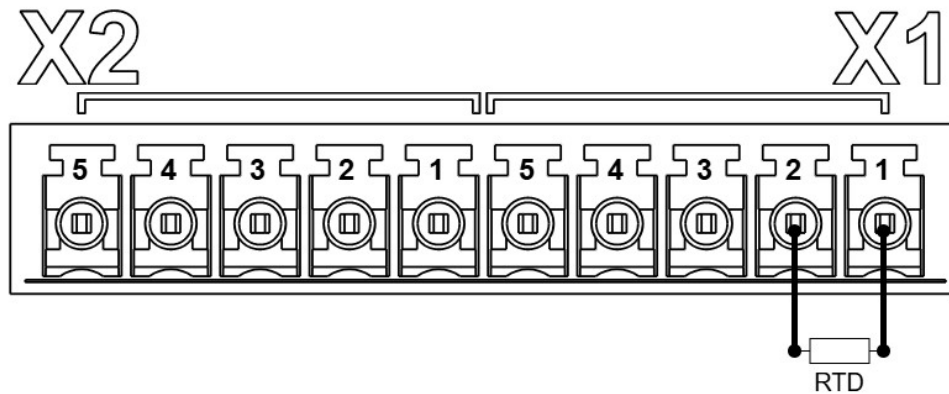


Figure 12: RTD resistive sensor connection diagram – 2 wires

1.6.2. 8-way relay output card

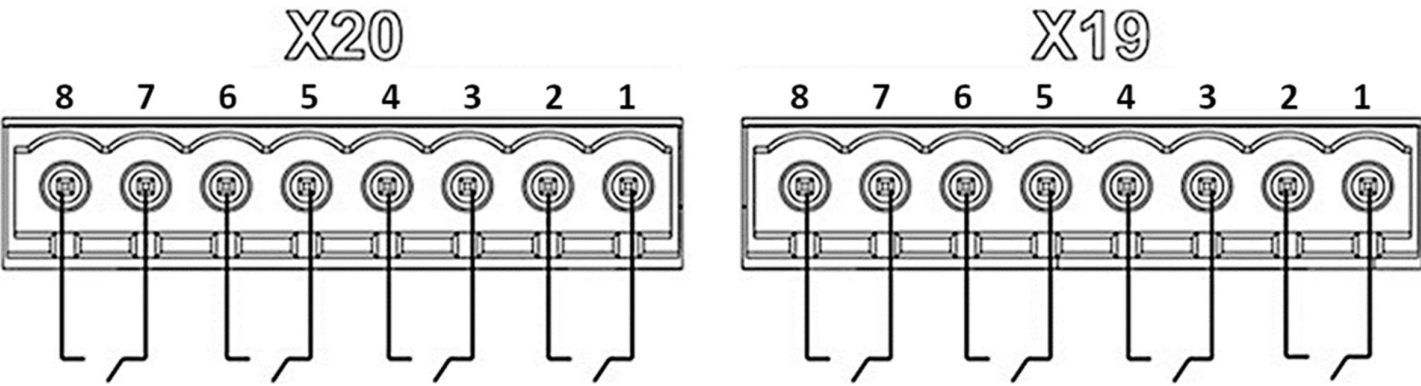


Figure 13: 8-way relay output connectors

Relay outputs are normally open (NO). Where:

X20	X19
Terminals 9-10: Output 5	Terminals 1-2: Output 1
Terminals 11-12: output 6	Terminals 3-4: Output 2
Terminals 13-14: Output 7	Terminals 5-6: Output 3
Terminals 15-16: Output 8	Terminals 7-8: output 4

1.6.3. Card with 6 binary inputs, 4 relay outputs

1.6.3.1. Connecting 4 relay outputs

Relay outputs are normally open (NO). Where:

X19
terminals 1-2: output 1
terminals 3-4: output 2
terminals 5-6: output 3
terminals 7-8: output 4

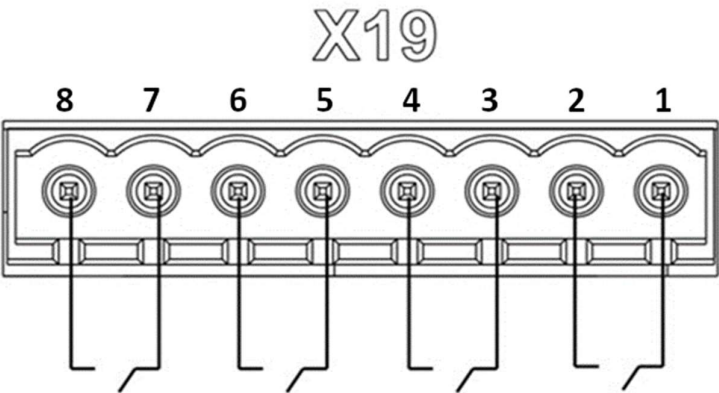


Figure 14: Connector for 4 relay outputs

1.6.3.2. Connecting 6 binary inputs (X20)

Binary inputs controlled by signals:

0 ... 2 V DC - binary input inactive

8 ... 24 V DC - binary input active

8 ... 24 V DC – counting input (high level)

X20	
Terminal 9	binary input S(X) In1
Terminal 10	binary input S(X) In2
Terminal 11	binary input S(X) In3
Terminal 12	common for S(X) COM1-3 inputs
Terminal 13	binary input S(X) In4
Terminal 14	binary input S(X) In5
Terminal 15	binary input S(X) In6
Clamp 16	common for S(X) COM4-6 inputs

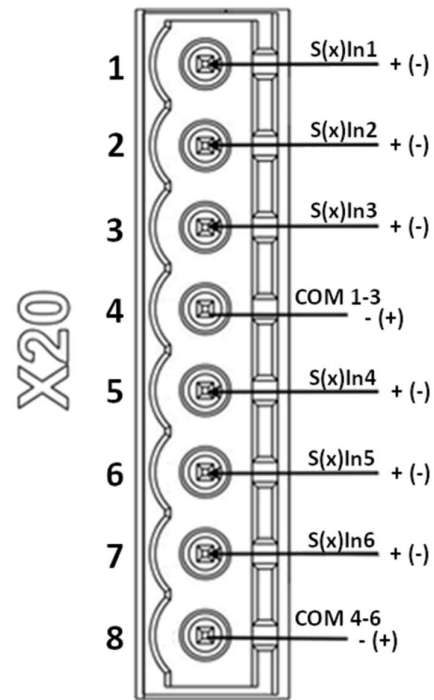


Figure 15: 6 binary input connectors

1.6.4. Card with 6 binary inputs, 3 analog outputs

1.6.4.1. Connecting 3 analog outputs

The version with 3 analog outputs uses the upper part of the expansion card connector.

X19	
Terminals 1–2:	Analog output 1 (S(X) Out 1)
Terminals 4 – 5:	Analog output 2 (S(X) Out 2)
Terminals 7 – 8:	Analog output 3 (S(X) Out 3)

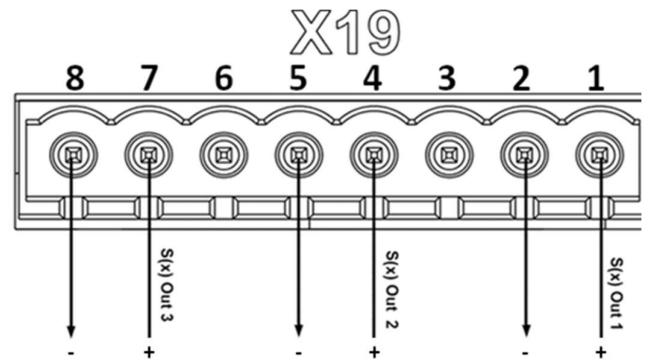


Figure 16: 3 analog output connector

The connection of 6 binary inputs can be found in subsection 1.6.3.2.

1.6.5. Card with 4 binary inputs, 6 analog outputs

1.6.5.1. Connecting 6 analog outputs

The 6 analog output version uses both expansion card connectors.

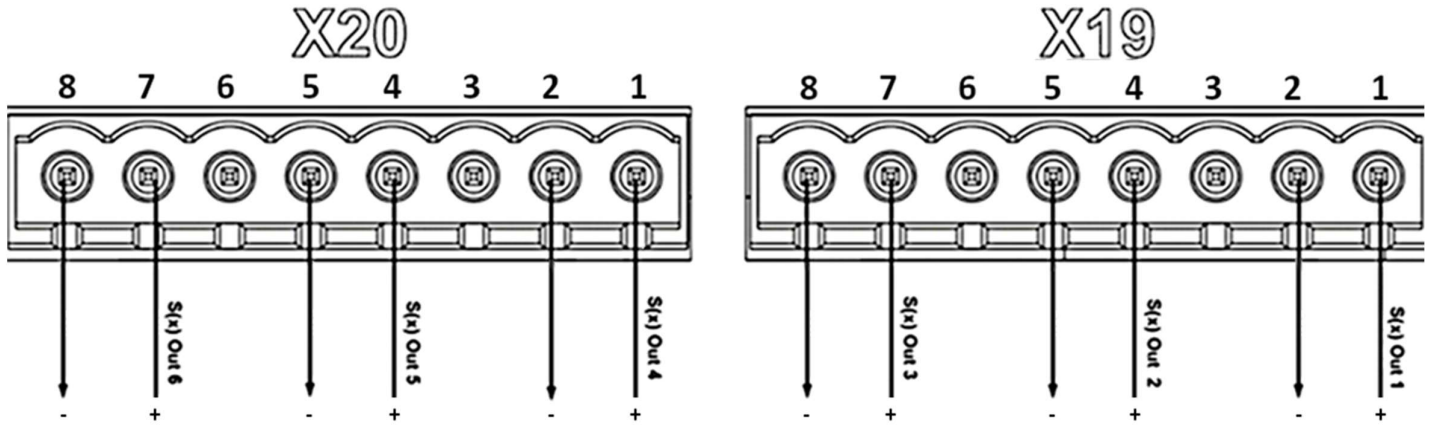


Figure 17: 6 Analog Output Connectors

X20	X19
1 – 2: analog output 4 (S(X) Out 4)	1 – 2: analog output 1 (S(X) Out 1)
4 – 5: analog output 5 (S(X) Out 5)	4 – 5: analog output 2 (S(X) Out 2)
7 – 8: analog output 6 (S(X) Out 6)	7 – 8: analog output 3 (S(X) Out 3)

1.6.5.2. Connecting 4 binary inputs (X21)

Binary inputs controlled by signals:

0 ... 2 V DC - binary input inactive

8 ... 24 V DC - binary input active

8 ... 24 V DC – counting input (high level)

X21	
Clamp 1	binary input S(X) In1
Terminal 2	binary input S(X) In2
Terminal 3	binary input S(X) In3
Terminal 4	binary input S(X) In4
Terminal 5	common for S(X) COM1-4 inputs

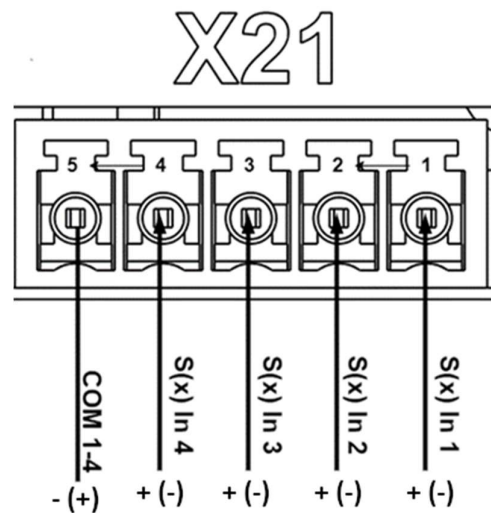


Figure 18: Binary inputs

1.6.6. RS-485 Modbus Master (X21)

The X21 connector performing the Modbus Master function is available in three versions of expansion cards:

- 8 relay outputs;
- 6 binary inputs, 4 relay outputs;
- 6 binary inputs, 3 analog outputs.

In each of the above versions, it is one interface with duplicated terminals A and B, and ground (GND).

The figure below shows the individual terminals of the RS-485 Modbus Master connector.

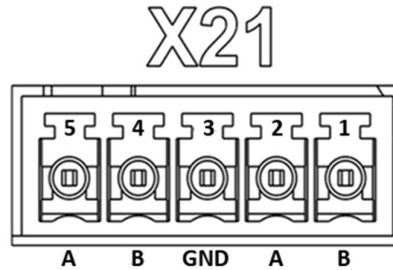


Figure 19: RS-485 Modbus Master Interface

1.6.7. Temperature connector (X22)

Connector X22 serves as a temperature connector. Available in all KD10 versions.

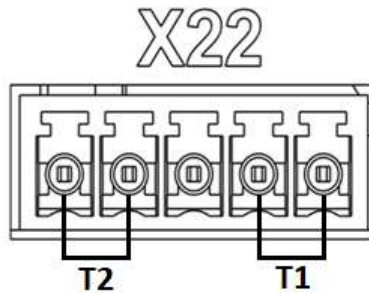


Figure 20: Temperature connectors T1 and T2.

1.6.8. RS-485 Modbus Slave connector (X24)

Connector X24 functions as a Modbus Slave. Available in all KD10 versions.

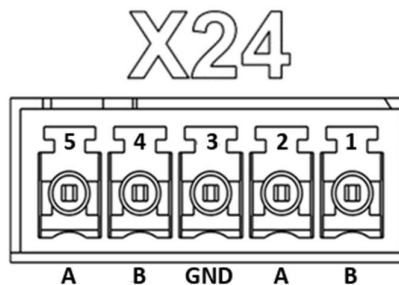


Figure 21: RS-485 Modbus Slave Interface.

1.7.Mounting method

The KD10 recorder is designed to be mounted on a panel using brackets. Housing dimensions 144 x 144 x 104 mm, mounting hole dimensions 138 x 138 mm.

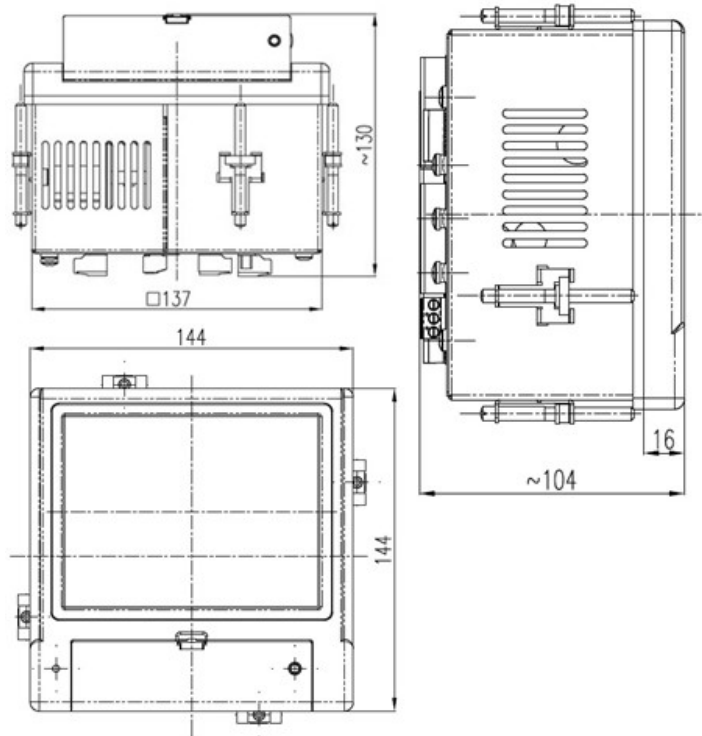


Figure 22: Dimensions

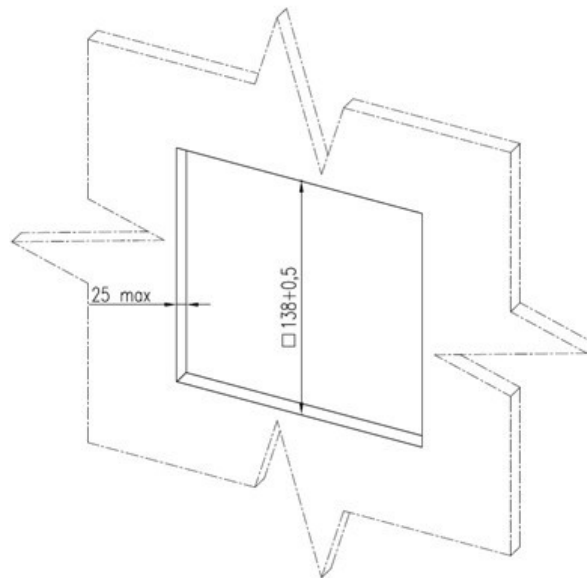


Figure 23: Dimensions - mounting hole.

2. Operating the device

2.1.Home screen

Once the device is turned on, the user will be redirected to the home screen. (*Illustration 1*). When you first start it up (for a standard configuration), this will be the first view of the digital displays screen.

Analog inputs #1			06:52:18 2026-03-05
Analog input	36.80		36.80 ↑
AI1			---
TC J	None		35.66 ↓
Analog input	36.79		36.79 ↑
AI2			---
TC J	None		35.65 ↓
Analog input	35.62		35.62 ↑
AI3			---
TC J	None		34.61 ↓
Analog input	35.60		35.60 ↑
AI4			---
TC J	None		34.59 ↓
Analog input	34.46		34.46 ↑
AI5			---
TC J	None		33.57 ↓
Analog input	34.42		34.42 ↑
AI6			---
TC J	None		33.54 ↓

Illustration 1: Home screen.

Tapping the central area will display a tool overlay containing additional interface components (*Illustration 2*).

Analog inputs #1			06:52:18 2026-03-05
Analog input		36.80	36.80 ↑
AI1		---	---
TC J	None	35.66	↓
Analog input		36.79	↑
AI2		---	---
TC J		---	---
Analog input		36.82	36.82 ↑
AI1		---	---
TC J	None	35.66	↓
Analog input		36.81	36.81 ↑
AI2		---	---
TC J	None	35.65	↓
Analog input		35.64	35.64 ↑
AI3		---	---
TC J	None	34.61	↓
Analog input		35.61	35.61 ↑
AI4		---	---
TC J	None	34.59	↓
Analog input		34.47	34.47 ↑
AI5		---	---
TC J		33.57	↓
Analog input		34.44	34.44 ↑
AI6		---	---
TC J		33.54	↓

Illustration2: Home screen – displaying the tool overlay.

Interface elements are divided into two groups: navigation elements and functional elements.

2.1.1. Navigating the Home Screen – Navigation Elements

The first group are **navigation elements** (*Illustration 3*), allow the user to switch between available views and screens.

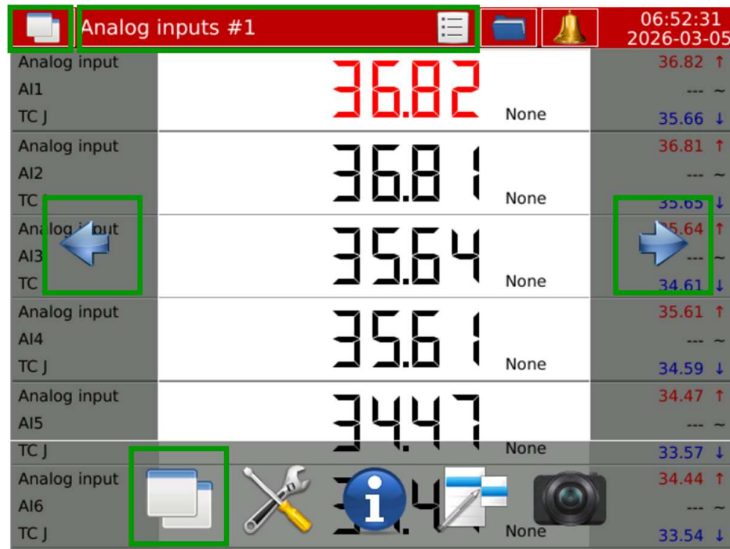


Illustration 3: Main screen – navigation elements

The table below shows the navigation elements found on the toolbar.

Symbol	Description
	Navigating through views. Tapping the right arrow displays the next view with a set of measured parameters. After reaching the last element, selecting the "move right" option returns you to the first screen. Moving left works similarly.
	Navigate screens. Tapping an icon will display the next available screen.

Screens and views can be configured in the visualization settings (chapter 3.8).

The navigation elements located in the top bar of the home screen allow you to move through the available screens and views in a non-linear manner using selection lists (*Illustration 4*).

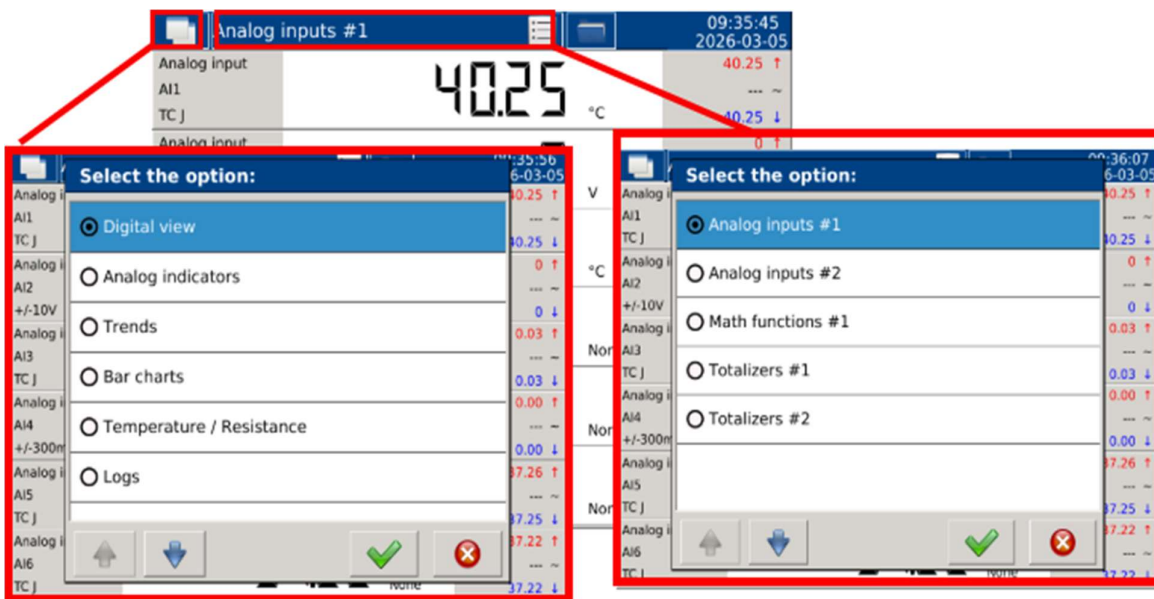


Illustration 4: Home screen (navigation elements) - selection lists of available screens/views

2.1.2. Home screen navigation – functional elements

The next group are **functional elements** (*Illustration 5*) which allow you to change the current recorder settings and access advanced configuration settings.

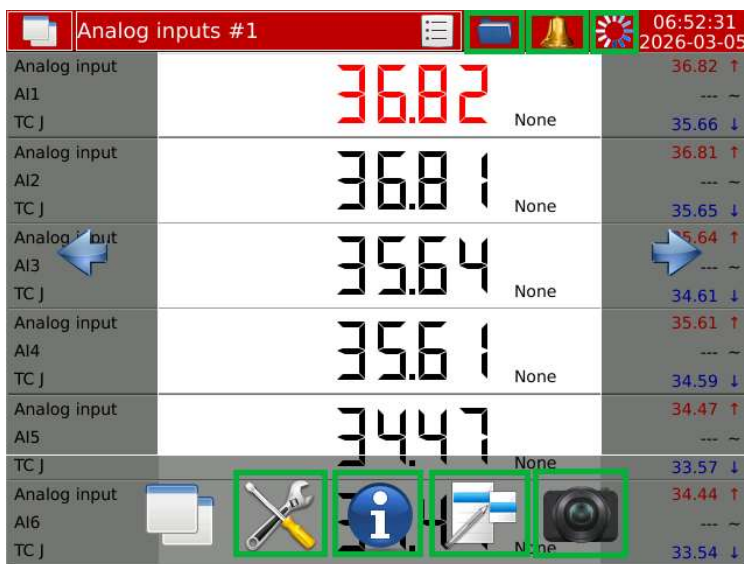


Illustration 5: Home screen - functional elements.

The table presents individual elements of the main screen along with a description of their functionality.

Symbol	Description
	Access the control panel to change device settings. Secured against unauthorized access by a login window.
	Go to the system information window.
	Access the context menu for managing selected device parameters. An example of the dialog is shown below.
	Screenshot function.
	Go to the alarm management window. For a more detailed description, see section 6 of the manual.
	A file manager that allows you to manage the contents of your SD card. See section 4 of this manual for a more detailed description.
	Animated icon for obtaining an IP address.

The options available in the context menu depend on the screen on which it was invoked. In the illustration (*Illustration 6*) examples of possible choices are presented.

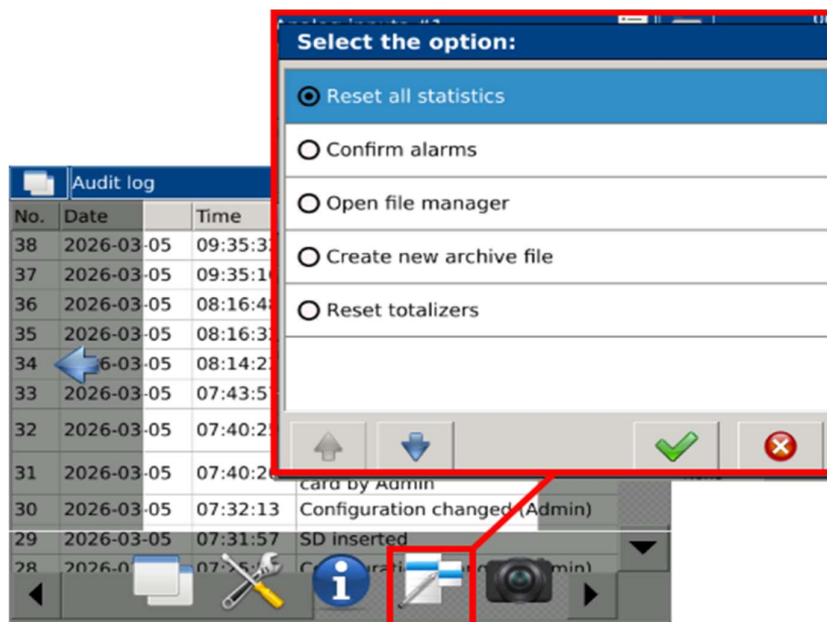


Illustration 6: Context menu - alarm log.

2.1.3. Login window

Certain operations require elevated privileges, such as accessing the control panel, selecting context menu options, or taking a screenshot. Privilege elevation is performed via the login window (*Illustration 7*).

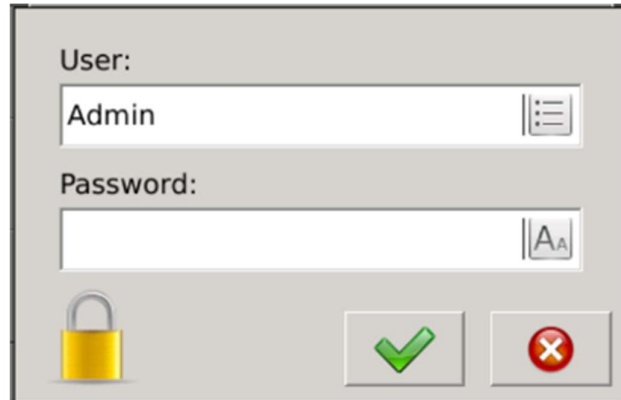


Illustration 7: Login window.

The login dialog box (*Illustration 7*) consists mainly of 4 elements: user selection from the list, edit field for entering the password, button for accepting login data (with a green icon on the left), and a button to exit the dialog box without accepting the data (with a red icon on the right).

When you touch the edit field where you enter the password, the on-screen keyboard will appear on the screen. In the illustration below (*Illustration 8*) is a view of the main window of the on-screen keyboard, which allows you to enter numbers, characters, or special characters. The example shown allows you to enter characters (lowercase letters).



Illustration 8: On-screen keyboard.

Element	Description
1	Edit field.
2	Accepting the entered value and closing the dialogue.
3	Switch the keyboard between lowercase and uppercase letters.
4	Swapping tabs between a keyboard containing letters and a keyboard containing numbers and special characters.
5	Buttons allowing you to move the cursor left or right in the edit field displaying the element being edited (1).
6	Deleting a single item from the screen (1) directly behind the cursor.
7	Close the window without saving the name.

In the illustration below (*Illustration 9*) is located view of the keyboard window allowing you to enter numerical values and available special characters.



Illustration 9: On-screen keyboard - editor of numerical values and special characters.

2.2.Screens and data presentation

The visualization of measurement parameters is organized into screens, each with its own view group. Using the configuration settings described in section 3.8 of the manual, the user can decide which screens and their associated view groups will be available for presentation. This allows for full control over both the number and as well as the content of the information presented.

Additionally, users can define their own sets of measurement channels for visualization on the recorder's display. This functionality is available on selected screens:

- large digital displays,
- analog indicators,
- trends,
- bar charts.

2.2.1. Measurement channel status colors

In the example below (*Illustration 10*) shows an example screen (large digital displays) with a view containing analog input values in different colors.

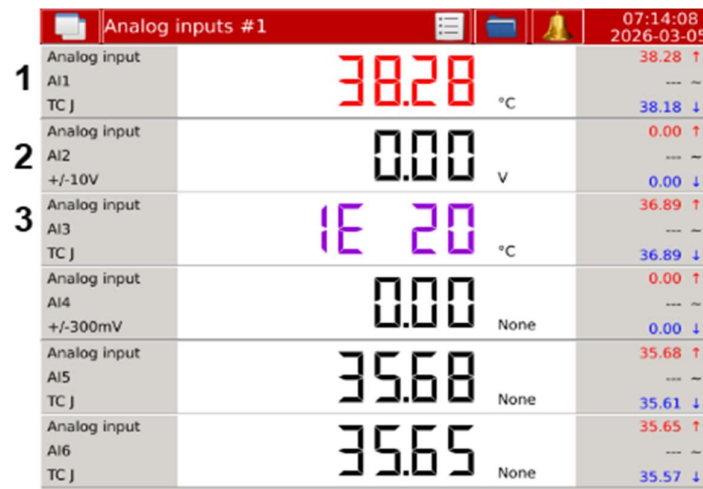


Illustration 10: Main screen - measurement values for analog inputs

Option	Description
1	Alarm occurred on the displayed value.
2	Example of a correct measured value.
3	The value was not converted correctly.

Each screen has unique features for presenting data. The following sections describe each type, along with the elements available to the user.

2.2.2. Large digital displays

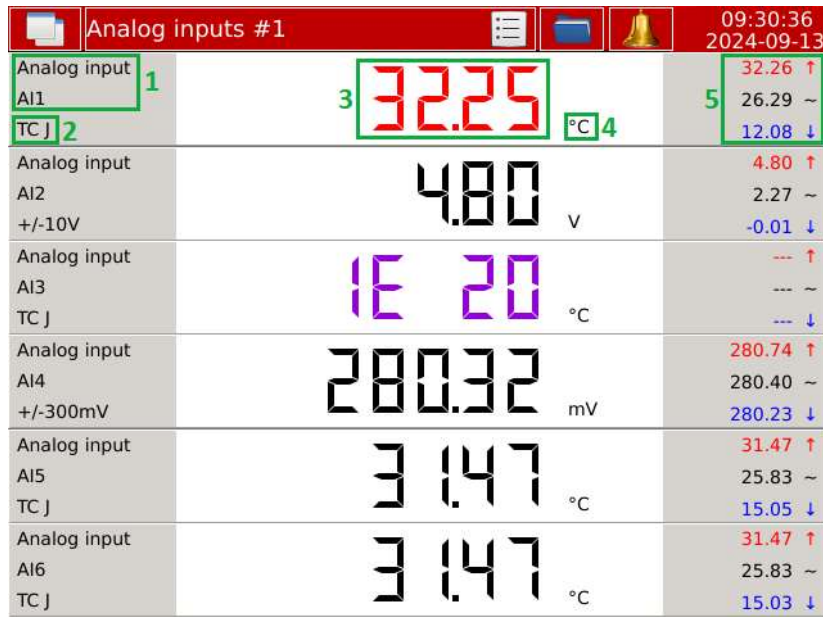


Illustration 11: Screen - Large digital displays.

Option	Description
1	Input name and input type
2	Input type
3	Measured value
4	The unit assigned to the measured value
5	Minimum, maximum, and average values of rolling window measurements (enabled by setting the averaging window)

2.2.3. Analog gauges

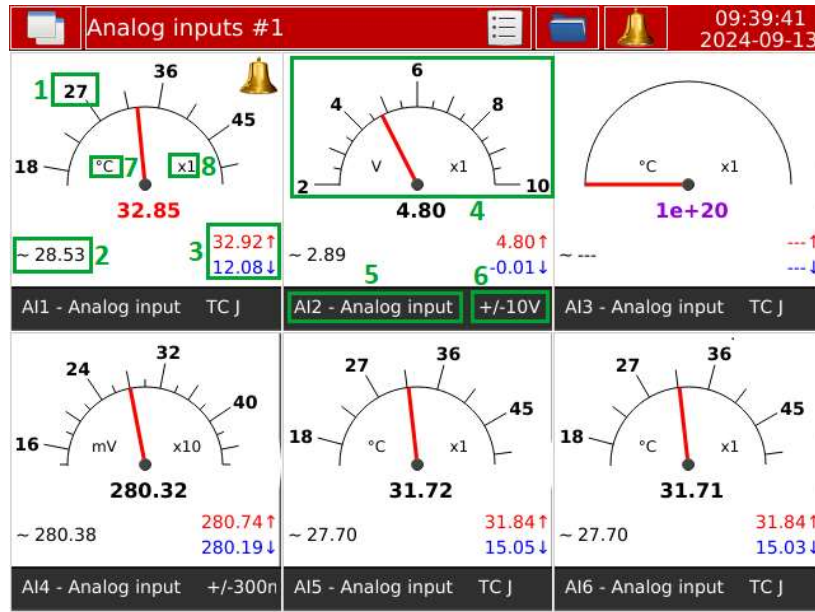


Illustration 12: Screen - Analog gauges.

Option	Description
1	Analog indicator presenting the value of the measured parameter
2	Average of measurements from a rolling window (enabled by setting the averaging window)
3	Minimum and maximum values
4	Analog display scale for a given value
5	Entry name
6	Input type
7	Unit
8	Scale
9	Measured value in digital form

2.2.4. Trends

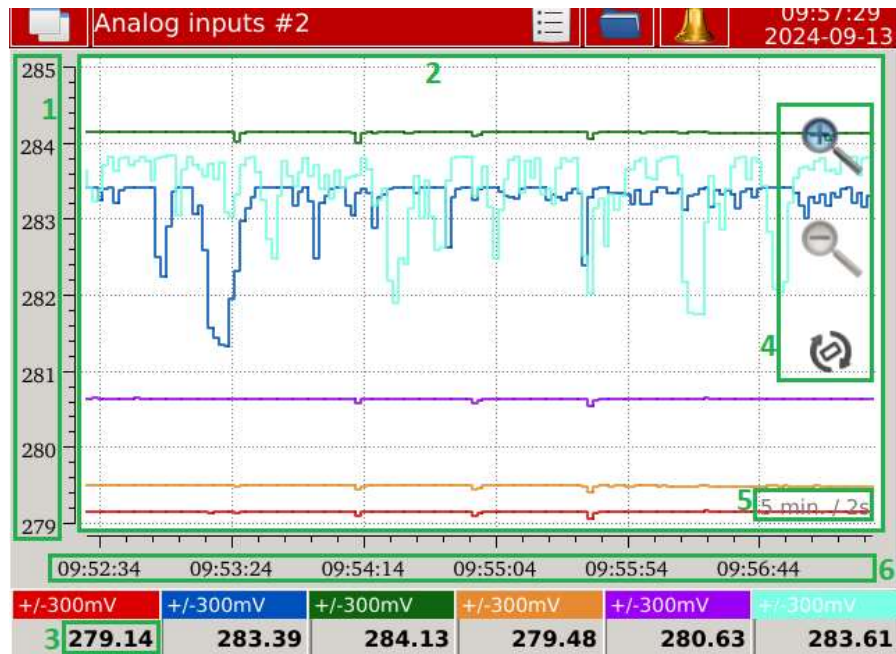


Illustration 13: Screen - Trendy.

Option	Description
1	A scale describing the range of values at the time presented. The range is automatically scaled as the measured values change.
2	Main trend presentation window
3	The value of the measured parameter in digital form
4	Zoom in and out tool, rotate screen to portrait position
5	The time range of presenting values on trends with information on the frequency of parameter updates
6	Timeline updated automatically with subsequent measured values presented on the main screen

2.2.5. Bar charts

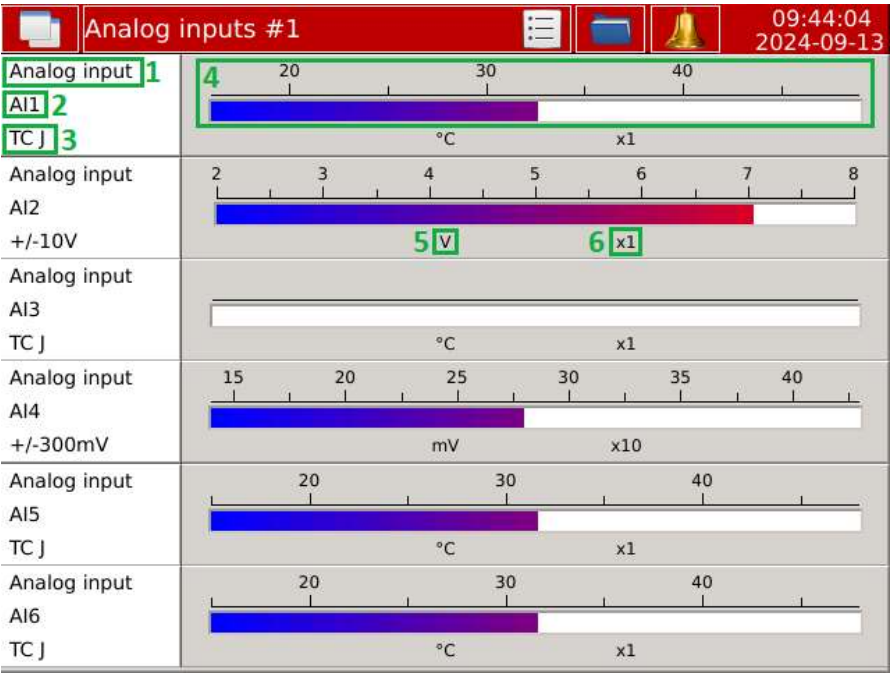


Illustration 14: Screen - Bar charts.

Op- tion	Description
1	Entry name
2	Entry type
3	Input type
4	Value on the scaled axis
5	Unit
6	Scale

2.2.6. Temperature/Resistance Measurement Screen

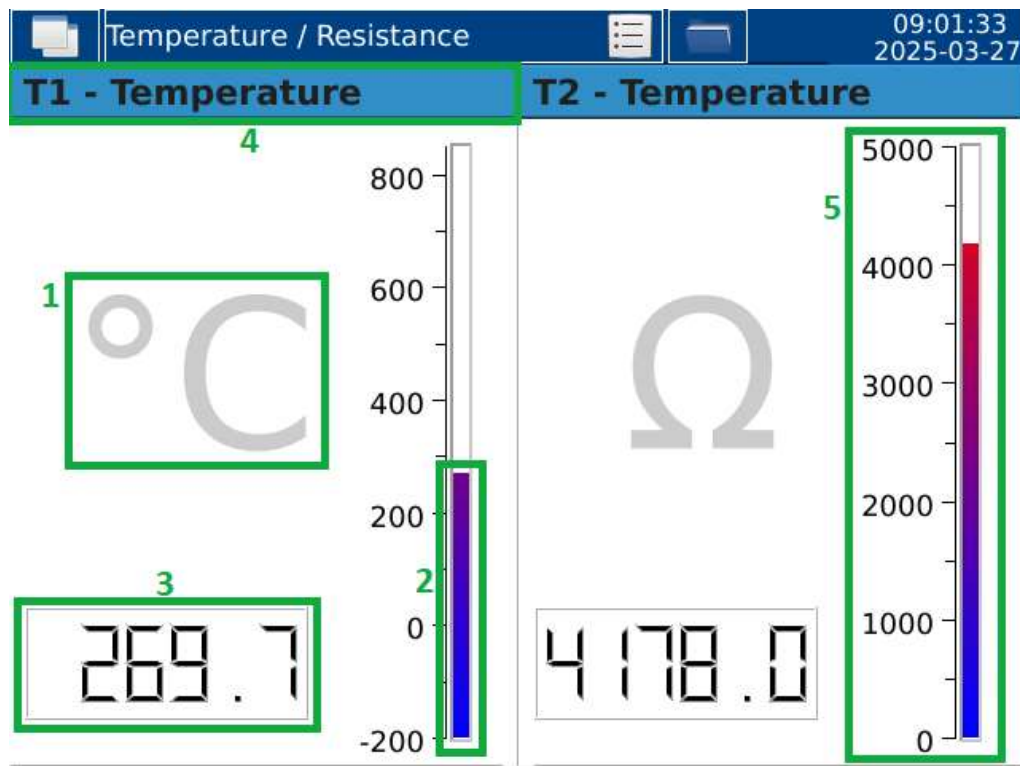


Illustration 15: Screen – Temperature / Resistance.

Option	Description
1	Description of the unit assigned to a given field - depending on the sensor type (temperature or resistance)
2	Measured value indicator
3	Value measured in digital form
4	Channel description
5	Measurement scale adapted to the sensor type

2.2.7. Binary input measurement screen

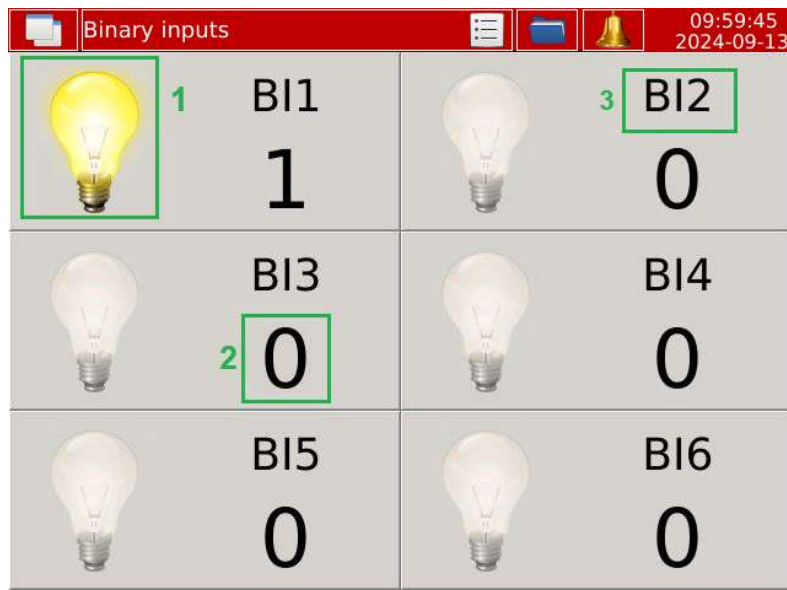


Illustration 16: Screen - Binary inputs.

Option	Description
1	Visualization of the binary input status: bulb on – binary input connected, bulb off – binary input disconnected
2	<ul style="list-style-type: none"> Binary input mode: information about the current input state Counter input mode: number of counted pulses
3	Description of the binary output, e.g.: BI2 – binary input number 2

2.2.8. Log Review

The screenshot shows a screen titled "Alarm log" with a blue header bar. The screen displays a list of alarm events. The status of each input is as follows:

No.	Date	Time	Entry
10	2026-03-05	08:16:48	Alarm 1 - On (AI1 - Analog input = 39.2108°C) (> 20)
9	2026-03-05	07:32:13	Alarm 1 - On (AI1 - Analog input = 39.0882°C) (> 20)
8	2026-03-05	07:25:55	Alarm 1 - On (AI1 - Analog input = 38.8242°C) (> 20)
7	2026-03-05	07:24:13	Alarm 1 - On (AI1 - Analog input = 38.7249°C) (> 20)
6	2026-03-05	07:19:38	Alarm 1 - On (AI1 - Analog input = 38.5162°C) (> 20)
5	2026-03-05	07:12:09	Alarm 1 - On (AI1 - Analog input = 38.1889°C) (> 20)
4	2026-03-05	07:06:21	Alarm 1 - On (AI1 - Analog input = 37.9077°C) (> 20)
3	2026-03-05	07:04:03	Alarm 1 - On (AI1 - Analog input = 37.7733°C) (> 20)

Green boxes highlight the "No." column, the "Date" column, the "Time" column, and the "Entry" column. A green box also highlights the "1" value for the first entry. The top right corner shows the time "11:06:54" and date "2026-03-05".

Illustration 17: Logs.

Option	Description
1	Order of message occurrence
2	Date of the message
3	Time of message occurrence
4	Content of the message

2.3. Other interface elements

2.3.1. Numeric Value Editor

The dialog box (*Illustration 18*) allows the user to enter fixed-point or floating-point numbers, depending on the edit field type.

At the top of the editor there is a range of values that can be saved.

Illustration 18: Fixed-point and floating-point numeric value editors.

2.3.2. Selection lists

Multiple choice list (*Illustration 19*) -an element that allows you to select more than one option. Tapping an unselected parameter on the screen will select it. To cancel a selection, touch the screen again on the previously selected item. Additional buttons provide functions for automatically selecting or deselecting all options on the list.

Selection list (*Illustration 20*) allows you to select only one of the available options.

Illustration 19: Single-selection list.

Illustration 20: Multiple-selection list.

3. Device configuration

3.1. Control panel

3.1.1. Login

The transition to the Control Panel is preceded by a login window (*Illustration 7, section 2.1.3*), protecting against unauthorized access to device settings. Users are identified by their username and password. Successful login will display a window with the selection of the type of operation on the device configuration file. (*Illustration 21*).



Illustration 21: Configuration window - operation.

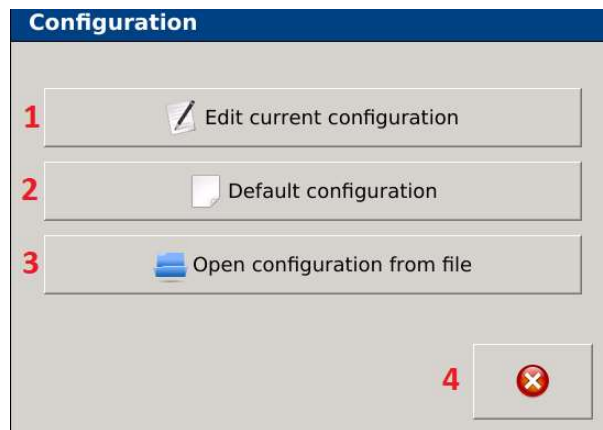


Illustration 22: Configuration window.

LP.	Option	Description
1	Edit current configuration	Go to the control panel.
2	Default configuration	Restores the default configuration for the device.
3	Open configuration from file	Launches a file browser with the ability to select available configuration files.
4		Closes the window

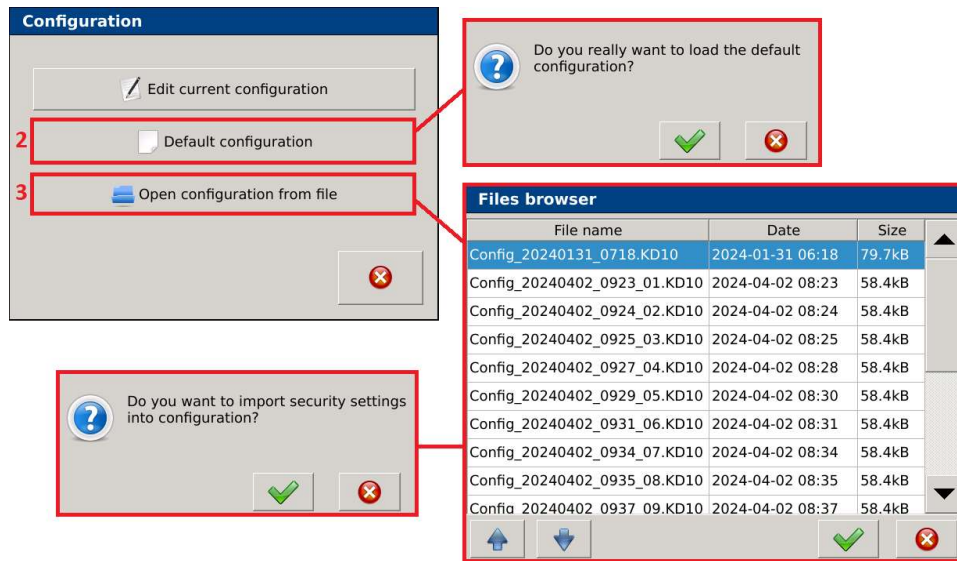


Illustration 23: Configuration - View Options 2 and 3

When selecting a configuration from a file (option 3), a message will appear informing you that you want to import security settings. Approve changes – the settings from the file will be applied. Discard changes – the security settings configuration (users, passwords, digital signatures) will remain unchanged from before the file was loaded.

File Browser (*Illustration 23* - in the lower right corner) presents the available configuration files that can be opened and configured in KD10. The file browser window contains:

Option	Description
File name	Individual name defined by the user when saving.
Data	Restores the default configuration for the device.
Size	The amount of memory used by the file.

3.1.2. Service

Using the control panel involves selecting one of the available parameter groups. Individual groups allow for complete configuration of the device depending on the user's requirements.



Illustration 24: Control panel.

Configuration editing is accomplished by selecting the appropriate option from the Control Panel's main screen. Tapping the selected icon displays a dialog presenting a set of configuration parameters.

In individual dialogues, the first tab is opened by default, subsequent tabs are switched according to the principle presented below (*Illustration 25*).

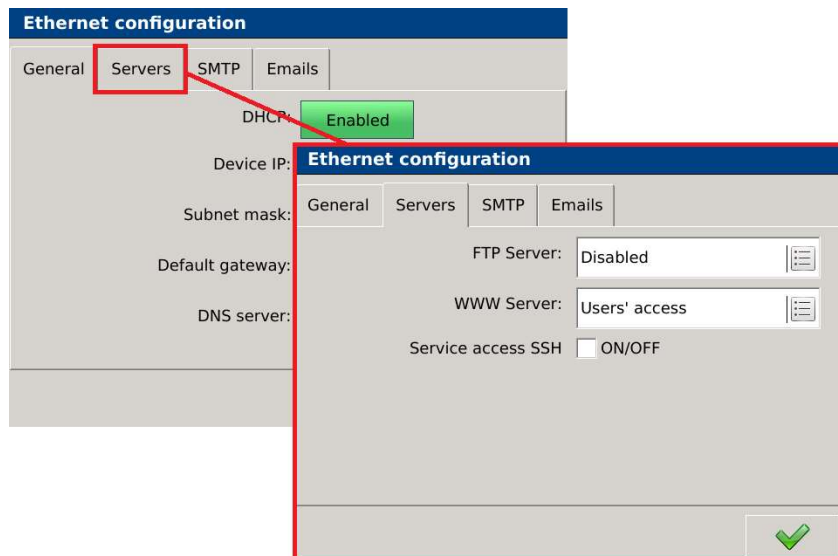


Illustration 25: Example control panel configuration page – changing tab.

Parameter groups such as Alarms or Security have an additional checkbox allowing you to select the parameter you want to configure. Navigation between them is as shown below (*Illustration 26*). By touching the field marked with number 1, we generate a selection list of available items.

The main window also contains navigation buttons that allow   you to change subsequent options without opening an additional dialog box.

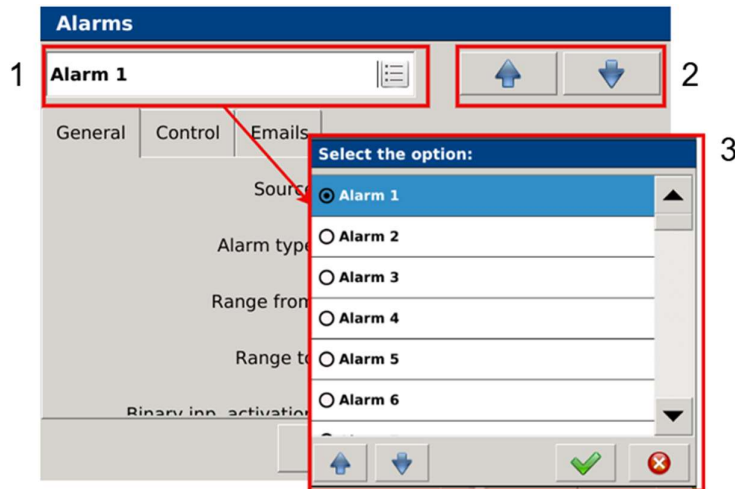


Illustration 26: Alarm selection list.

The individual Control Panel options are described in the table below.

Option	Description
 General settings	Selecting a device name and ID. Changing the language and setting the date and time. Editing LCD-related parameters, such as blanking, backlighting, and screen calibration.
 Channels	Channel configuration: analog inputs, binary inputs, temperatures, mathematical functions and Modbus Master inputs.
 Outputs	Depending on the version, it allows for the configuration of analog outputs or relay outputs.
 Alarms	Settings for individual alarms include source, type, and alarm enable/disable conditions. Additional options allow for setting relays, acknowledgements, switching delays, and alarm logs.

 Visualization	Settings for screens and trends. Users can enable or disable individual screens, select pre-defined parameter sets, or define their own to be displayed on the device. Trend settings include selecting parameter sets and defining the data presentation fields for each set.
 Ethernet	Settings: DHCP, IP address, subnet mask, default gateway, DNS server, FTP and WWW server, SSH service access, SMTP and e-mail.
 Communications	Modbus Slave and Modbus Master protocol settings (depending on the version) allowing you to set the transmission mode and speed. Device address settings and Modbus TCP-related parameters such as enabling or disabling the interface and port number.
 Archive	Archiving parameter settings. General archiving parameters, e.g., number of records per file, archiving time range, conditional archiving, circular buffer. Managing individual archiving parameters: parameter selection, interval definition, and archiving condition.
 Security	User permission settings. Ability to assign a name, password, and access rights, as well as configure a digital signature for a given user.
 Totalizer	Totalizer - configuration of channel totalizers.
 File manager	A file manager that allows you to manage the contents of external media.
 System information	General information about the system, memory, hardware, updates and access to the service tab.

3.1.3. Exiting the control panel

Closing the Control Panel is shown below (*Illustration 27*). After selecting the option, a dialog will be displayed confirming that the configuration editing has been completed.

3.1.3.1. Saving configuration

The set configuration is saved by tapping the "Save and set configuration" field. In the event of configuration file corruption, a backup copy will be restored on the device.

The recorder allows you to save the configuration to a file on an SD card by tapping the "Save to file" field. This step requires inserting the SD card into the device's slot. Additionally, you can change the configuration file name by tapping the field with the current, automatically generated configuration name and making your own changes.

3.1.3.2. Exit without saving changes

Tapping the "Leave as is" field exits the control panel with the previously saved configuration.

Touching the symbol  closes the dialog box and allows you to make corrections to the current, not yet saved configuration.

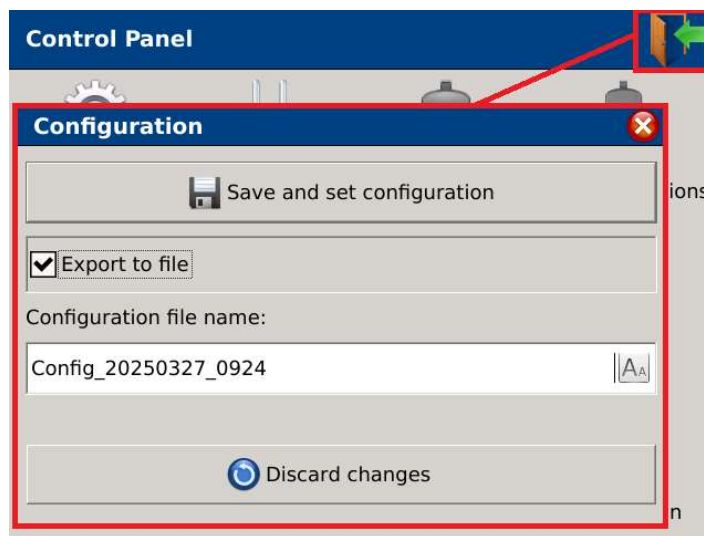


Illustration 27: Saving the configuration.

3.2. Configuring general settings

3.2.1. Basic parameters

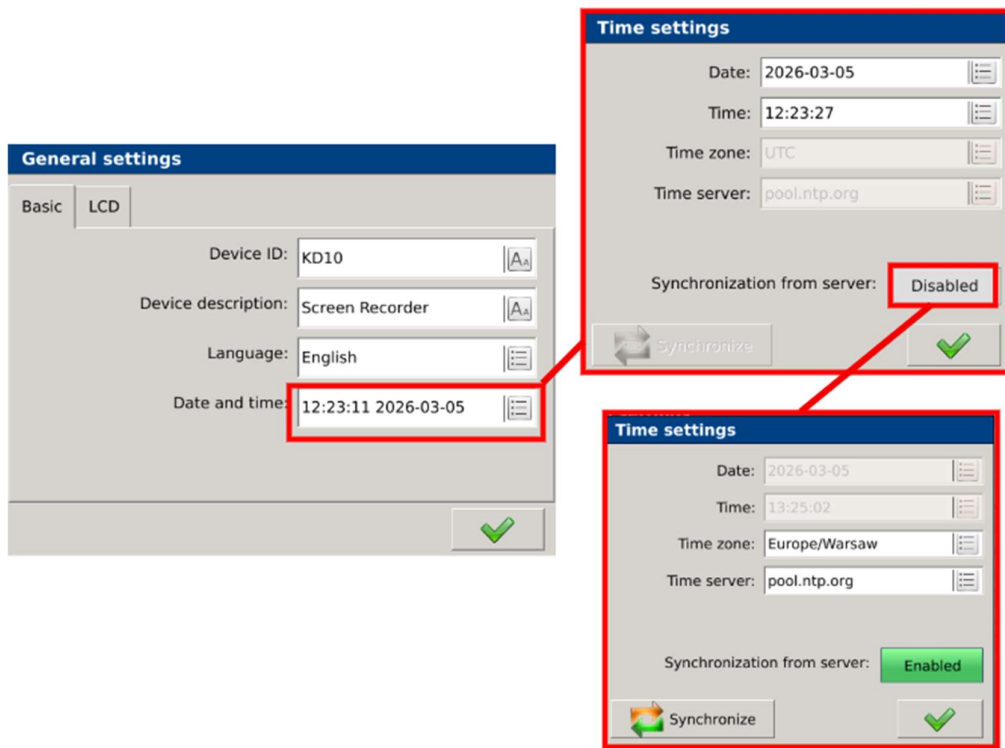


Illustration 28: General settings - basic.

Parameter	Description
Device ID	Assigned identifier. User can change the description.
Device description	Editable device description.
Tongue	Option allowing you to select the device's operating language.
Date and time	Editing the date and time on your device.
Time zone	List of all time zones.
Time server	Selecting a time server that provides the UTC reference time.
Automatic synchronization	Enabling server synchronization prevents you from setting the date manually and time, which will be retrieved from the selected time server for the selected time zone. Disabling synchronization allows you to define your own date and time settings.
Synchronize	Force system time synchronization in the application.

3.2.2. LCD settings

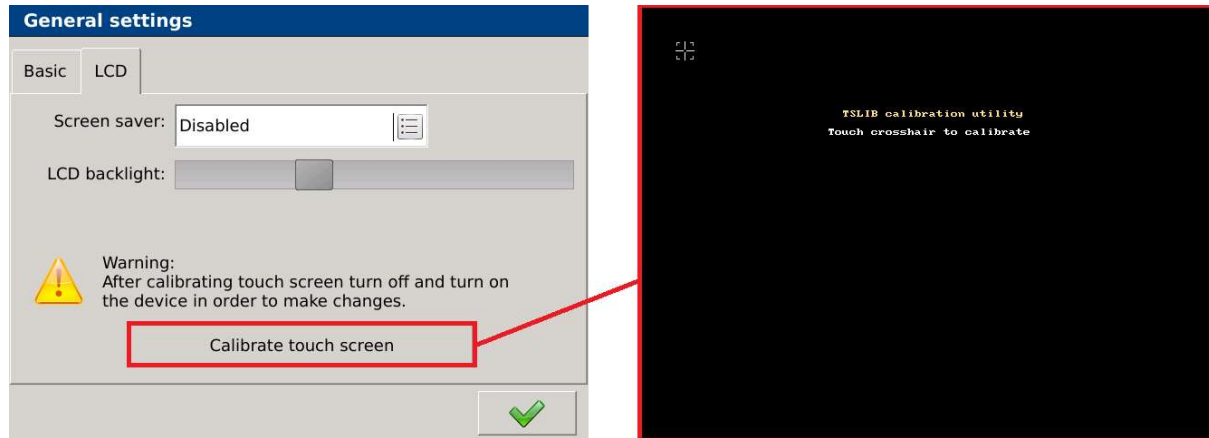


Illustration 29: LCD settings.

Parameter	Description
Screen blanking	This option allows you to enable or disable the screen timeout. The user selects a time period from the list after which the device's screen will turn off or remain on.
LCD backlight	Adjusting the device's screen brightness. Using the slider, the user changes the backlight intensity. The maximum value will be set after swiping to the right, swiping to the left will decrease the screen brightness.
Calibration touch screen	By selecting the calibration option, the user operating the device will be redirected to the calibration window. In the next calibration steps, touch the screen at the points indicated on the screen. The screen is calibrated at five points, after calibration, the device will return to the initial screen. There is no way to interrupt the screen calibration. If the screen is incorrectly calibrated, the described process must be repeated.

3.3.Channel configuration

The channels are: analog inputs, binary inputs, temperatures, mathematical functions, Modbus Master inputs. In the illustration below (*Illustration 30*) there is a channel configuration menu (Control Panel → Channels).

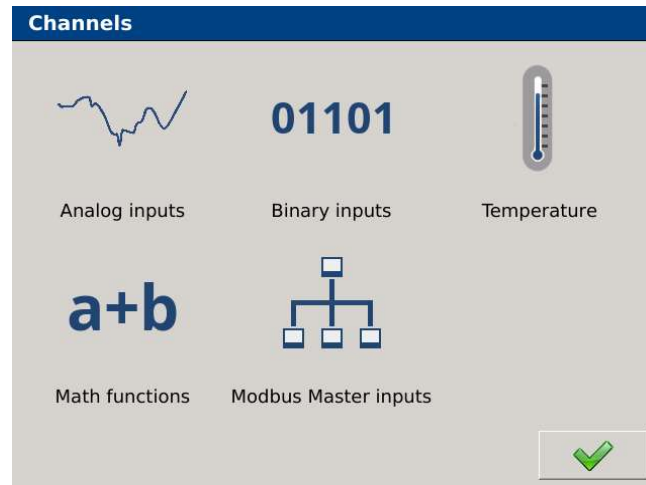


Illustration 30: Channel configuration menu.

After selecting the group we are interested in, a list of available entries expands.

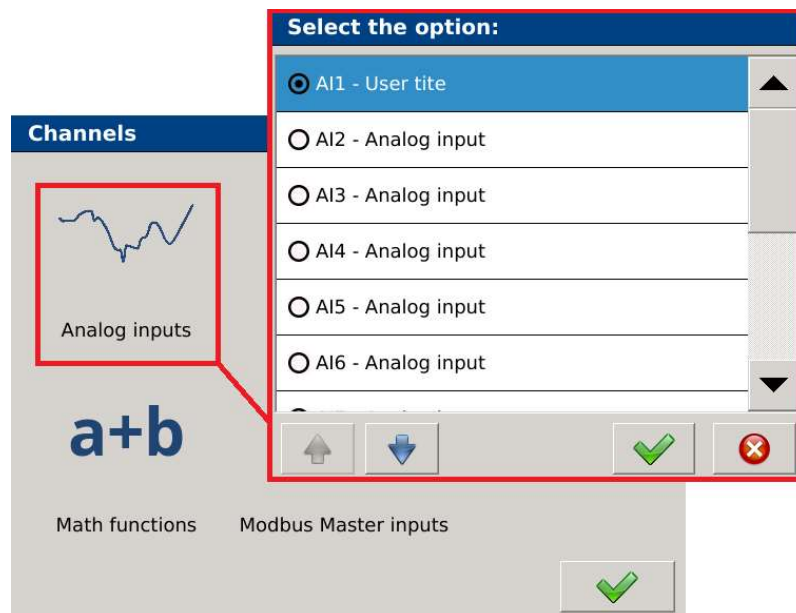


Illustration 31: List of available inputs

3.3.1. Analog input configuration

KD10, depending on the version, has 6/12/18 programmable analog inputs.

Illustration 32: Analog input configuration window

Parameter	Description
Name	Edit name
Input type	<ul style="list-style-type: none"> • PT100 • PT1000 • TC E • TC J • TC K • TC N • TC R • TC S • +/- 60mV • +/- 150mV • +/- 300mV • +/- 10V • +/- 20mA • 4...20mA
Displayed unit	None, Own, V, A, mV, kV, mA, kA, W, kW, MW, var, kvar, VA, kVA, MVA, kWh, MWh, kvarh, Mvarh, kVAh, MVAh, Hz, kHz, W, kW, °C, °F, K, %, %RH, pH, kg, bar, m, l, s, h, m3, obr, pcs, imp, rps, m/s, l/s, obr/min, rpm, mm/min, m/min, l/min, m3/min, pcs/h, m/h, km/h, m3/h, kg/h, l/h Possibility to create a unit by the user ("Custom" option)
Maximum entry*	-1000000.0... 1000000.0
Minimum entry*	-1000000.0... 1000000.0

Maximum output*	-1000000.0... 1000000.0
Minimum output*	-1000000.0... 1000000.0
Float precision	0...0.00000
Averaging time entrances	100...1000ms
Averaging window	0...3600s
Compensation type	Auto/Manual
Compensation value	0.0...20.0

*Used to scale measurement values. Default is 0 - no scaling.

3.3.2. Binary inputs

Binary inputs are available in versions with expansion cards:

- 6 binary inputs, 4 relay outputs,
- 6 binary inputs, 3 analog outputs,
- 4 binary inputs, 6 analog outputs.

For a channel, one of the available binary inputs BI can be selected as the input signal.

In the binary channel parameters window, you can change its name and input mode.

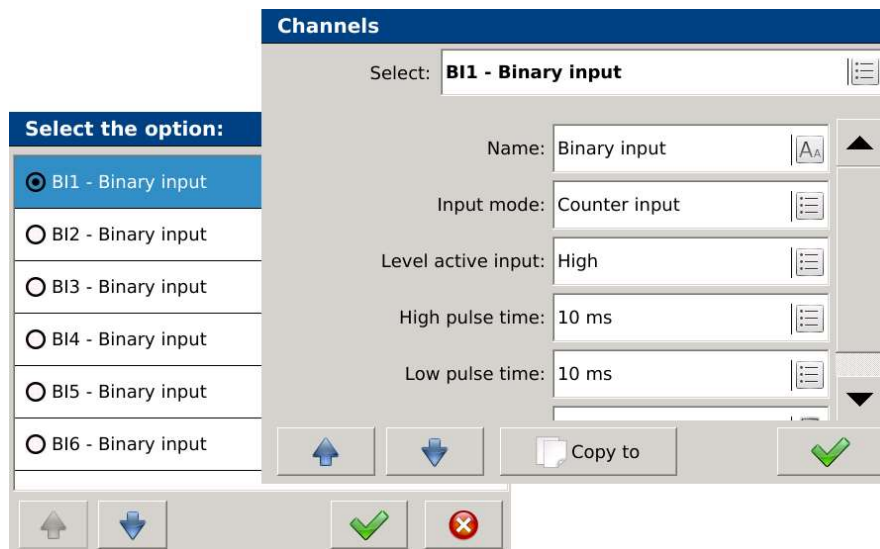


Illustration 33: Configuration window for binary inputs.

Parameters	Description
Name	User name editing
Entry mode	Binary input/Counter input
Parameters for input in counter mode	
Activity level	High / Low
High Level Time	1ms / 10ms / 100ms / 1s / 10s / 60s (10ms)
Low level time	1ms / 10ms / 100ms / 1s / 10s / 60s (10ms)
Number of pulses per 1	1...100000 (1000)

3.3.3. Temperature and resistance

The input signal for the channel can be temperature or resistance measurements T1 – T2.

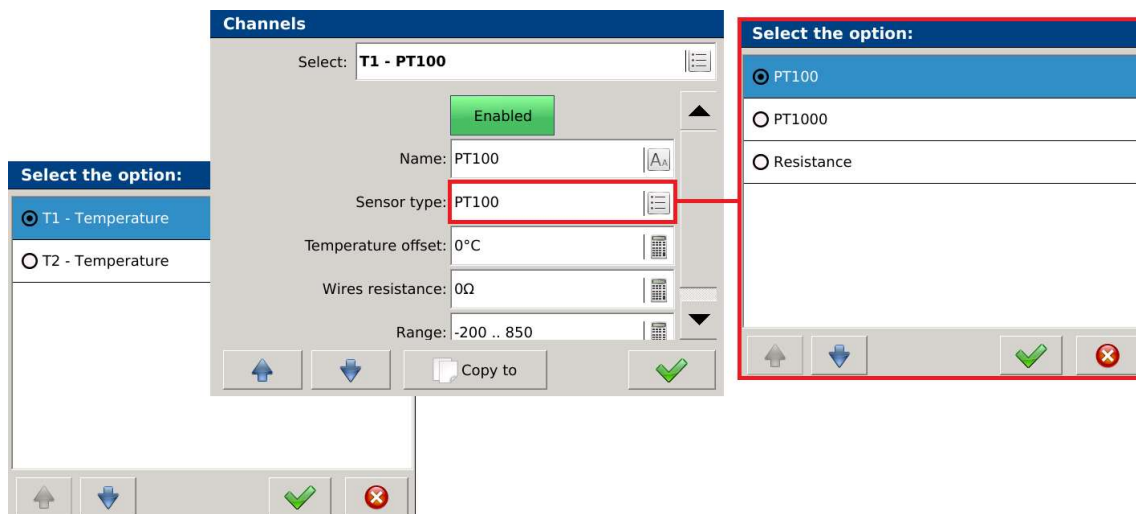


Illustration 34: Temperature channel configuration window.

Parameters for configuring the temperature or resistance measurement input:

Parameter	Description
Status	On/Off
Name	Edit name
Sensor type	Selection of temperature sensor (PT100, PT1000) or resistance.
Temperature offset (PT100/ PT1000)	-100.0 ...100.00
Wire resistance	0.0...10000.0
Range	Selecting the range for the selected sensor type. Provides the ability to change the standard minimum and maximum values assigned to the selected sensor.

3.3.4. Mathematical functions

The device has the ability to set 18 mathematical functions MT1...MT18.

Channels

Select: **MT1 - Math function**

State: **Enabled**

Name: Math function

Display Unit: None

Float precision: 0.00

Function: $(AI1+AI1AVG)*sum(T1MIN, pi, 55\%)$

Select the option:

- ☒ MT1 - Math function
- ☐ MT2 - Math function
- ☐ MT3 - Math function
- ☐ MT4 - Math function
- ☐ MT5 - Math function
- ☐ MT6 - Math function

Buttons: ↑ ↓ Copy to ✓

Pop-up keypad:

$(AI1+AI1AVG)*sum(T1MIN, pi, 55\%)$

Buttons: Analog input, Temperature, Modbus Master inputs, Math function, Number, Binary input, Math channel value, Alarm state, Const, Operator, (,), -, ×, ..abc.., ..123.., Math, ✓, ✗

Illustration 35: Math function configuration window.

Parameters for configuring a mathematical function.

Parameter	Description
Status	Turning on/off the math function
Name	Edit name
Displayed unit	None, Own, V, A, mV, kV, mA, kA, W, kW, MW, var, kvar, VA, kVA, MVA, kWh, MWh, kvarh, Mvarh, kVAh, MVAh, Hz, kHz, W, kW, °C, °F, K, %, %RH, pH, kg, bar, m, l, s, h, m3, obr, pcs, imp, rps, m/s, l/s, obr/min, rpm, mm/min, m/min, l/min, m3/min, pcs/h, m/h, km/h, m3/h, kg/h, l/h Possibility to create a unit by the user ("Custom" option)
Function	Creating a mathematical function for this channel.

The data source for configuring the mathematical function is analog inputs, temperature, Modbus Master inputs, the value of another mathematical channel, binary inputs and alarm statuses, mathematical and logical operators, and logical channel values such as average, maximum and minimum values.

In the figure below, the data source for the function is the scaled value of the analog input.

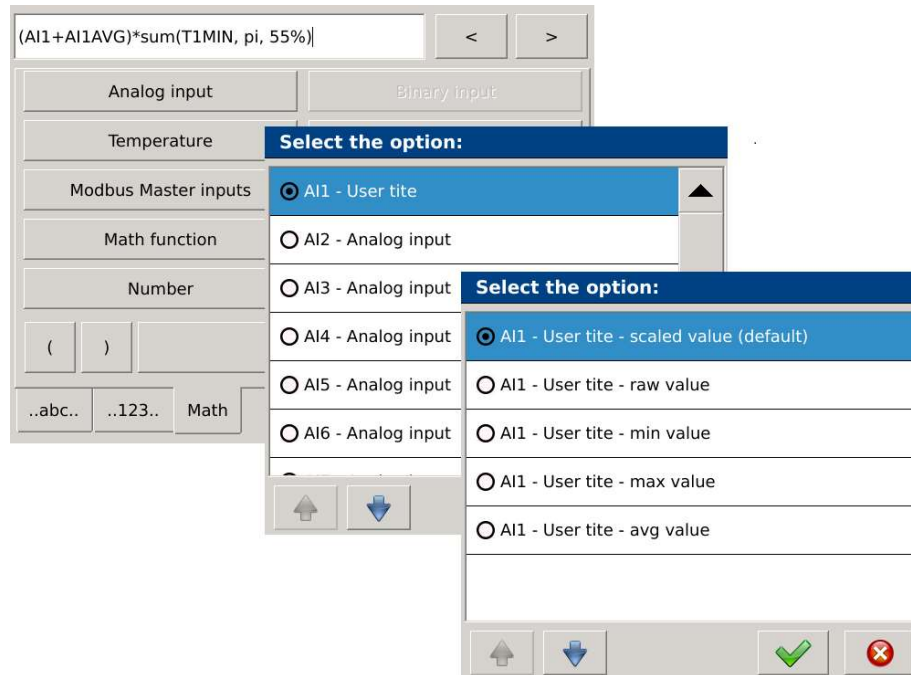


Illustration 36: Selecting the data source for a mathematical function.

Available mathematical and logical functions:

Function	Description
round(x)	Returns the value of x rounded to the nearest integer
sin(x)	Sine of the number x
and(x)	Arcsine of the number x
birth(x)	Hyperbolic sine of x
cos(x)	Cosine of the number x
acos(x)	Arc cosine of x
cosh(x)	Hyperbolic cosine of x
tan(x)	The tangent of x
waiting(x)	Arctangent of x (in radians)
tanh(x)	Hyperbolic tangent of x
sqrt(x)	The square root of x
pow(x)	Power
fact(x)	Factorial
mod(val1,val2)	Returns the modulo of the numbers val1, val2

min(v1,v2,v3,...)	Returns the minimum value of the numbers v1,v2,v3...
max(v1,v2,v3,...)	Returns the maximum value of the numbers v1,v2,v3...
avg(v1,v2,v3,...)	Returns the average value of the numbers v1,v2,v3...
sum(v1,v2,v3,...)	Returns the sum of the numbers v1,v2,v3...
abs(x)	Absolute value
ceil(x)	Returns the smallest integer greater than or equal to x
floor(x)	Returns the largest integer less than or equal to x
log(x)	The natural logarithm of x
log10(x)	The base 10 logarithm of x

3.3.5. Modbus Master Inputs

Binary inputs are available in versions with expansion cards:

- 8 relay outputs,
- 6 binary inputs, 4 relay outputs,
- 6 binary inputs, 3 analog outputs.

The device can be configured with 32 logical channels with a Modbus Master input (MMI1-MMI32). Modbus Master in RTU mode is only available with a card with 8 relay outputs.

The screenshot shows a software interface for configuring channels. On the left, a list titled 'Select the opt' contains radio buttons for 'MMI1 - Modbus', 'MMI2 - Modbus', 'MMI3 - Modbus', 'MMI4 - Modbus', 'MMI5 - Modbus', and 'MMI6 - Modbus Master'. 'MMI1 - Modbus' is selected. The main panel, titled 'Channels', shows configuration for 'MMI1 - Modbus Master'. It includes a 'Select:' dropdown with 'MMI1 - Modbus Master' chosen, a 'State:' button labeled 'Enabled', a 'Name:' text field with 'Modbus Master', a 'Connection type:' dropdown with 'TCP', an 'IPv4 Address:' text field with '10.0.211.30', a 'Port:' text field with '502', and a 'Modbus ID:' text field with '1'. At the bottom of the main panel are buttons for up, down, 'Copy to', and a green checkmark. At the bottom of the entire window are buttons for up, down, a green checkmark, and a red 'X'.

Illustration 37: Channel configuration window for MMI.

Configuration parameters for Modbus Master input:

Parameter	Description
Status	Turn on/off the channel
Name	Edit name
Connection type	TCP/RTU (RTU for the version with the card8 relay outputs)
IPv4 Address	IP Address
Port	1...65535 (502 - default)
Modbus ID	1..255 (1 - default)
Register address	0...100000 (0 - default)
Number of registers	1...10 (1 - default)
Channel Register	Selecting a register for the measurement channel to calculate and store its value.
Register type	<ul style="list-style-type: none"> • int 16 • uint 16 • long 2x16 • 2x16 head • long 2x16 swapped • 2x16 head swapped • float 2x16 3210 • float 2x16 0123 • float 2x16 2301 • float 2x16 1032 • float 32 3210 • float 32 0123 • float 32 2301 • float 32 1032
Read function	<ul style="list-style-type: none"> • Read Holding Registers 0x03 • Read Input Registers 0x04
Scanning frequency	1s, 2s, 3s, 5s, 10s, 15s, 30s, 60s (1s) – at what intervals the Slave device is polled
Time constraints	100ms, 200ms, 300ms, 400ms, 500ms, 600ms, 700ms, 800ms, 900ms, 1000ms (100ms) – waiting time for a response from the Slave device
Displayed unit	None, Own, V, A, mV, kV, mA, kA, W, kW, MW, var, kvar, VA, kVA, MVA, kWh, MWh, kvarh, Mvarh, kVAh, MVAh, Hz, kHz, W, kW, °C, °F, K, %, %RH, pH, kg, bar, m, l, s, h, m3, obr, pcs, imp, rps, m/s, l/s, obr/min, rpm, mm/min, m/min, l/min, m3/min, pcs/h, m/h, km/h, m3/h, kg/h, l/h Possibility to create a unit by the user ("Custom" option)
Float precision	0...0.00000

The Modbus registers read from the slave device are passed on to the logger registers (section 9.8.7).

In the case of Modbus Master RTU configuration (for a device with a card with 8 relay outputs), you need to set the transmission parameters, which can be found in the "Communication" tab (Control Panel → Communication → Modbus RTU → Modbus Master).

Communications configuration

Modbus RTU | Modbus TCP

Modbus slave
Modbus master

Mode: RTU 8N1

Baud rate: 9600

Response timeout: 500 ms

Time between request: 50 ms

✓

Illustration 38: Modbus Master RTU configuration.

3.4. Output configuration

3.4.1. Relay output configuration

Outputs

Analog outputs | Relays

Relay 1

Active state: 1

Safe (default) state: 0

Select the option:

☒ Relay 1
☐ Relay 2
☐ Relay 3
☐ Relay 4
☐ Relay 5
☐ Relay 6

✓

Illustration 39: Output configuration - relays

Option	Description
Relay number	Selecting a relay for configuration
Active status	The value is set when the alarm condition assigned to a given relay is met.
Safe condition	The value set when the bound value is not ready.

3.4.2. Analog output configuration

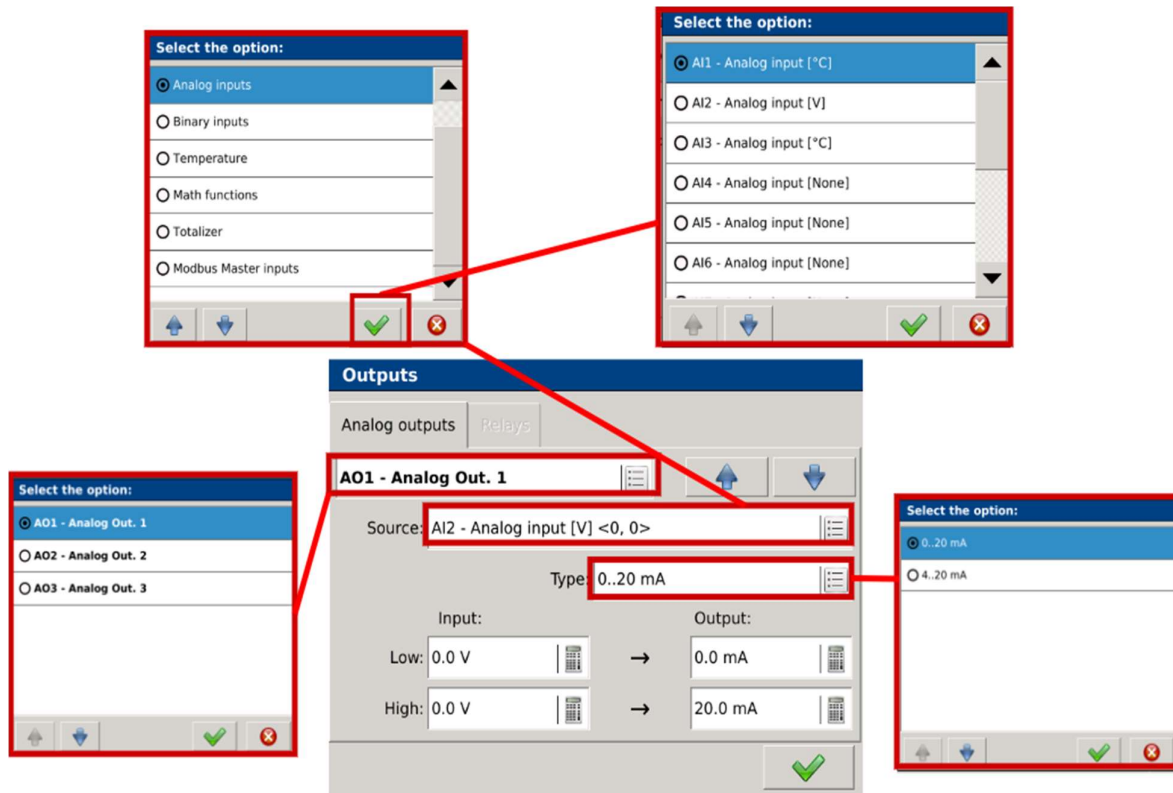


Illustration 40: Analog output configuration.

Option		Description
Analog output selection		Selection of the currently configured analog output.
Source		Selects the input source assigned to the analog output.
Type		Analog output range selection.
Entry	Low	Lower value (of input source).
	High	High value (of input source).
Exit	Low	Lower value (at analog output).
	High	Upper value (at analog output).

3.5.Communication configuration

3.5.1. Modbus RTU Slave Configuration

Communications configuration

Modbus RTU | Modbus TCP

Modbus slave

Mode: RTU 8N2

Baud rate: 115200

ID: 1

Response delay: 0 ms

Modbus master

RTU 8N2

RTU 8E1

RTU 8O1

RTU 8N1

9600

19200

38400

57600

115200

230400

Illustration 41: Configuration for Modbus RTU.

Parameter	Description
Mode	Specifies the transmission frame type of the RS-485 interface.
Speed	RS-485 interface transmission speed.
ID	Device identifier in the Modbus network.
Delayed response	Force response time delay.

3.5.2. Modbus TCP Slave Configuration

Communications configuration

Modbus RTU | Modbus TCP

Modbus slave

TCP/IP slave: Enabled

Address: 1

TCP/IP port: 502

Illustration 42: Modbus TCP configuration

Parameter	Description
ID	Device identifier in the Modbus network.
TCP/IP slave	Enable or disable Modbus TCP/IP mode.
TCP/IP port	Modbus TCP/IP protocol port number.

3.6.Archiving configuration

The following files can be managed as part of archiving:

- Archive with parameters selected by the client,
- Alarm logs,
- Audit logs

Files are available in formats (select in the "Log file format" field on *Illustration 43*):

- SQLITE3
- CSV
- SQLITE3 with digital signature
- CSV with digital signature

Parameter	Maximum estimated size	Number of records	
		Minimum	Maximum
Archiving parameters	-	1000	10000
Audit logs	32kB	-	-
Alarm logs	32kB	-	-

Archivization

General | Conditionals | Parameters

Parameters arch.: **Enabled** Alarms arch.: **Enabled**

Audits arch.: **Enabled**

Number of records in log files: 10000

Log files format: CSV

Select the option:

☐ SQLITE3

☒ CSV

☐ SQLITE3 with digital signature

☐ CSV with digital signature

Navigation buttons: Up, Down, Confirm (green check), Cancel (red X)

Illustration 43: Archiving - general settings.

In the tab "**Conditions**" the user can set the archiving conditions and time.

Illustration 44: Archiving conditions.

Parameter	Description
Disable archiving when	Select the alarm that will disable archiving. Alarm1...Alarm12
Archive only when	Select the alarm for which archiving will be enabled. Alarm1...Alarm12
Archiving only in time	Edit time limit.
Not enough memory space	When there is no space left on the SD card: -Stop – stops archiving -Delete the oldest file (circular buffer)
Copy to SD card	Setting the time for cyclic copying of archive files to the SD card: -1 min -5 min -10min -15min -30min -1h
CSV float separator	-Comma -Dot
Separator kolumn CSV	-Comma -Semicolon -Tabulator

In the tab "**Parameters**", the user defines the parameters that will be archived.

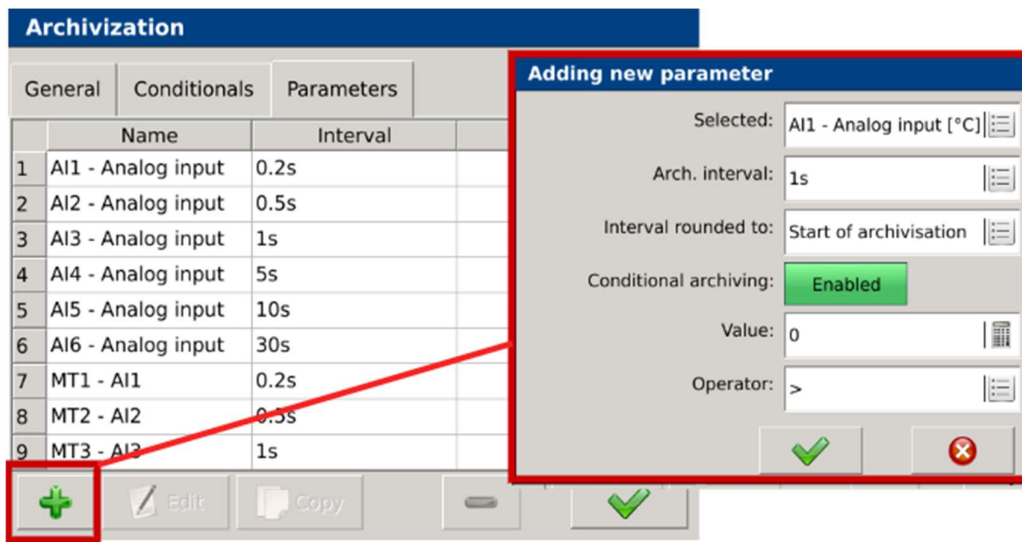


Illustration 45: Archiving - adding a parameter.

Option	Description
Chosen	Selection of the parameter to be archived.
Archiving interval	Selecting the archiving interval for the selected parameter.
Interval rounded to	<ul style="list-style-type: none"> archiving start – from the time the archiving starts (for example, every 1 hour with a start at 11:32 will be: 12:32, 13:32, etc.) whole hours – for example, every 1 hour with a start at 11:32 there will be: 12:00, 13:00, etc.
Conditional archiving	Enable or disable conditional archiving.
Value	The value assigned to the conditional archiving condition.
Condition	Conditional archiving condition.

3.7. Alarm configuration

The device allows you to configure up to 64 alarms for measurement outputs.

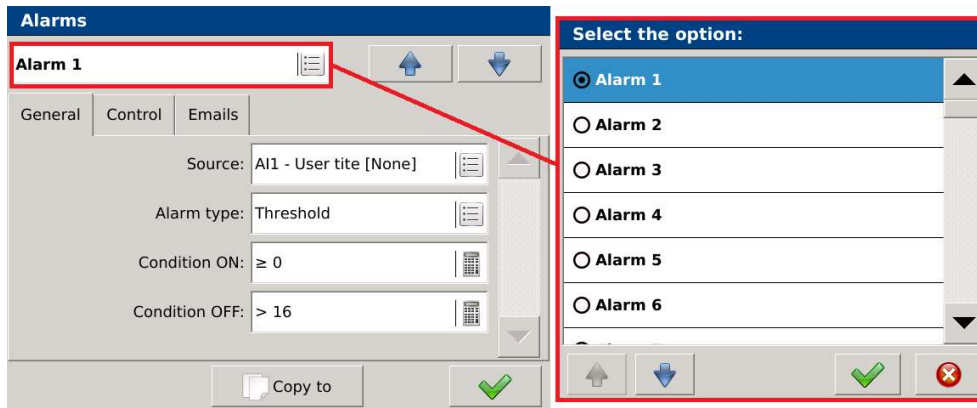


Illustration 46: Alarm configuration - alarm selection.

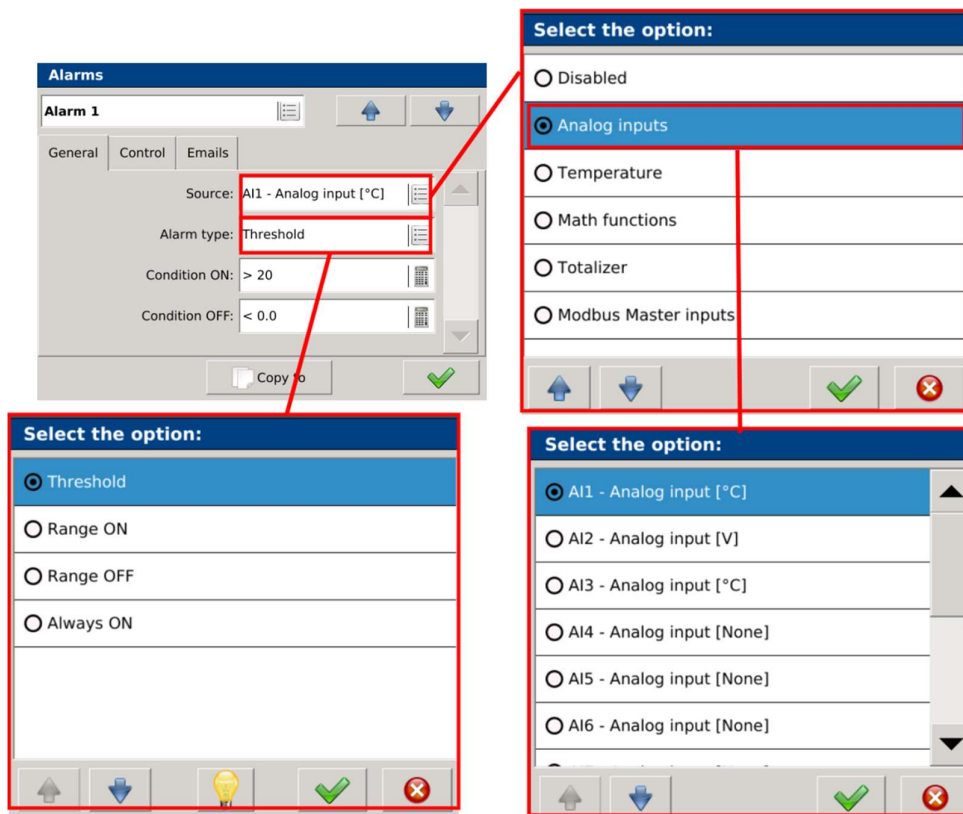


Illustration 47: Alarms - main settings

Parameter	Description
Source	Selecting an alarm source. First, the user selects a parameter group, and then a specific channel.
Threshold	The alarm is activated if the following conditions are met ON condition , deactivated if met OFF condition .
On in the compartment	The alarm is triggered if the measured value is within within the specified range. A value outside the range disables the alarm.
Off in the compartment	The alarm remains off if the measured value is within within the specified range. A value outside the range triggers an alarm.
Always on	Alarm always on.
ON condition	Alarm trigger value.
OFF condition	Alarm disable value.

The KD10 version with relay outputs allows you to select the relay activated when an alarm occurs.

The screenshot displays the 'Alarms' configuration window for 'Alarm 1'. The 'General' tab is active, showing fields for 'Set relay', 'Confirm type', 'Alarm switching delay', and 'Alarm log'. The 'Set relay' dropdown is currently set to 'None'. A red box highlights the 'Set relay' field and the 'Confirm type' field. A red arrow points from the 'Set relay' field to a 'Select the option:' dialog box. This dialog box lists the following options: 'None' (selected), 'Relay 1', 'Relay 2', 'Relay 3', 'Relay 4', and 'Relay 5'. Another red box highlights the 'Set relay' field and the 'Confirm type' field. A red arrow points from the 'Confirm type' field to a 'Select the option:' dialog box. This dialog box lists the following options: 'None' (selected) and 'With confirmation'. A third red box highlights the 'Set relay' field and the 'Confirm type' field. A red arrow points from the 'Set relay' field to a 'Select the option:' dialog box. This dialog box lists the following options: 'Disabled' and 'Enabled' (selected). The 'Alarm switching delay' is set to '0 s' and the 'Alarm log' is set to 'Enabled'. The 'Set relay' field is currently set to 'None'.

Illustration 48: Configuring an alarm as a relay.

Parameter		Description
Set relay		Assigning a relay to an alarm output.
Confirmation type	Lack	After deactivating the alarm, the event information disappears.
	With confirmation.	After the alarm is deactivated, information about the event remains and requires confirmation.
Alarm switching delay		Alarm state switching delay time. When an event occurs, the alarm will be enabled or disabled based on the set delay time.
Alarm log		Sets an option to force alarm events to be written to the alarm log (Alarm Logs).

3.8. Visualization configuration

3.8.1. Screens

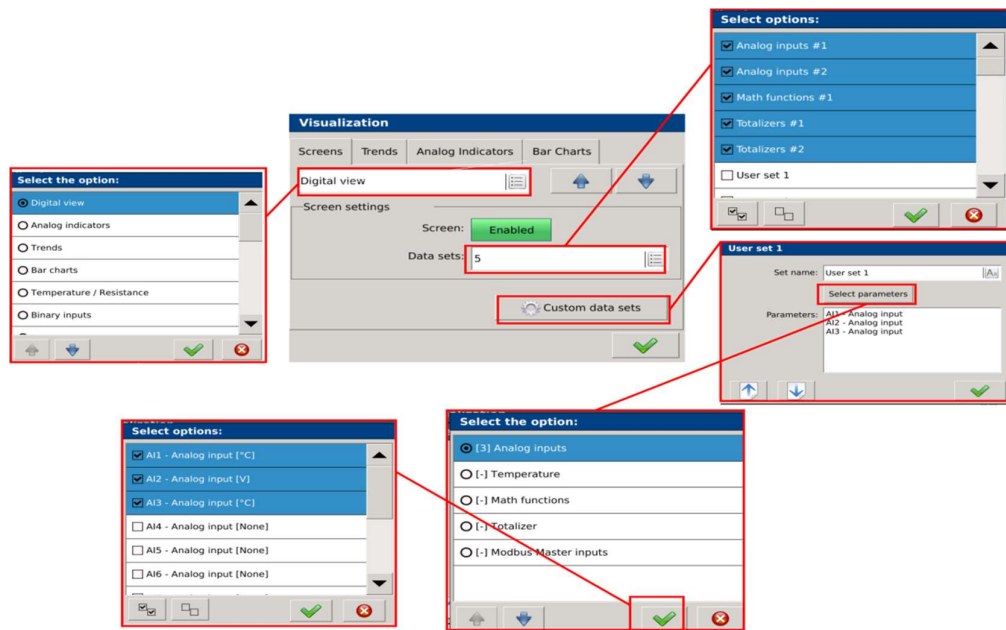


Illustration 49: Screen configuration for large digital displays.

Parameter		Description
Screens		The user selects the screen type using a picklist (as shown in the example, or using the buttons placed on the right side of the selection list).
Screen settings	Screen	On/Off – Turns the screen display on and off.
	Data sets	The user can select which data sets to display in the currently selected screen (in the example shown – Large Digital Displays). Ready-made data sets and individually defined sets (user sets) are available for selection.
User Collec-	Name of	The user can define their own collection name or leave the default

tions	the collec- tion	name. Using the buttons, the user can navigate between user collections.
	Parameters	A function that allows you to select parameters for a user set. First, the group to which the parameter is assigned is selected. For the user's convenience, information about the selected parameters in a given group is provided. For example, "[2] Totalizer" indicates that two parameters from the "Totalizer" group have been selected. The "[-]" indicates that no options have been selected in that group. Additional options allow you to quickly select or delete all list items.

3.8.2. Trends

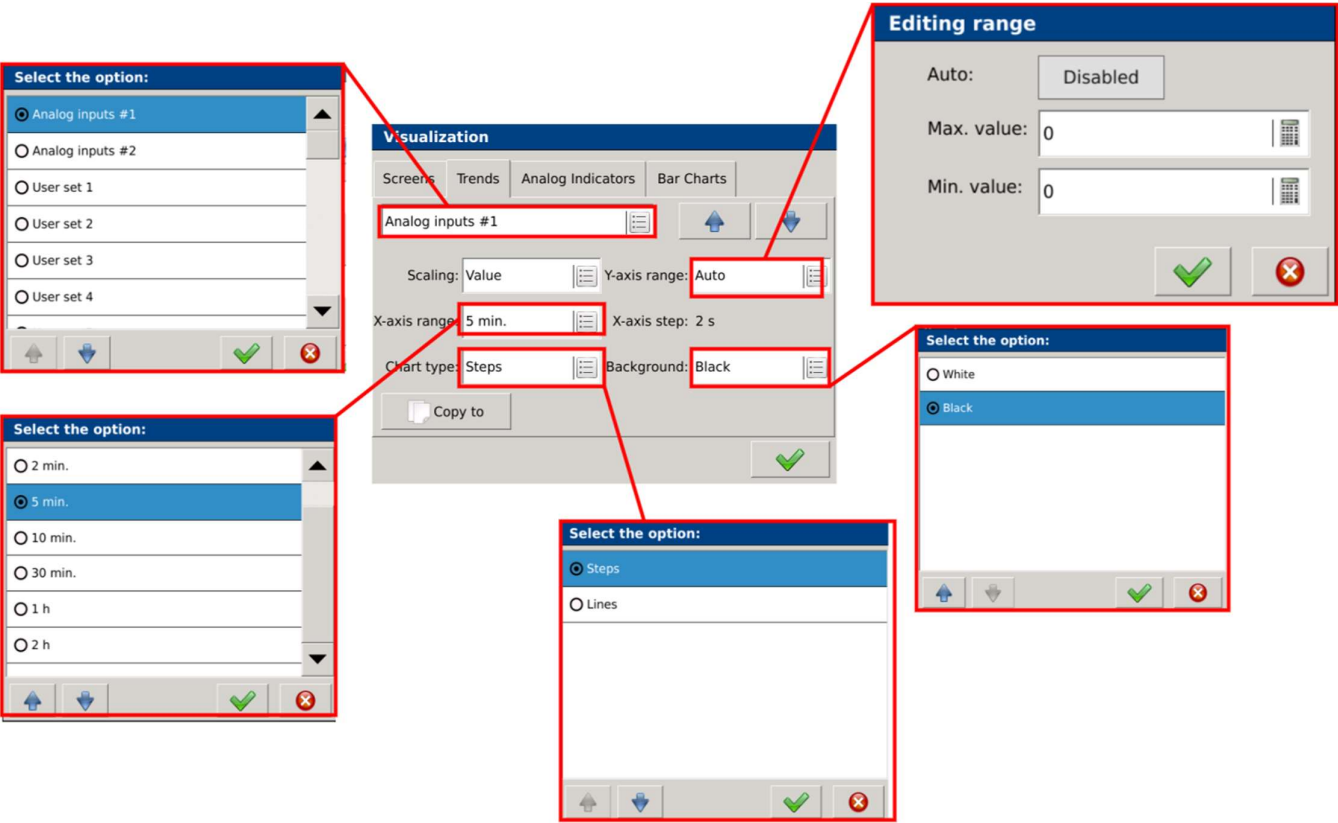


Illustration 50: Trend screen configuration.

Parameter		Description
Scaling	Value	Scaling to parameter values.
X-axis range		Time range of data presentation on the trend screen.
Chart type		The method of presenting measured values. Depending on the selected option, data is presented in a stepwise or linear format.
Background		Select the background color for trend screens.
Y-axis range	Automatic	Enabling or disabling scaling affects the ability to edit the maximum and minimum values presented on the Y-axis of the trend screen.
	Max value	Maximum value of the Y axis for the parameter presented on the trend screen.
	Min. value	The minimum value of the Y axis for the parameter presented on the trend screen.

3.8.3. Analog indicators and bar graphs

The configuration of analog displays and bar charts involves selecting the channel of interest and then assigning a range to it - it can be an automatic range or a manually defined range (*Illustration 51*).

The GUI appearance and configuration of bar charts are identical to those of analog indicators.

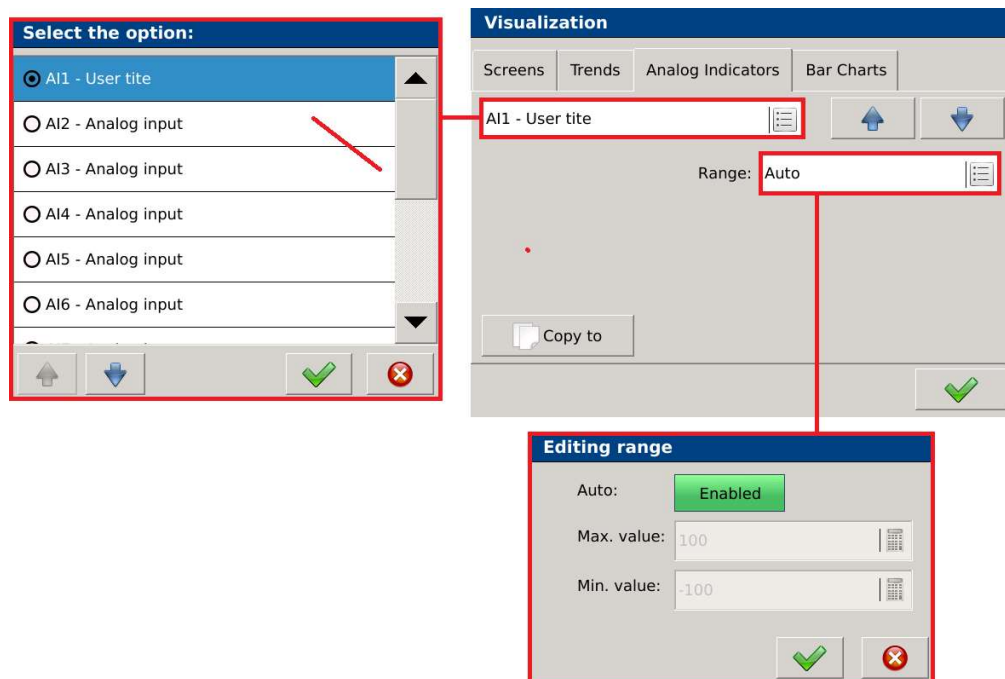


Illustration 51: Screen configuration for analog gauges.

3.9.Security configuration

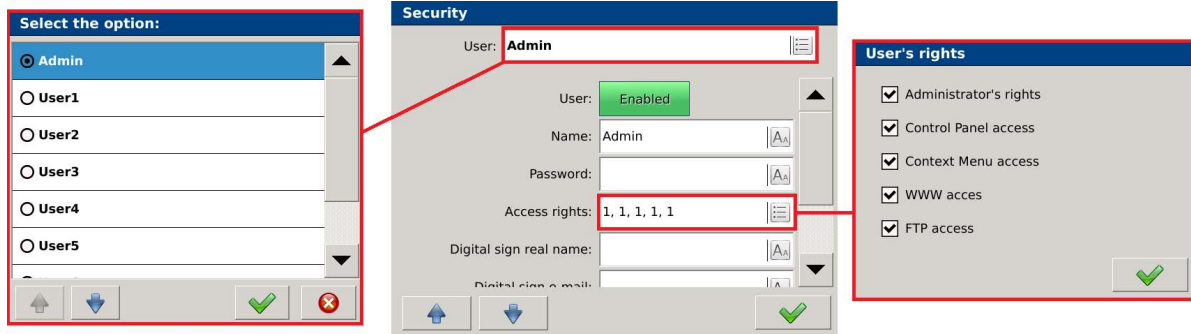


Illustration 52: Setting User Access Rights

Parameter		Description
User		Enable or disable the currently edited user.
Name		Editable user ID. Contains eight defined users. Default names: Admin, User 1, User 2 ... User 7.
Password		It is possible to assign a password to individual users. The password is required when logging in to the configuration settings.
Access rights	Administrator rights	Permissions allowing you to change user permissions.
	Access to the control panel	Ability to view and edit control panel parameters.
	Access to the context menu	Allows you to acknowledge alarms in the context menu, and additionally provides access to file management and alarm confirmation on the website.
	Access to the web	Authorized access to the website.
	FTP access	Authorized access to the FTP server.
Digital signature name		Username needed to generate a digital signature (usually first and last name)
Digital email signature		E-mail needed to generate a digital signature
Digital signature comment		Comment on the digital signature (not required to generate a digital signature)
Signature Expiration Time		Digital signature expiration time

Navigation between users can be done using a selection list (called up after touching the field at the top of the main screen (in the example shown with the currently selected one – Admin), or using the buttons .

A user without administrator rights can only see windows that match the access permissions set.

In the security configuration it is possible to configure a digital signature, which is later used in archiving after selecting the option **SQLITE3 with digital signature** or **CSV with digital signature**.

Initially, all digital signature configuration fields are blank and no user has an active digital signature.

To activate a digital signature, complete the required configuration fields. After completing them and saving the settings, a key pair necessary for the digital signature to function is automatically created. From this point on, the digital signature becomes active.

The user password should be at least 8 characters long and should contain one uppercase letter, and a lowercase letter, at least one number and a special character. If these requirements are not met, the password will not be saved and a window with the information (*Illustration 53*).

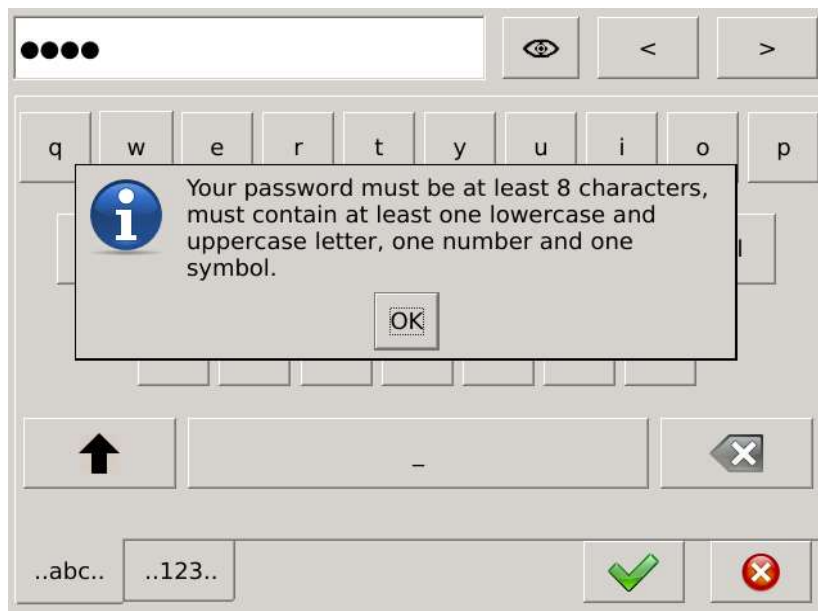


Illustration 53: Digital Signature Password

3.10. Totalizer – logical channel adder

KD10 has 12 adders (Counter/Integral) for logical channels (TOT1-TOT12), the adder configuration is in the "Totalizer" tab (Control panel → Totalizer).

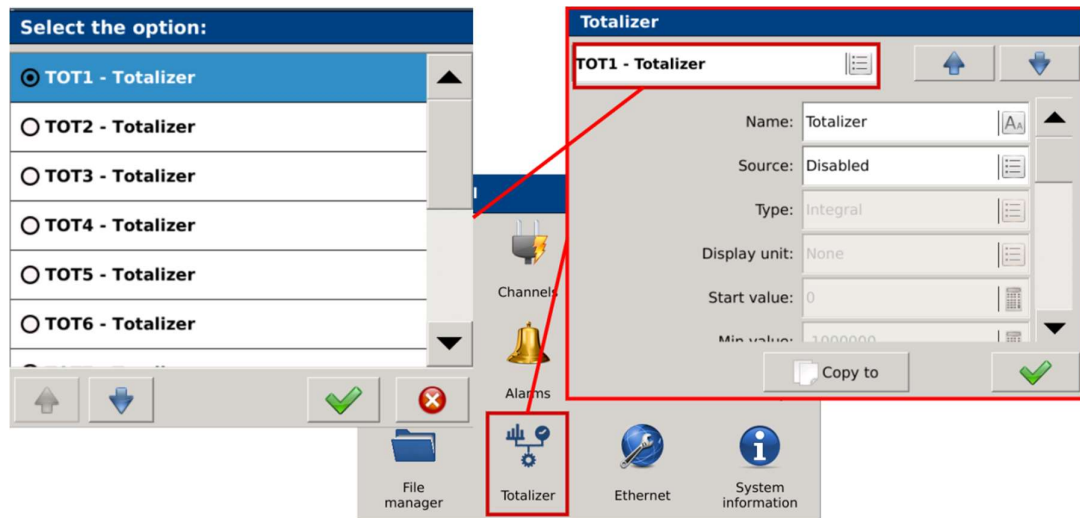


Illustration 54: Totalizer configuration.

Below is a table with configuration parameters for the selected totalizer.

Parameter	Description
Name	Edit name.
Source	The signal source for which the totalizer will count.
Type	Integral/Numerator.
Displayed unit	None, Own, V, A, mV, kV, mA, kA, W, kW, MW, var, kvar, VA, kVA, MVA, kWh, MWh, kvarh, Mvarh, kVAh, MVAh, Hz, kHz, W, kW, °C, °F, K, %, %RH, pH, kg, bar, m, l, s, h, m3, obr, pcs, imp, rps, m/s, l/s, obr/min, rpm, mm/min, m/min, l/min, m3/min, pcs/h, m/h, km/h, m3/h, kg/h, l/h Possibility to create a unit by the user ("Custom" option)
Initial value	-1000000...1000000 (0 – default)
Minimum value	-1000000...1000000 (-100 – default)
Maximum value	-1000000...1000000 (100 – default)
Negative ranges	On/Off
Exceeding	0.0...10000.0
Multiplier	0.0...1000000.0
Counting direction	Up (Summation)/Down (Subtraction)

Float accuracy	0...0.00000
Time base	1 sec / 1 min / 1 h / 1 day
Login every	Determines the interval at which a given totalizer will be entered into the "Totalizer log". hh : mm : ss
Time constraints	Defines the totalizer counting time, after which the totalizer counts again. Counting options: <ul style="list-style-type: none"> • Into infinity, • Daily, • Daily from – to (at specified hours), • Weekly, • Monthly.
The week starts with	The day that starts counting on a weekly basis. <ul style="list-style-type: none"> • Monday • Tuesday • Wednesday • Thursday • Friday • Saturday • Sunday
From an hour ago	The hour that starts counting in the "Daily from-to" mode. hh : mm : ss
Until the hour	The time defining the end of counting in the "Daily from-to" mode. hh : mm : ss
Reset time	Specifies the reset time of the totalizer in daily, weekly and monthly mode, after which the totalizer starts counting again.
Totalizer reset when	Selecting a logical channel whose logical state is 1 will set the adder state to its programmed minimum value and restart counting.
Turn off the totalizer when	Selection of a logical channel whose state 1 disables the adder operation.

Totalizers #1			09:47:17 2024-09-19
TOTALIZER TOT1 AI1	26486	W	
Totalizer TOT2 MT1	12258	None	
Totalizer TOT3 MT2	11063	None	
Totalizer TOT4 TOT1	36058	None	
Totalizer TOT5 T2	0	None	
Totalizer TOT6	— — —		None

Illustration 55: Totalizer screen view

3.11. Ethernet configuration

3.11.1. General settings

Ethernet configuration

General Servers SMTP Emails

DHCP:

Enabled

Device IP: 10.5.12.173

Subnet mask: 255.0.0.0

Default gateway: 10.10.10.203

DNS server: 0.0.0.0

✓

Ethernet configuration

General Servers SMTP Emails

DHCP:

Disabled

Device IP: 10.5.12.173

Subnet mask: 255.0.0.0

Default gateway: 10.10.10.203

DNS server: 0.0.0.0

✓

IP Address

Device IP:

10 . 5 . 12 . 173

✓

✗

Illustration 56: Ethernet configuration window - general.

Parameter	Description
DHCP	Enables or disables DHCP support. When enabled, it activates support for automatic acquisition of Ethernet interface IP protocol parameters from external DHCP servers within the same LAN.
Device IP	Edit field for changing the IP address.
Subnet mask	Edit field for changing the subnet mask.
Default gateway	Edit field for changing the default gateway.
DNS server	Edit field for changing the DNS server.

3.11.2. FTP and WWW server settings

Ethernet configuration

General Servers SMTP Emails

FTP Server: Anonymous access

WWW Server: Anonymous access

Service access SSH ☐ ON/OFF

Select the option:

☐ Disabled

☐ Users' access

☒ Anonymous access

Navigation buttons: Up, Down, Confirm (Green Check), Cancel (Red X)

Illustration 57: Ethernet Configuration – Servers

Parameter		Description
FTP server Web server	Off	No access to the web or FTP server
	Authorized access	Access requires authorization (login required)
	Anonymous access	Access without authorization (no login required)

3.11.3. Email client settings

The figure below shows the SMTP configuration dialog box.

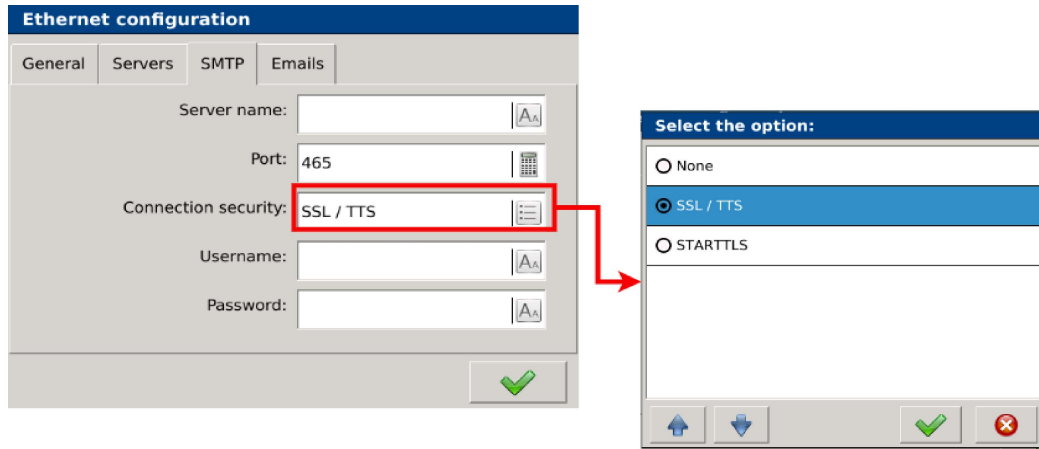


Illustration 58: Ethernet Configuration - SMTP

Parameter	Description
Server name	Outgoing mail server
Port	Outgoing mail server port
Connection security	Selecting outgoing email security options
Username	Message sender ID
Password	Access password

The email address list configuration is located in the "Email" tab and its contents are shown in the figure below.

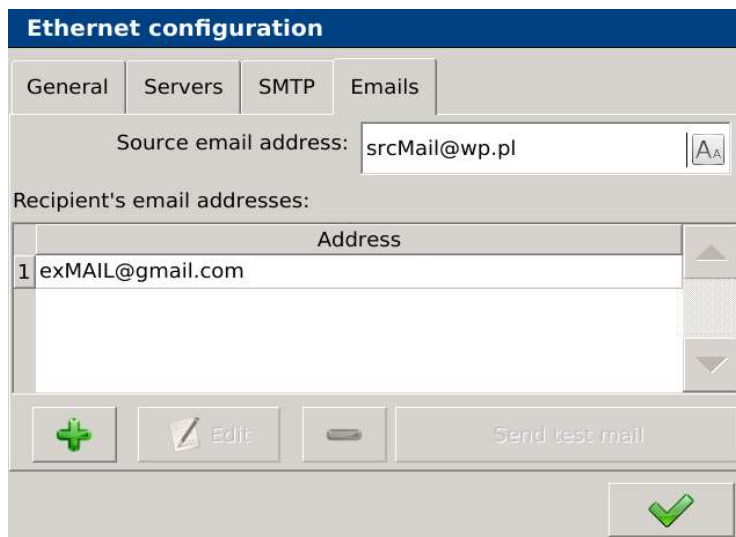


Illustration 59: Ethernet Configuration - Email.

Parameter	Description
Source address	Outgoing mail server
List of receiving email addresses	List of receiving addresses with the possibility of editing. Maximum 10 addresses on the list.
	Add a new recipient address to the address list or remove an existing address from the list.
Edition	Changing an existing address in the recipient list.
Send a test message	Sending a test message to an address on the recipient list.

3.11.4. Obtaining an IP Address

When the animated icon appears (*Illustration 60*), the device begins the process of acquiring an IP address. During this time, the existing IP connection may be dropped. The acquisition process takes up to 3 minutes. If the user's network problems persist, the device will restart. Once the IP address is successfully acquired, the icon disappears from the blue bar.

Analog inputs #1				14:03:08 2026-03-20	
Analog input				38.55	↑
AI1				---	~
TC J		None		37.97	↓
Analog input				38.53	↑
AI2				---	~
TC J		None		37.95	↓
Analog input				37.25	↑
AI3				---	~
TC J		None		36.60	↓
Analog input				37.22	↑
AI4				---	~
TC J		None		36.58	↓
Analog input				35.95	↑
AI5				---	~
TC J		None		35.24	↓
Analog input				35.94	↑
AI6				---	~
TC J		None		35.23	↓

Illustration 60: Main screen – IP loading wheel.

3.12. System information and software updates

To update the KD10 recorder software, copy the files to the SD card with the update. After completing the given action, the next step is to insert the SD card to the screen recorder.

In the Control Panel, in the System Information tab, select the "Update" group and proceed to select the update file.

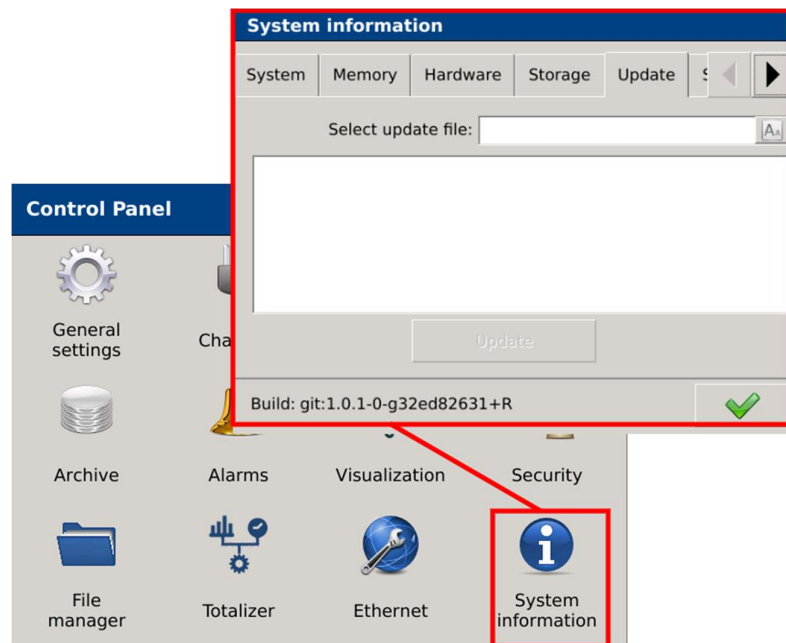


Illustration 61: Control Panel - System Information.

The user confirms their selection from the list of detected files. The next window displays information about the update.

We confirm the process by pressing the "Update" button.

4. File manager

The user can edit files stored on the SD card or USB host from the device using the file manager.

You can access file management from two places in the app. The first way is to tap the icon on the top bar of the home screen (*Illustration 62*). The second option is to tap the "File Manager" icon in the lower left corner of the control panel (*Illustration 24*).

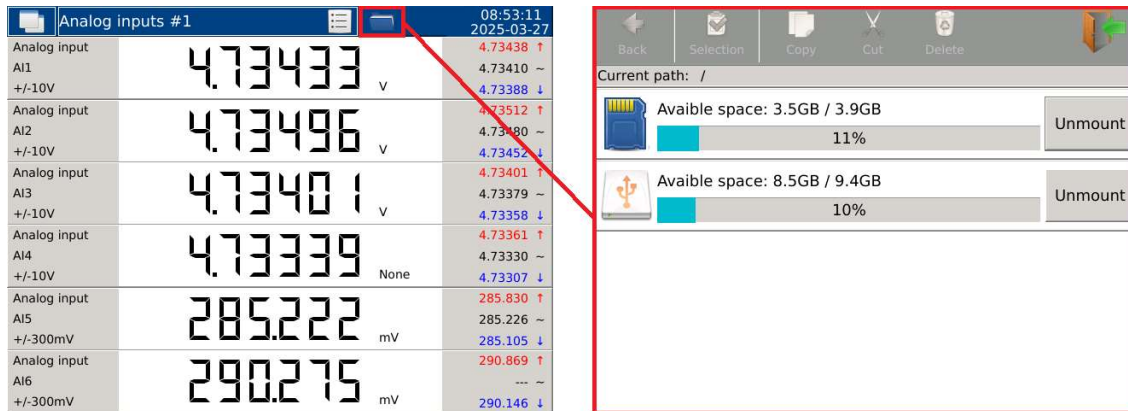


Illustration 62: Going to the file manager - navigation.

After selecting the editable resource, such as an SD card or USB host, we gain the ability to edit the files contained on it. Below is an example of selecting a file located on the SD card along with the editing options assigned to it.

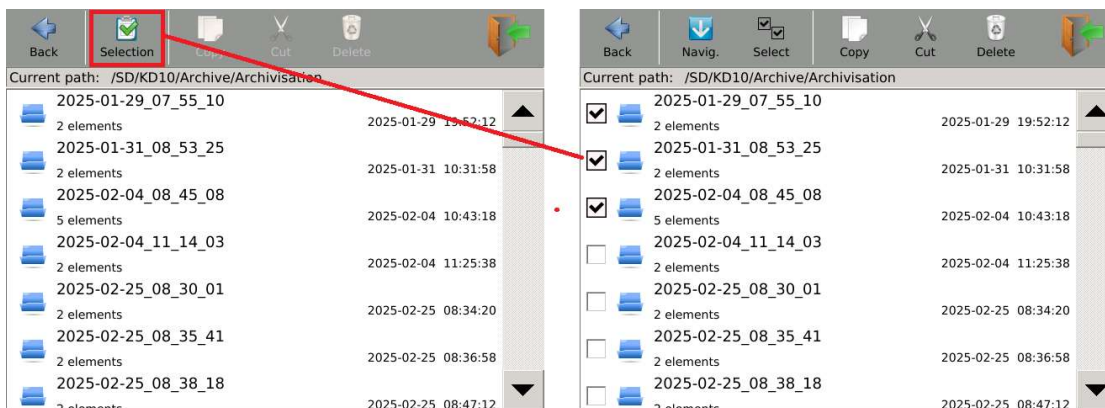


Illustration 63: File manager - file selection.

Option	Description
 Copy	Copying the selected item to any desired location on the card memory.
 Cut	Moving the selected item to any desired location on the card memory.
 Delete	Delete the selected item from the memory card.
	Exit file manager.
 Select	Selection of selected files and folders.

5. Data archiving

The archive configuration is described in section 3.6. Archiving Configuration.

Archivization			
General		Conditionals	Parameters
	Name	Interval	Condition
1	AI1 - Analog input	0.2s	
2	AI2 - Analog input	0.5s	
3	AI3 - Analog input	1s	
4	AI4 - Analog input	5s	
5	AI5 - Analog input	10s	
6	AI6 - Analog input	30s	
7	MT1 - AI1	0.2s	
8	MT2 - AI2	0.5s	
9	MT3 - AI3	1s	


 Edit
  Copy
 


Illustration 64: Archiving parameters editing window.

Downloading archive files is possible via a web server or FTP client e.g. FileZilla software or directly from an SD card.

Sample file with archived data: **2023-11-12 13_24_21.KD10Arch.sqlite3**

The file name includes the date and time the file was created. In the example above (bold text), the file has already completed archiving (all records set during archiving configuration are completed). If the file has not completed archiving, it is displayed in the file system with "_" at the beginning: **_2023-11-12 13_24_21.KD10Arch.sqlite3**

When you make changes to the archiving configuration (e.g. adding new parameters or changing archiving conditions), a new file is created with the time and date of its creation.

The file contains basic information about the archived parameters:

Parameter	Description
id/record	automatically assigned record identifier,
date	date of occurrence of the archived parameter
time	time of occurrence of the archived parameter
channel* value	rescaled channel value
channel* valueRaw	raw channel value
channel* avg	average channel value from the rolling window
channel* min	minimum channel
channel* max	maximum channel value
channel* flag	channel flag

*channel is the name of the channel in the "Parameters" tab of the archiving configuration (*Illustration 63*)

A digital signature is "encrypted" information that allows verification of the authenticity and correctness of an archive file. A properly verified file provides assurance that the file's contents have not been modified and unambiguous information about its owner.

The software is used to handle file archiving and verify digital signatures **PowerArchive**.

Digital signatures can also be verified in free programs that support OpenPGP, e.g. Kleopatra.

Signature configuration is described in section 3.9.

6. Alarms

The KD10 recorder in some versions (according to the order code) is equipped with 4 or 8 relay alarm outputs.

The rules for configuring alarms are described in section 3.7. Alarm Configuration.

Analog inputs #1				08:44:01 2024-09-12
Analog input	32.55	°C	34.18 ↑	
AI1			---	---
TC J			31.00 ↓	
Analog input	32.56	°C	34.18 ↑	
AI2			---	---
TC J			31.02 ↓	
TJ3	546.27	°C	578.44 ↑	
AI3			---	---
TC J			515.45 ↓	
Analog input	0.00	V	0.00 ↑	
AI4			---	---
+/-10V			-0.00 ↓	
Analog input	31.17	°C	32.84 ↑	
AI5			---	---
TC J			29.52 ↓	
Analog input	31.14	°C	32.81 ↑	
AI6			---	---
TC J			29.50 ↓	

Illustration 65: View without active alarm.

Analog inputs #1				10:17:00 2024-09-11
Analog input	33.84	°C	33.88 ↑	
AI1			---	---
TC J			33.83 ↓	
Analog input	33.85	°C	33.90 ↑	
AI2			---	---
TC J			33.84 ↓	
TJ3	572.05	°C	572.27 ↑	
AI3			---	---
TC J			571.60 ↓	
Analog input	0.00	V	0.00 ↑	
AI4			---	---
+/-10V			0.00 ↓	
Analog input	32.49	°C	32.52 ↑	
AI5			---	---
TC J			32.47 ↓	
Analog input	32.46	°C	32.48 ↑	
AI6			---	---
TC J			32.44 ↓	

Illustration 66: View with active alarm.

The above illustration on the left (*Illustration 65*) shows the operating mode in which no alarm-activating event occurred. In the illustration on the right (*Illustration 66*) you can see the operating mode with the alarm enabled.

When an alarm is triggered, the information bar at the top of the screen changes color from blue to red. An additional element is also displayed.

Analog inputs #1

10:39:15
2026-04-10

39.08

39.13 ↑

38.88 ↓

User title

AI1

TC J

Analog input

+/-300mV

Analog input

AI3

TC J

Analog input

AI4

TC J

Analog input

AI5

TC J

Analog input

AI6

TC J

Alarms list

Alarm 1	AI1 - User title	Threshold	active - unconfirmed

Confirm

Illustration 67: Alarm list.

Touching the element generated when the alarm is triggered in the top panel will display the alarm confirmation window.

Confirming a selected alarm changes its color and status description to confirmed, just like in the illustration below (*Illustration 68*).

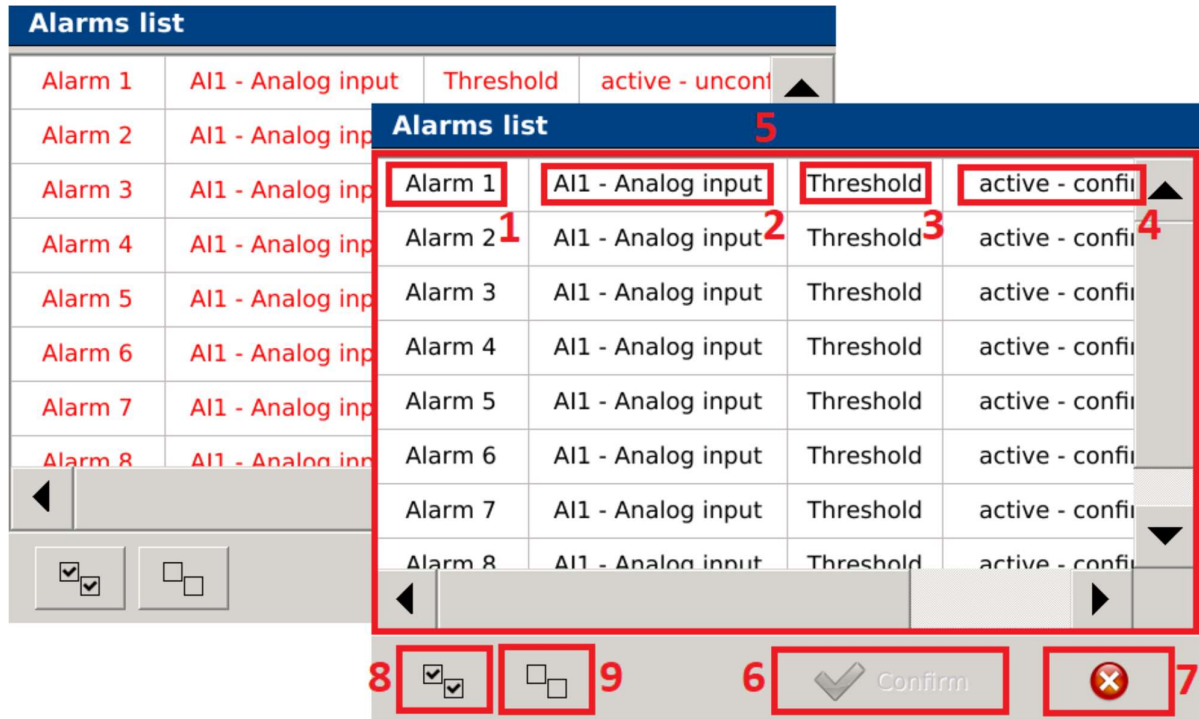


Illustration 68: Confirming an alarm from the list.

Option	Description
1	Alarm number, set by the user.
2	Channel assigned to a given alarm. The parameter value triggers activation or turning off the alarm.
3	The alarm type assigned to the displayed event.
4	Current alarm status.
5	Main window with information about alarm occurrences.
6	A function that allows you to confirm alarms.
7	Exiting the dialogue.
8	Select all alarms.
9	Deselect all alarms.

If the alarm configuration is set to report the alarm status in the alarm logs, events related to the activation or deactivation of the alarm will be recorded.

Alarm log				
No.	Date	Time	Entry	
9	2024-09-12	10:38:13	32.9369°C) (€ <20 , 40>)	▲
8	2024-09-12	08:42:30	Alarm 1 - Confirmed by Admin	
7	2024-09-11	14:02:51	Alarm 1 - On (AI1 - Analog input = 33.9703°C) (€ <20 , 40>)	
6	2024-09-11	11:05:19	Alarm 1 - On (AI1 - Analog input = 33.8979°C) (€ <20 , 40>)	
5	2024-09-11	11:01:26	Alarm 1 - On (AI1 - Analog input = 33.8435°C) (€ <20 , 40>)	
4	2024-09-11	10:48:44	Alarm 1 - On (AI1 - Analog input = 33.7373°C) (€ <20 , 40>)	
3	2024-09-11	10:22:42	Alarm 1 - On (AI1 - Analog input = 33.736°C) (€ <20 , 40>)	
2	2024-09-11	10:17:13	Alarm 1 - Confirmed by Admin	
1	2024-09-11	10:16:32	Alarm 1 - On (AI1 - Analog input = 33.8624°C) (€ <20 , 40>)	▼
◀ ▶				

Illustration 69: Alarm log.

Op- tion	Description
No.	A number specifying the order in which alarm events occurred.
Data	Date the event occurred.
Time	Time of occurrence of the event.
Entry	An entry containing information about an event. The description includes the alarm ID, the event, and the value that triggered the event.

Alarm logs are managed using the context menu (*Illustration 70*). Details regarding its opening are described in point 2.1.2 and presented at *Illustration 6*. Option *Clear this journal*, will clear the log window of saved entries. Option *Acknowledging alarms*, will redirect you to the previously described dialog for confirming selected alarms. The deletion and confirmation options require confirmation of your authorizations. After selecting this option, a dialog is generated in which the user enters their username and assigned password.

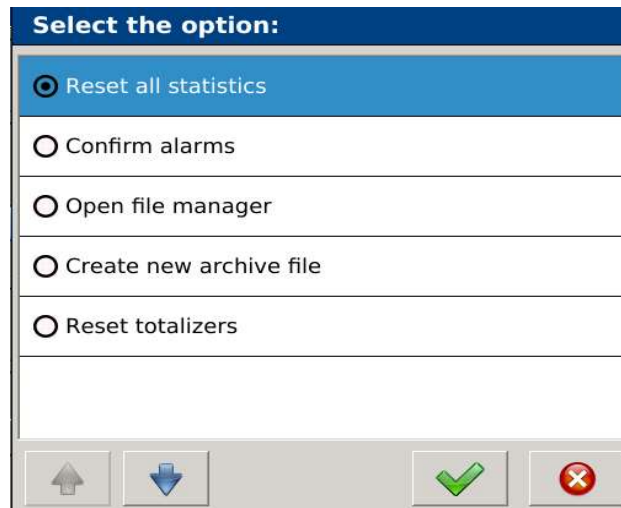


Illustration 70: Context menu.

Alarm logs are saved on the SD card. The file containing the current logs is saved as **alarm.log.sqlite3** the **alarm.log.csv**.

A preview of the list of files stored on the SD card is shown below.

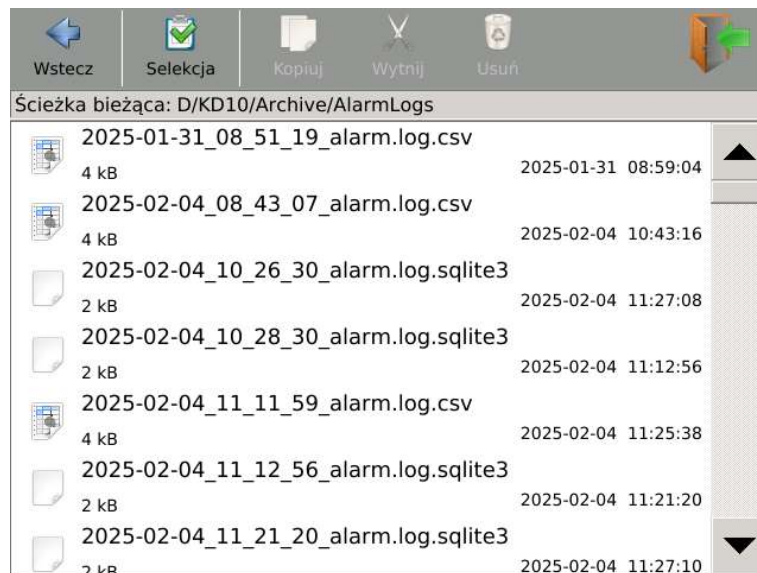


Illustration 71: Alarms - entries in the log file.

Example file name for both formats:

- 2023-09-07_12_26_30_alarm.log.sqlite3
- 2023-09-07_12_26_30_alarm.log.csv

7. Web server

We gain access to the web server by entering the IP address assigned to a given screen recorder in the browser window.

The screenshot displays the KD10 web server interface in a browser window. The address bar shows the URL `10.0.210.109/main`. The page title is "KD10 Screen recorder" and the user is logged in as "Admin".

Measurement data (Analog inputs, 1s refresh):

Name	Value
AI1 - User tite	34.83
AI2 - Analog input	4.78
AI3 - Analog input	1e+20
AI4 - Analog input	280.31
AI5 - Analog input	33.62
AI6 - Analog input	33.61
AI7 - Analog input	279.13
AI8 - Analog input	282.97
AI9 - Analog input	284.11
AI10 - Analog input	279.47
AI11 - Analog input	280.63
AI12 - Analog input	283.81

Alarms

Alarm 1 (AI1 - User tite = 34.6306°C) (> 30) 12:24:18

Confirm

Files: /KD10/Archive/Archivisation

Name	Modified	Size
2025-05-30_10_39_44	2025-05-30 12:28:24	4.0 kB
2025-05-30_11_48_49	2025-05-30 12:28:24	4.0 kB
2025-05-30_11_54_56	2025-05-30 12:28:24	4.0 kB
2025-05-30_12_24_18	2025-05-30 12:51:07	4.0 kB

System information

Device name	KD10
Device description	Screen Recorder
Serial number	25050001
System version	1.0.1
Used space on SD card	8%

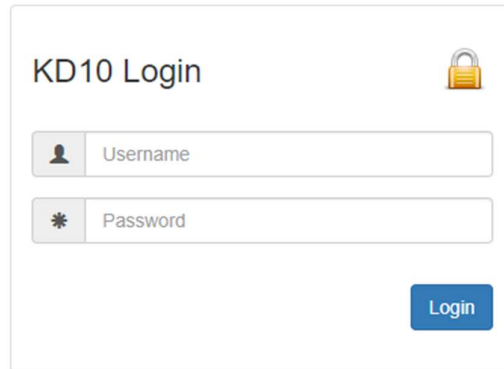
Illustration 72: Website view.

7.1.Navigation

7.1.1. Login

Depending on the Ethernet configuration settings, the user is provided with two modes of access to the web server. The first mode **Authorized access** is preceded by a login window. **Anonymous access** automatically redirects to a website with limited functionality.

The login window is shown in the illustration below (*Illustration 72*). Login and password are consistent with the device's security configuration (section 3.9).



The illustration shows a web browser window titled 'KD10 Login'. It features a lock icon in the top right corner. Below the title, there are two input fields: 'Username' with a person icon and 'Password' with an asterisk icon. A blue 'Login' button is positioned at the bottom right of the form.

Figure 73: Web server - login.

7.1.2. Functionality

The website presents the current measurement results with adjustable refresh time, visible in the illustration below (*Illustration 74*). Measurement sets can be individually configured or presented in prepared sets. Values associated with the occurrence of an alarm (not confirmed) turn red.

Measurement data		Analog inputs ▼	1s ▼
Name	Value		
AI1 - User tite	34.83		
AI2 - Analog input	4.78		
AI3 - Analog input	1e+20		
AI4 - Analog input	280.31		
AI5 - Analog input	33.62		
AI6 - Analog input	33.61		
AI7 - Analog input	279.13		
AI8 - Analog input	282.97		
AI9 - Analog input	284.11		
AI10 - Analog input	279.47		
AI11 - Analog input	280.63		
AI12 - Analog input	283.81		

Illustration 74: Table with measured values – www.

The alarm section presents the current alarm status in authorized access mode, with the ability to confirm alarms.

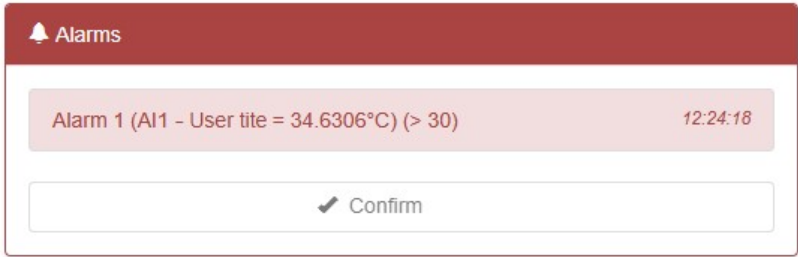


Illustration 75: Table with a list of active alarms.

Log file management, configuration, and archiving sections. Module editing and viewing are only possible in authorized access mode.

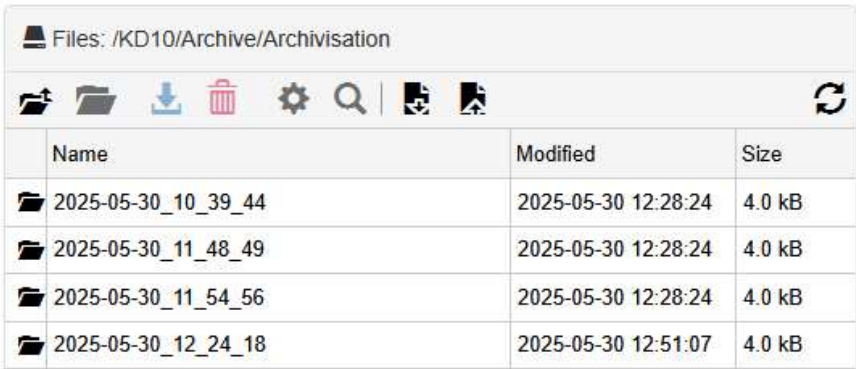


Illustration 76: File Manager – www.

The information section contains basic information about the device.

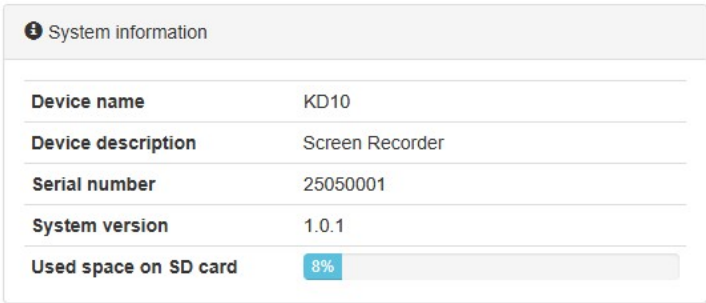


Illustration 77: Device Information - www.

7.1.3. Configuring user measurement data sets

Defining measurement data sets is performed as follows.

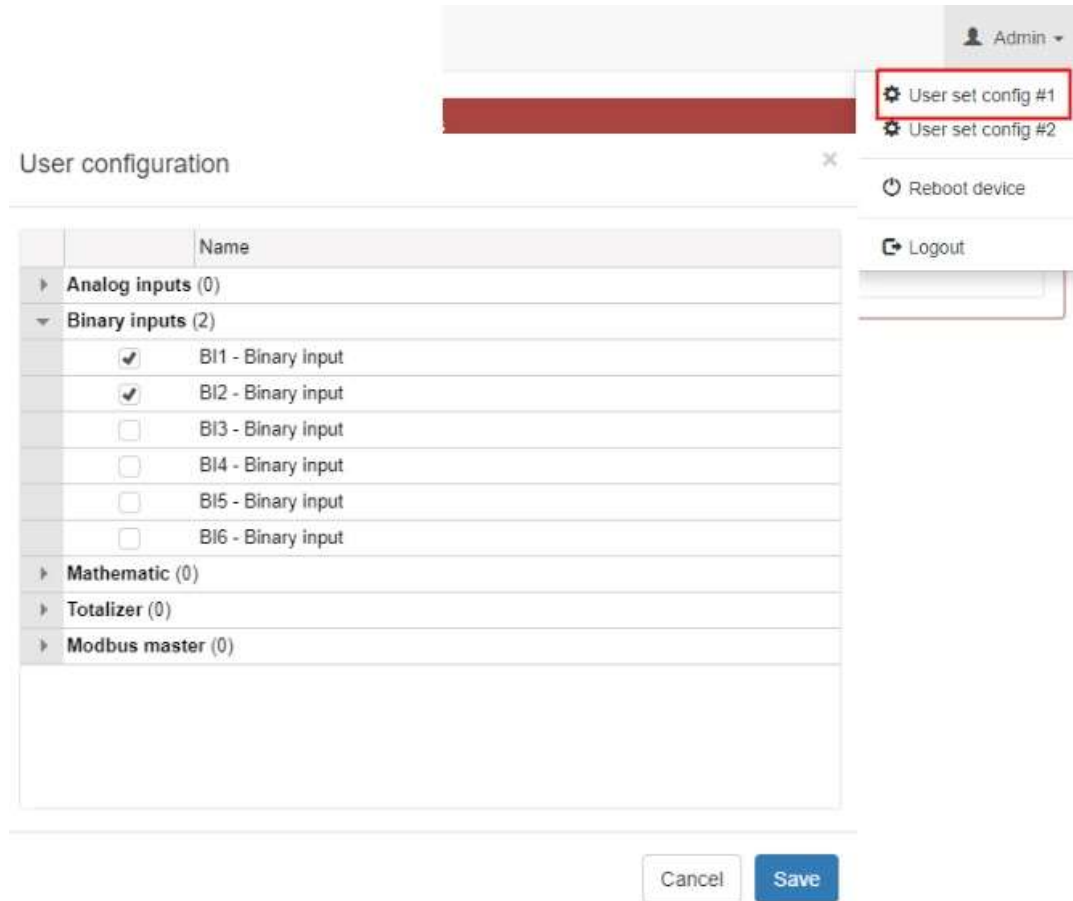


Illustration 78: Selecting a user set - website.

In the next window, select the data to be presented in the measurement data window. The user selects a parameter group, in which they can expand the list and select or deselect selected parameters. After completing the configuration, select the option **Save** (to save changes) or **Cancel** (close the window without making any changes).

7.1.4. Selecting and viewing measurement data sets

Below is an expanded list of measurement data sets, with user-configured sets at the end. Changing the refresh time allows you to regulate the frequency of measurement data updates presented on the page.

Measurement data		Analog inputs ▾	1s ▾
Name			
AI1 - Analog input		Analog inputs	
AI2 - Analog input		Binary inputs	
AI3 - Analog input		Mathematic	
AI4 - Analog input		Totalizer	
AI5 - Analog input		Modbus master	
AI6 - Analog input		Values other	
AI7 - Analog input		User set #1	
AI8 - Analog input	5.82790	User set #2	
AI9 - Analog input	0.00001		
AI10 - Analog input	0.00008		
AI11 - Analog input	5.82789		
AI12 - Analog input	0.00000		

Illustration 79: List of display value sets.

7.1.5. Alarm confirmation

Alarm module window with information about alarm occurrences.

Alarms

Alarm 1 (AI7 - Analog input = 5.78849None) (> 4.5)
 18:16:21

Confirm

Illustration 80: Alarm occurrence.

The user selects the alarm to be confirmed and confirms the selection with the option **Confirm**.

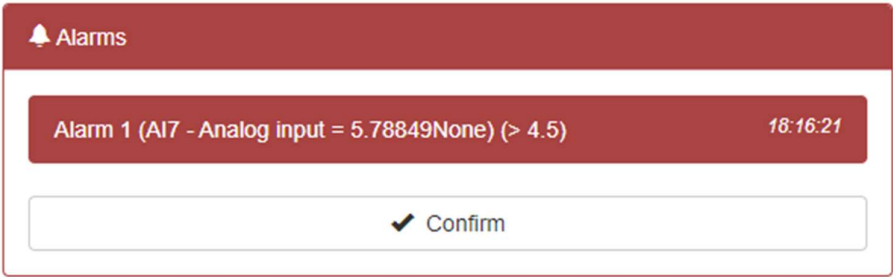


Illustration 81: Select alarm to acknowledge.

7.1.6. File manager

Below is a description of the individual functions of the file manager on the web server.

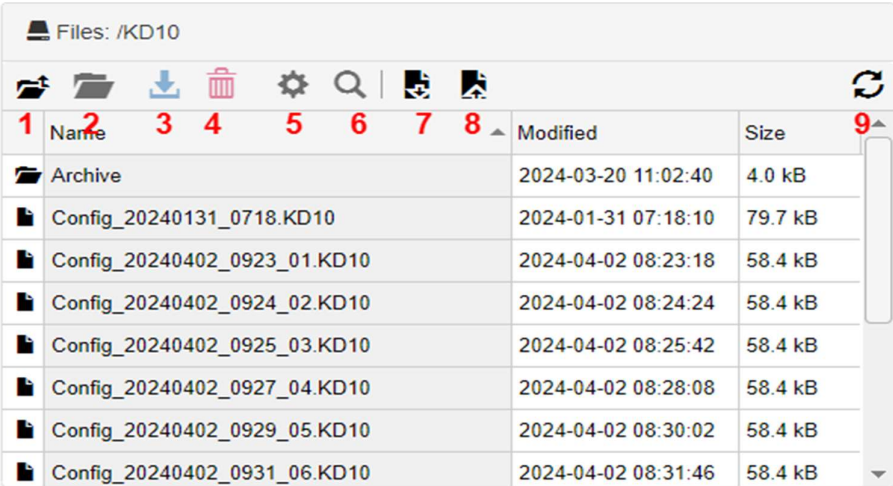


Illustration 82: File manager - website.

Item number (icons)	Description
1	Go to a folder higher in the path.
2	Opening a folder.
3	Downloading available files.
4	Deleting files
5	Setting configuration from file.
6	Preview of file contents (archive files).
7	Downloading current configuration.
8	Transferring a file to a memory card.
9	Refreshing and updating the file list.

7.1.7. Log out and restart the device

The option to log out of the server is located in the upper right corner of the browser. From the drop-down list after selecting the currently logged in user, select **Log out** (*Illustration 83 – Option 2*).

Remote restart of the device via the website can be performed as shown in the illustration (*Illustration 83 – Option 1*). To restart the device from the drop-down list after selecting the currently logged in user, select the option **Restart your device**. In the next window, confirm the restart of KD10.

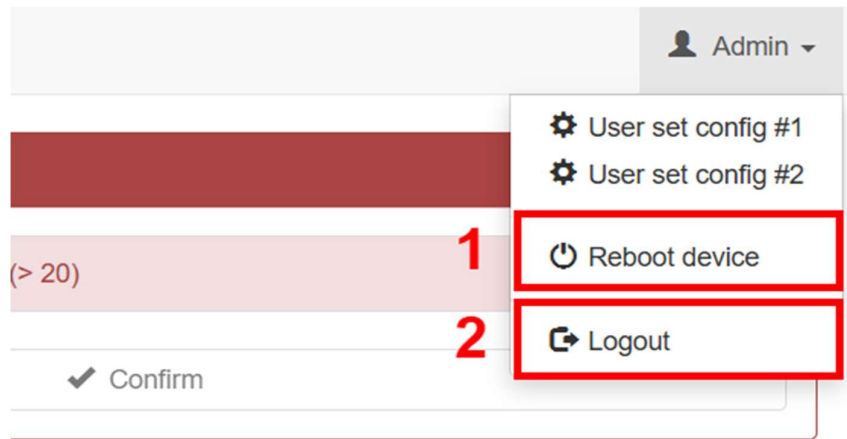


Illustration 83: Logout/restart device.

7.2. Access levels

No .	Option	Authorized access		Anonymous access
General				
1	Login / Logout	✓		×
2	Restart the device	✓		×
3	Configuration of user measurement data sets.	✓		×
Measurement data				
4	Preview of measurement data	✓		✓
5	Selecting defined sets	✓		✓
6	Selecting user sets	✓		×
7	Changing the measurement data refresh time	✓		✓
8	Disabling the refreshing of measurement data	✓		✓
Alarms				
9	Alarm preview	✓		✓
10	Acknowledging alarms*	✓	×	×
Files				
11	File preview*	✓	×	×
12	Refreshing file list*	✓	×	×
13	Opening and closing directories*	✓	×	×
14	Download files*	✓	×	×
15	Deleting files*	✓	×	×
16	Setting configuration from file*	✓	×	×
17	Archive file preview*	✓	×	×
System Information				
18	View system information	✓		✓

* function availability depends on user permission settings

8. PC programs

8.1.KD10 Setup

KD10 Setup is a program that allows you to prepare a configuration file for the KD10 recorder. This file should be placed on an SD card and allows you to load a user-prepared configuration.

8.1.1. Program operation

The KD10Setup program interface is identical to the KD10 recorder menu, which makes it easier to use.

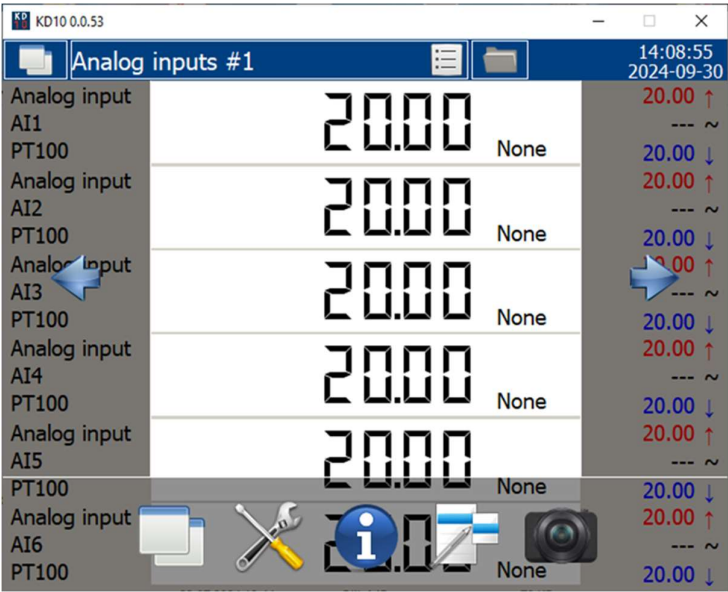


Illustration 84: KD10 Setup software view.

After entering the settings  a window for selecting a measurement card depending on the number of analog inputs is displayed.

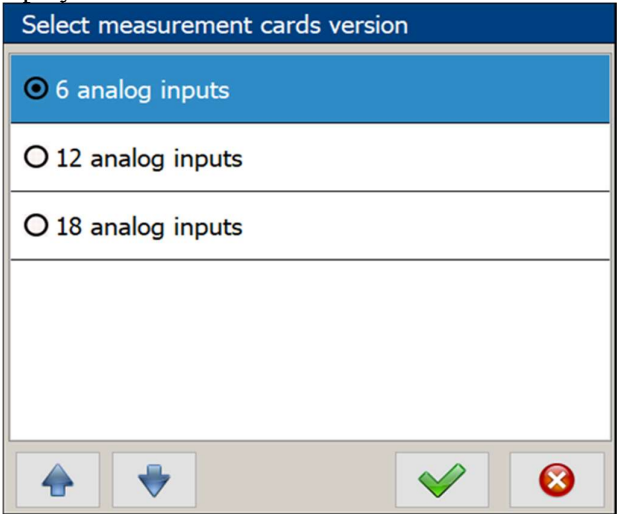


Illustration 85: Measurement card selection options.

The next step is to select an expansion card.

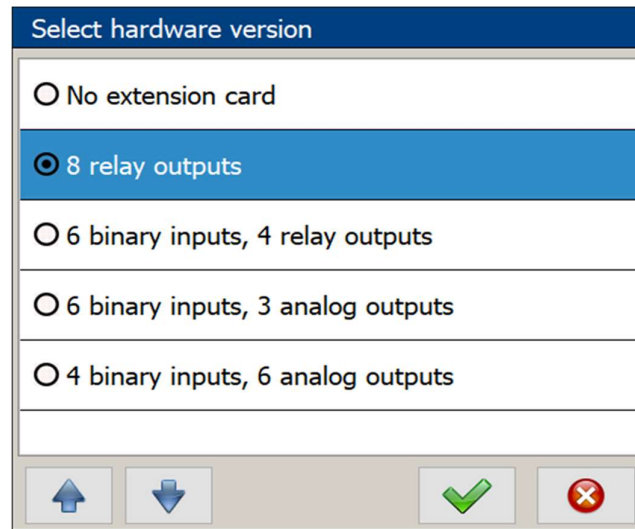


Illustration 86: Expansion card selection options.

After selecting the appropriate cards for the configurable device, we move on to editing configuration and control panel view



Illustration 87: Control panel view.

Once all options are set and the control panel is closed, the user configuration is saved.

8.1.2. Saving the settings file

The user configuration file is saved in the folder where the KD10Setup program is installed.

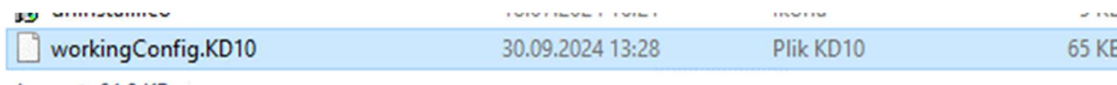


Illustration87: Configuration file

To load the configuration on the KD10 recorder, this file must be copied to the SD card in the KD10 folder.

9. Technical data

9.1. Universal measurement input card

Measurement ranges

LP.	Entry type	Range of indications (rated range)	Class
1	PT100	-200...850 °C (-200...850 °C)	0,1
2	PT1000	-200...850 °C (-200...850 °C)	
3	400 Ω	0...440 Ω (0...400 Ω)	
4	4000 Ω	0...4040 Ω (0...4000 Ω)	
5	Type E thermocouple	-205...1000 °C (-150...1000 °C)	
6	Type J thermocouple	-205...1200 °C (-150...1200 °C)	
7	K-type thermocouple	-205...1372 °C (-150...1372 °C)	
8	N-type thermocouple	-205...1372 °C (-150...1372 °C)	
9	R-type thermocouple	-50...1768 °C (-50...1768 °C)	
10	S-type thermocouple	-50...1768 °C (-50...1768 °C)	
11	Voltage input 60 mV	-75...75 mV (-60...60 mV)	
12	Voltage input 150 mV	-155...155 mV (-150...150 mV)	
13	Voltage input 300 mV	-310...310 mV (-300...300 mV)	
14	Voltage input 10 V	-13...13 V (-10...10 V)	
15	Current input 0...20 mA	-24...24 mA (-20...20 mA)	
16	Current input 4...20 mA	3,6...22.0 mA (4...20 mA)	

Parameters of the measurement tracks

Current in the sensor circuit during resistance measurements	< 175 μ A
Input resistance for voltage measurements: thermocouples, 60 mV, 150 mV, 300 mV, 0...10 V	> 1 M Ω
Input resistance for current ranges	< 11 Ω
Measuring lead resistance compensation range (maximum single lead resistance)	< 20 Ω
Automatic terminal temperature compensation range for thermocouple sensor measurements	-30...80 °C
Insulation between channels	500 V DC

Additional measurement errors

Automatic compensation of the reference junction temperature	< 1 °C
Automatic compensation of wire resistance for thermoresistance sensors	< 0.5 °C
Automatic compensation of wire resistance for resistance measurements	< 0.2 Ω (range 400 Ω) < 2 Ω (range 4000 Ω)
From changes in ambient temperature (main measurement path and cable resistance compensation paths)	50% class / 10 K

Measurement frequency: 10Hz (the card measures every 100ms)

9.2.Expansion cards

Additional cards and their inputs depend on the KD10 recorder build code.

9.2.1. Three isolated analog outputs

Parameter	Value
Type:	3 galvanically isolated current outputs
Output signal:	0/4...20 mA
Output measurement error:	$\pm 0.2\%$ of the measuring range
Load resistance:	$\leq 500\Omega$
Response time:	200 ms

9.2.2. Six isolated analog outputs

Parameter	Value
Type:	6 galvanically isolated current outputs
Output signal:	0/4...20 mA
Output measurement error:	$\pm 0.2\%$ of the measuring range
Load resistance:	$\leq 500\Omega$
Response time:	200 ms

9.2.3. Binary inputs

Parameter	Value
Type:	2 groups of 3 binary inputs with common ground
Control signal:	0...2/8...24 V DC
Switching frequency:	up to 50 Hz input voltage in the range of 8...24 V DC

9.2.4. Relay outputs

Parameter	Value
Type:	8 or 4 programmable electromagnetic relays, normally open (NO)
Contact voltage / load current:	≤ 250 V AC / 1,5 A ≤ 30 V DC / 1A
Basic output error:	200 ms + hysteresis time

9.3.Reference conditions and rated operating conditions

Storage conditions (temperature and humidity)	Temperature: -20...70°C (-22...158 °F) Humidity: less than 75% RH (non-condensing)
Operating conditions (temperature and humidity)	Temperature: 0...23...50°C (32...93.2...122°F) Humidity: less than 75% RH (non-condensing)
Power supply	85...253 V AC, 40...400 Hz 90...300 V DC
Power consumption	≤ 20 VA
Dust and water resistance	IP54 – from the front side IP20 – terminal side

9.4.Operational safety according to PN-EN 61010-1

Installation Category	III
Degree of pollution	2
Insulation voltage to earth	<ul style="list-style-type: none"> • RS-485: 500V AC/DC • Ethernet: 250V AC / 500V DC • Temperature measurement input: 500V AC/DC • Power supply and relay output circuits: 2140 V AC/DC • Analog outputs: 500V AC/DC • Binary inputs: 1200V AC/DC
Maximum operating voltage to ground	For power supply circuits and relay outputs: 300 V For measuring input: 50 V For RS-485, Ethernet, relay outputs, analog outputs and binary inputs: 50 V
Height above sea level	< 2000 m

9.5.Electromagnetic compatibility

Electromagnetic emission	compliant with EN 61000-6-4
Immunity to interference	compliant with EN 61000-6-2

9.6.Installation

Dimensions (width x height x depth)	144 × 144 × 104 mm (5.669" × 5.669" × 4,094")
Mounting hole dimensions (width x height)	138 ^{-0,5} x 138 ^{-0,5} mm (5.433 ^{-0,02"} × 5.433 ^{-0,02"})
Libra	1,5 kg (52.9 oz.)

9.7.Compliance with standards

EN 61010	Operational safety
EN 61000-6-4	Electromagnetic compatibility
EN 61000-6-2	

9.8. Register tables

The KD10 recorder contains data stored in 16-bit and 32-bit registers. The bits in the 16-bit registers are numbered from least significant to oldest (b0 ... b15). 32-bit registers (4 bytes, 2 x 16 bits) contain float registers with byte arrangement: B4 B3 B2 B1.

Attention! All addresses given are physical addresses. Some computer programs use logical addressing, in which case the addresses must be incremented by 1.

The KD10 register map is presented below.

Address range	Register type	Description
0000 - 0019	Integer (16 bits)	Information and status registers.
0300 - 0363	Integer (16 bits)	Alarms
0800 - 0802	Float (2 x 16 bits)	Temperature
0900 - 0910	Float (2 x 16 bits)	Binary inputs
1000 - 1170	Float (2 x 16 bits)	Universal analog measurement inputs
1200 - 1222	Float (2 x 16 bits)	Totalizer
1600 - 1634	Float (2 x 16 bits)	Mathematical functions
2000 - 2062	Float (2 x 16 bits)	Modbus Master → for one selected register
2400 - 3020	Float (2 x 16 bits) x 10	Modbus Master Group → Forwarding

9.8.1. Information registers and statuses

Register	Register type	Parameter
0000	Integer (16 bits)	Device ID - 0xEF (239)
0001	Integer (16 bits)	Main program version
0002	Integer (16 bits)	Measurement card program version
0003	Integer (16 bits)	Status 1
0004	Integer (16 bits)	Status 2
0005	Integer (16 bits)	Status 3
0006	Integer (16 bits)	Time: seconds
0007	Integer (16 bits)	Time: hours and minutes (hour * 100 + minutes)
0008	Integer (16 bits)	Date: month and day (month * 100 + day)
0009	Integer (16 bits)	Dates: year
0010	Integer (16 bits)	Serial number
0011	Integer (16 bits)	Serial number
0012	Integer (16 bits)	Password to confirm the execution of the CMD command
0013	Integer (16 bits)	CMD command assignment number
0014	Integer (16 bits)	Hardware version of the device

0015	Integer (16 bits)	The fifth and fourth bytes (B5.B4) of the meter's MAC address, format: B5:B4:B3:B2:B1:B0 25651 (0x6433 = 64:33)
0016	Integer (16 bits)	The third and second bytes (B3.B2) of the meter's MAC address, format: B5:B4:B3:B2:B1:B0 56090 (0xDB1A = DB:1A)
0017	Integer (16 bits)	The first and zero bytes (B1.B0) of the meter's MAC address, format: B5:B4:B3:B2:B1:B0 27051 (0x69AB = 69:AB)
0018	Integer (16 bits)	The third and second bytes (B3.B2) of the meter's IP address, IPv4 format: B3.B2.B1.B0 49320 (0xC0A8 = 192.168)
0019	Integer (16 bits)	The first and zero bytes (B1.B0) of the meter's IP address, IPv4 format: B3.B2.B1.B0 356 (0x0164 = 1.100)

9.8.2. Binary input registers

Register	Register type	Description
0900	Float 3210 (2 x 16 bits)	Binary input 0
0902	Float 3210 (2 x 16 bits)	Binary input 1
0904	Float 3210 (2 x 16 bits)	Binary input 2
0906	Float 3210 (2 x 16 bits)	Binary input 3
0908	Float 3210 (2 x 16 bits)	Binary input 4
0910	Float 3210 (2 x 16 bits)	Binary input 5

9.8.3. Universal analog measurement input registers

Register	Register type	Parameter
1000	Float 3210 (2 x 16 bits)	Universal Analog Input 1
1010	Float 3210 (2 x 16 bits)	Universal Analog Input 2
1020	Float 3210 (2 x 16 bits)	Universal Analog Input 3
1030	Float 3210 (2 x 16 bits)	Universal Analog Input 4
1040	Float 3210 (2 x 16 bits)	Universal Analog Input 5
1050	Float 3210 (2 x 16 bits)	Universal Analog Input 6
1060	Float 3210 (2 x 16 bits)	Universal Analog Input 7
1070	Float 3210 (2 x 16 bits)	Universal Analog Input 8
1080	Float 3210 (2 x 16 bits)	Universal Analog Input 9
1090	Float 3210 (2 x 16 bits)	Universal Analog Input 10
1100	Float 3210 (2 x 16 bits)	Universal Analog Input 11
1110	Float 3210 (2 x 16 bits)	Universal analog input 12
1120	Float 3210 (2 x 16 bits)	Universal Analog Input 13
1130	Float 3210 (2 x 16 bits)	Universal analog input 14
1140	Float 3210 (2 x 16 bits)	Universal Analog Input 15
1150	Float 3210 (2 x 16 bits)	Universal analog input 16
1160	Float 3210 (2 x 16 bits)	Universal analog input 17
1170	Float 3210 (2 x 16 bits)	Universal analog input 18

9.8.4. Totalizer

Register	Register type	Parameter
1200	Float 3210 (2 x 16 bits)	Totalizer 0
1202	Float 3210 (2 x 16 bits)	Totalizer 1
1204	Float 3210 (2 x 16 bits)	Totalizer 2
1206	Float 3210 (2 x 16 bits)	Totalizer 3
1208	Float 3210 (2 x 16 bits)	Totalizer 4
1210	Float 3210 (2 x 16 bits)	Totalizer 5
1212	Float 3210 (2 x 16 bits)	Totalizer 6
1214	Float 3210 (2 x 16 bits)	Totalizer 7
1216	Float 3210 (2 x 16 bits)	Totalizer 8
1218	Float 3210 (2 x 16 bits)	Totalizer 9
1220	Float 3210 (2 x 16 bits)	Totalizer 10
1222	Float 3210 (2 x 16 bits)	Totalizer 11

9.8.5. Mathematical functions

Register	Register type	Description
1600	Float 3210 (2 x 16 bits)	Mathematical Function 0
1602	Float 3210 (2 x 16 bits)	Mathematical Function 1
1604	Float 3210 (2 x 16 bits)	Mathematical Function 2
1606	Float 3210 (2 x 16 bits)	Mathematical Function 3
1608	Float 3210 (2 x 16 bits)	Mathematical Function 4
1610	Float 3210 (2 x 16 bits)	Mathematical Function 5
1612	Float 3210 (2 x 16 bits)	Mathematical Function 6
1614	Float 3210 (2 x 16 bits)	Mathematical Function 7
1616	Float 3210 (2 x 16 bits)	Mathematical Function 8
1618	Float 3210 (2 x 16 bits)	Mathematical Function 9
1620	Float 3210 (2 x 16 bits)	Mathematical Function 10
1622	Float 3210 (2 x 16 bits)	Mathematical Function 11
1624	Float 3210 (2 x 16 bits)	Mathematical Function 12
1626	Float 3210 (2 x 16 bits)	Mathematical Function 13
1628	Float 3210 (2 x 16 bits)	Mathematical Function 14
1630	Float 3210 (2 x 16 bits)	Mathematical Function 15
1632	Float 3210 (2 x 16 bits)	Mathematical Function 16
1634	Float 3210 (2 x 16 bits)	Mathematical Function 17

9.8.6. Modbus Master – one selected register

Register	Register type	Description
2000	Float 3210 (2 x 16 bits)	MODBUS MASTER 0
2002	Float 3210 (2 x 16 bits)	MODBUS MASTER 1
2004	Float 3210 (2 x 16 bits)	MODBUS MASTER 2
2006	Float 3210 (2 x 16 bits)	MODBUS MASTER 3
2008	Float 3210 (2 x 16 bits)	MODBUS MASTER 4
2010	Float 3210 (2 x 16 bits)	MODBUS MASTER 5
2012	Float 3210 (2 x 16 bits)	MODBUS MASTER 6
2014	Float 3210 (2 x 16 bits)	MODBUS MASTER 7
2016	Float 3210 (2 x 16 bits)	MODBUS MASTER 8
2018	Float 3210 (2 x 16 bits)	MODBUS MASTER 9
2020	Float 3210 (2 x 16 bits)	MODBUS MASTER 10
2022	Float 3210 (2 x 16 bits)	MODBUS MASTER 11
2024	Float 3210 (2 x 16 bits)	MODBUS MASTER 12
2026	Float 3210 (2 x 16 bits)	MODBUS MASTER 13
2028	Float 3210 (2 x 16 bits)	MODBUS MASTER 14
2030	Float 3210 (2 x 16 bits)	MODBUS MASTER 15
2032	Float 3210 (2 x 16 bits)	MODBUS MASTER 16
2034	Float 3210 (2 x 16 bits)	MODBUS MASTER 17
2036	Float 3210 (2 x 16 bits)	MODBUS MASTER 18
2038	Float 3210 (2 x 16 bits)	MODBUS MASTER 19
2040	Float 3210 (2 x 16 bits)	MODBUS MASTER 20
2042	Float 3210 (2 x 16 bits)	MODBUS MASTER 21
2044	Float 3210 (2 x 16 bits)	MODBUS MASTER 22
2046	Float 3210 (2 x 16 bits)	MODBUS MASTER 23
2048	Float 3210 (2 x 16 bits)	MODBUS MASTER 24
2050	Float 3210 (2 x 16 bits)	MODBUS MASTER 25
2052	Float 3210 (2 x 16 bits)	MODBUS MASTER 26
2054	Float 3210 (2 x 16 bits)	MODBUS MASTER 27
2056	Float 3210 (2 x 16 bits)	MODBUS MASTER 28
2058	Float 3210 (2 x 16 bits)	MODBUS MASTER 29
2060	Float 3210 (2 x 16 bits)	MODBUS MASTER 30
2062	Float 3210 (2 x 16 bits)	MODBUS MASTER 31

9.8.7. Modbus Master – Transferred Group

Register	Register type	Description
2400	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 0
2420	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 1
2440	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 2
2460	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 3
2480	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 4
2500	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 5
2520	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 6
2540	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 7
2560	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 8
2580	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 9
2600	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 10
2620	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 11
2640	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 12
2660	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 13
2680	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 14
2700	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 15
2720	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 16
2740	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 17
2760	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 18
2780	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 19
2800	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 20
2820	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 21
2840	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 22
2860	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 23
2880	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 24
2900	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 25
2920	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 26
2940	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 27
2960	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 28
2980	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 29
3000	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 30
3020	10 registers x (16 or 32 bits)*	MODBUS MASTER GROUP 31

* Depending on the Modbus Master channel configuration (section 3.3.5) - overwritten registers 1 do 1.

10. Execution codes

KD10 Screen Recorder-	X	X	XX	X	X
Measurement inputs:					
6 programmable measurement inputs	1				
12 programmable measurement inputs	2				
18 programmable measurement inputs	3				
Additional inputs/outputs¹					
lack	0				
8 relay outputs	1				
6 binary inputs, 4 relay outputs	2				
6 binary inputs, 3 analog outputs	3				
4 binary inputs, 6 analog outputs	4				
Execution					
standard			00		
special*			XX		
Language version:					
multilingual Polish/English				M	
other*				X	
Acceptance tests:					
no additional requirements					0
with additional quality control certificate					1
with calibration certificate					2
as agreed with the recipient*					X

¹option not available for 18 programmable measurement inputs

*only after consultation with the manufacturer

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