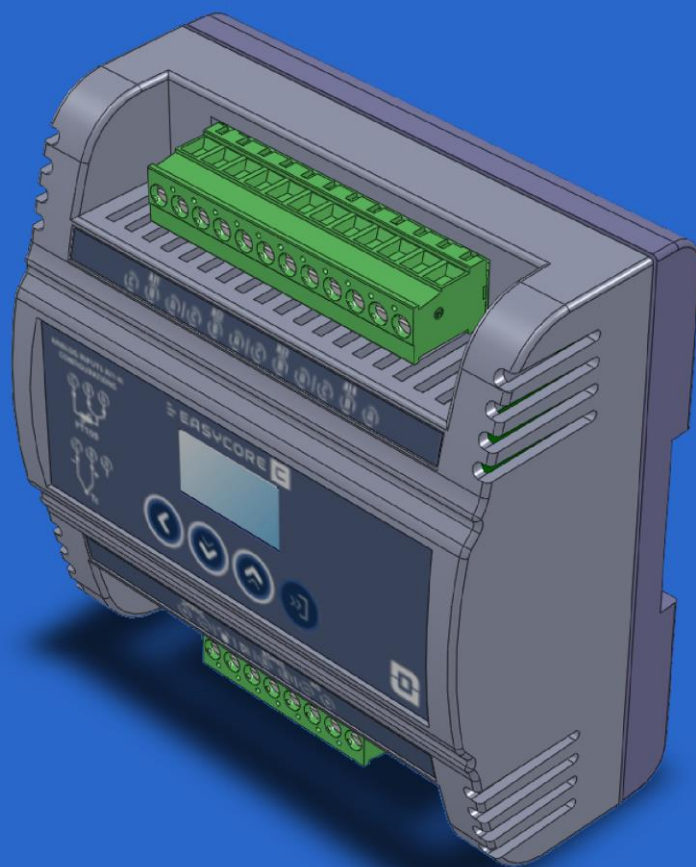


# EASY CORE C 400

USER MANUAL v1.4(1.0)EN



 **MIKSTER**

ul. Wojkowska 21, 41-250 Czeladź, Poland

tel. +48 32 763 77 77

fax: +48 32 763 75 94

[mikster.eu](http://mikster.eu)

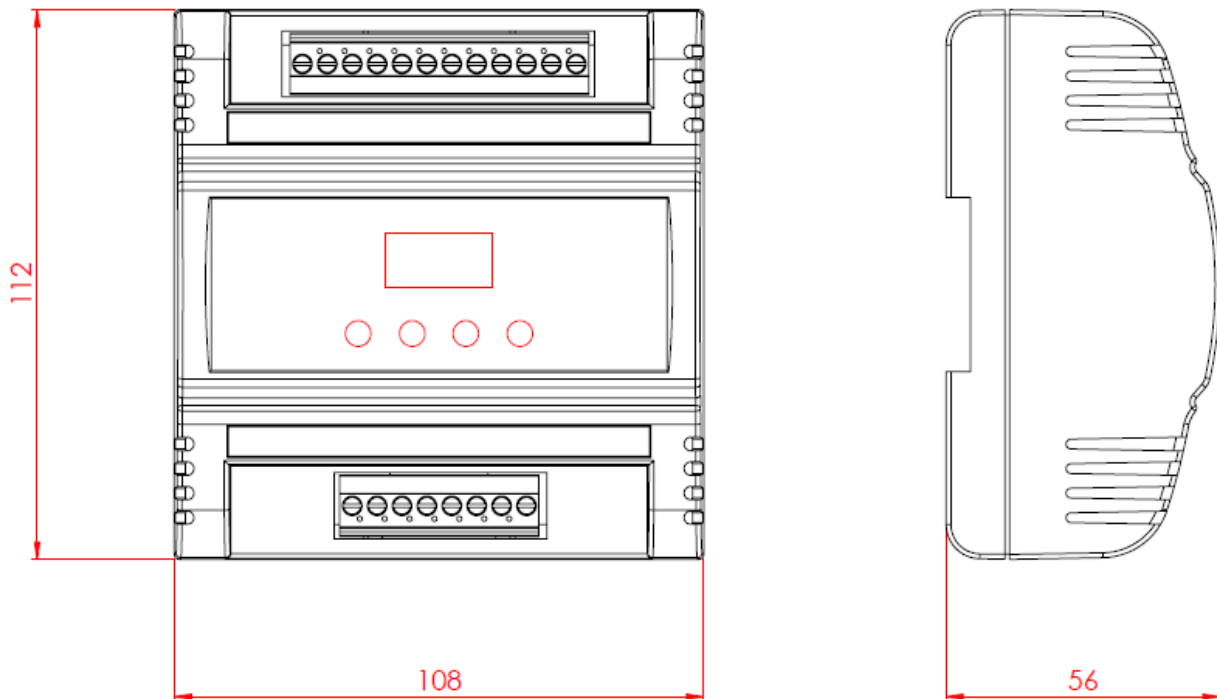
## CONTENTS

CONTENTS.....	2
1. TECHNICAL SPECIFICATIONS .....	3
2. INSTALLATION DATA .....	4
3. ENTRY.....	4
4. OPERATION DESCRIPTION.....	4
5. CONSTRUCTION DESCRIPTION.....	5
5.1. CONNECTION PT100.....	5
5.2. CONNECTION THERMOCOUPLE .....	6
6. KEYBOARD WITH DISPLAY .....	6
6.1. KEYBOARD DESCRIPTION .....	6
6.2. DISPLAY DESCRIPTION.....	7
7. CONFIGURATION FUNCTIONS (MENU).....	7
7.1. SENSORS .....	7
7.2. OUTPUTS.....	8
7.2.1. CONFIGURATION OUTPUT AO1 .....	8
7.2.2. CONFIGURATION OUTPUT DO ALARM.....	8
7.3. INPUTS.....	9
7.3.1. CONFIGURATION INPUT DI1.....	9
7.4. SETTINGS .....	9
7.4.1. RS485.....	9
7.4.2. UNIT .....	9
7.4.3. PASSWORD.....	9
7.4.4. LANGUAGE.....	9
7.5. REGISTRATION .....	10
7.6. CLOCK.....	10
7.7. INITIALIZATION.....	10
8. CONNECTION TO A PC.....	10
9. CONFIGURATOR EASY CORE .....	11
10. RESERVATIONS AND COMMENTS.....	11
11. COPYRIGHTS .....	11

## 1. TECHNICAL SPECIFICATIONS

<b>Power supply:</b>	24 V DC $\pm$ 10 %
<b>Power consumption:</b>	1,5 W (max 100 mA)
<b>Display:</b>	OLED 0,96"
<b>Inputs:</b>	Analog AI: 4x PT100 (3-wire) / thermocouples K,J; Digital DI: 1x 24 V DC;
<b>Outputs:</b>	Analog AO: 1x 0 $\div$ 20 mA/4 $\div$ 20 mA; Digital DO: 1x 24 V DC (ALARM, active 0/24 VDC);
<b>Temperature measurement range:</b>	-99,9 $\div$ 500,0 °C
<b>Temperature measurement resolution:</b>	0,1 °C
<b>Temperature measurement error:</b>	$\leq$ $\pm$ 0,5 °C (depending on the class of measurement probe used)
<b>Registration memory:</b>	approx. 127000 samples
<b>Communication ports:</b>	1x RS485
<b>Real time clock:</b>	Yes
<b>Dimensions (WxHxD):</b>	108 x 112 x 56 mm
<b>Mounting method:</b>	DIN rail 35 mm
<b>Weight:</b>	220 g
<b>IP rating:</b>	IP20
<b>Operating conditions:</b>	Temperature: -20 $\div$ 60 °C (-30 $\div$ 70 °C - short term) Humidity: 5 $\div$ 85 %RH (no condensation)

## 2. INSTALLATION DATA



## 3. ENTRY

The EasyCoreC400 module has been designed to measure temperatures from up to 4 external measurement probes. The device converts the temperature measurement(s) into a current signal that is calculated based on the average, minimum or maximum value of the active temperature channels. Measurements are recorded in the module memory and transferred to an external database system via the RS485 interface.

## 4. OPERATION DESCRIPTION

The recorder has 4 measurement channels to which PT100 sensors or "J" and "K" thermocouples can be connected.

The device has a digital input "DI", which indicates the start and end of recording in "Process" mode, and a digital alarm output, used to signal errors related to disturbances in temperature measurements, RTC, etc..

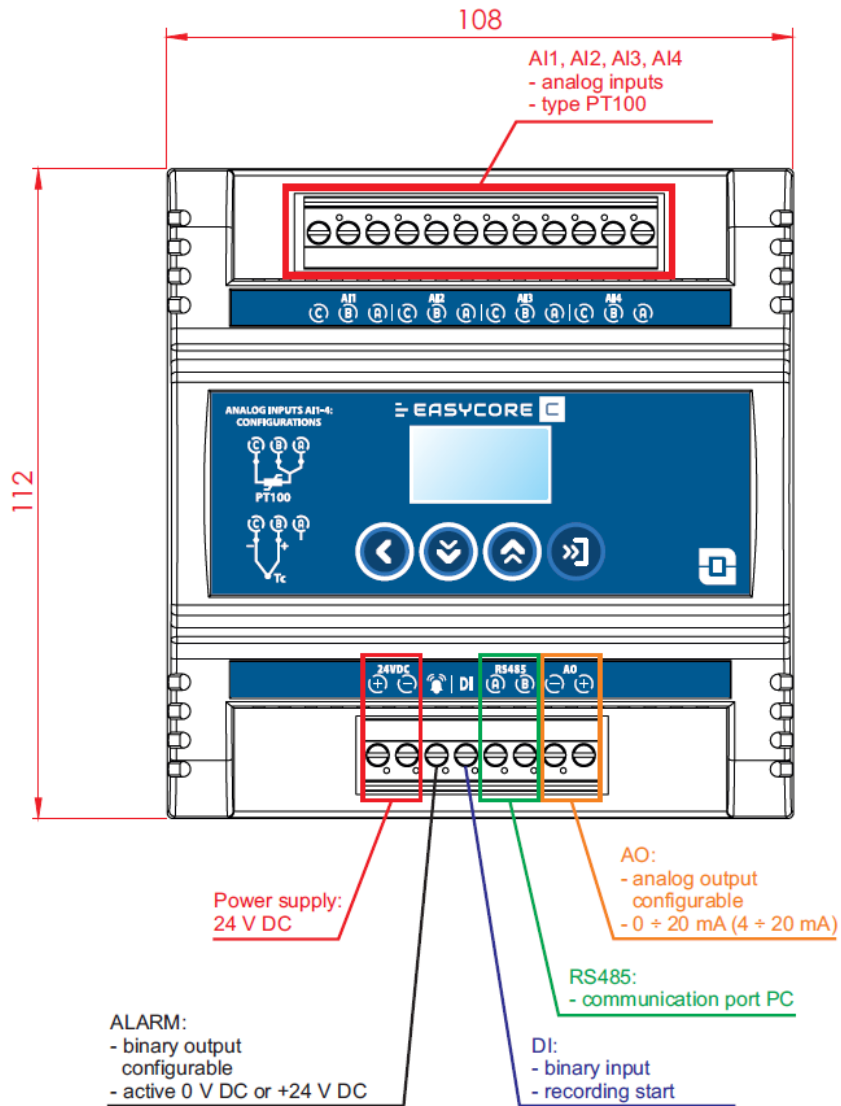
Configurable analog output  $0 \div 20 \text{ mA}$  /  $4 \div 20 \text{ mA}$ , which displays temperature values depending on the set source and type.

RS485 communication port used for communication with dedicated software on a computer.

The contents of the recorder's memory (for archiving purposes) can be transferred to a computer using dedicated software. When the memory is full, the oldest samples will be overwritten with new ones.

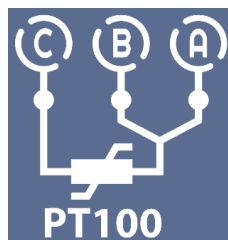
The built-in graphic display (OLED) enables local visualization of measurements and alarms and facilitates operation of the device.

## 5. CONSTRUCTION DESCRIPTION



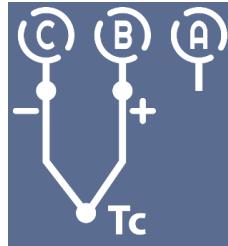
### 5.1. CONNECTION PT100

How to connect the PT-100 probe. Recommended 3-wire probes:

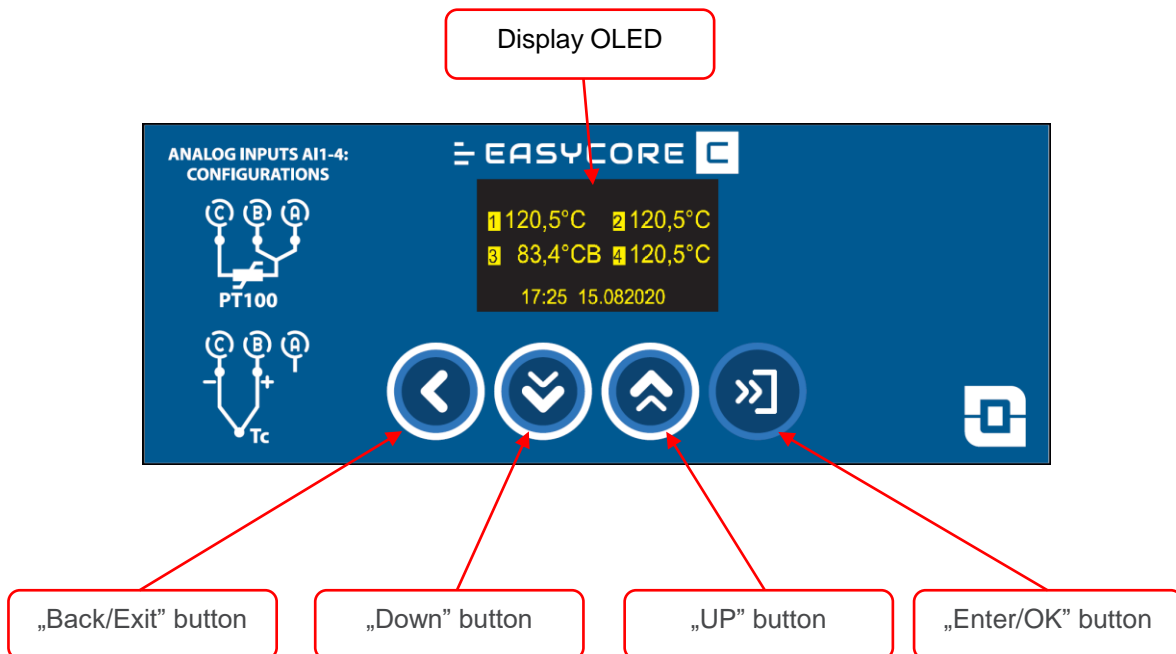


## 5.2. CONNECTION THERMOCOUPLE

How to connect thermocouple probes. Supported types: K or J:







## 6. KEYBOARD WITH DISPLAY



### 6.1. KEYBOARD DESCRIPTION

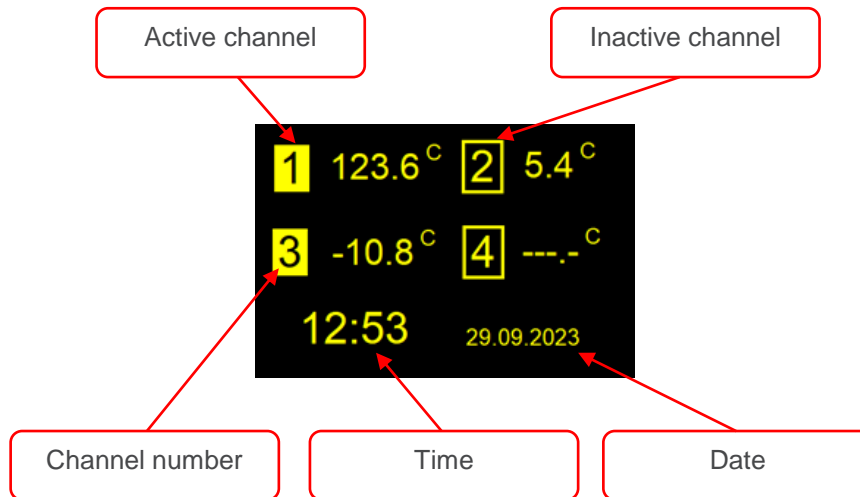
The keyboard consists of 4 buttons:


-  "Back/Exit" is used to exit the settings without saving them
-  "Down" - the button is used to navigate and select a lower value
-  "Up" - the button is used to navigate and select a higher value
-  "Enter/OK" - button used to enter the settings and confirm and save changed values

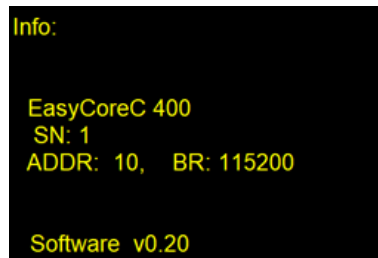
#### Caution !!!


When configuring module parameters using the button  we exit without changing the settings, while holding  saves the value.

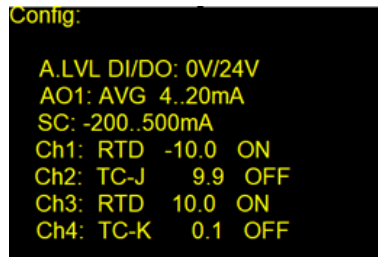
## 6.2. DISPLAY DESCRIPTION




Using button  we open the information screen:



Pressing again  we open a screen with configuration information:



## 7. CONFIGURATION FUNCTIONS (MENU)

To enter the MENU, press button  from the main screen. The entrance to the module settings is password protected. By default it is 00000, the password should be changed in the settings, as described in MENU/Settings/Password

### 7.1. SENSORS

The module has 4 analog inputs to which measurement probes can be connected.

Each input corresponds to the following measurement channel:

- AI1 -> Ch1;
- AI2 -> Ch2;
- AI3 -> Ch3;
- AI4 -> Ch4

To ensure proper operation of the device, the following parameters must be configured:

- „Name” – sensors name
- „Type” – selection of the sensor type:
  - Pt100 - resistive;
  - TC-J - J type thermocouple;
  - TC-K - K type thermocouple.
- „Status” – the selected measurement channel may have two status:
  - Active – the displayed measurement is involved in conversion to current value and alarm state;
  - Inactive – the displayed measurement does not take part in the conversion to current value and alarm states.
- “Offset” – correction of the measured temperature from -10 °C to +10 °C with a resolution of 0,1 °C

## 7.2. OUTPUTS

The device has one analog output AO1 and one digital output DO.

The AO1 output is used to output a current signal based on the measured temperatures.

The DO output is a voltage output used to signal alarm states.

### 7.2.1. CONFIGURATION OUTPUT AO1

For the correct operation of the analog output, the following parameters must be configured:

- „Type” – operating range 0 ÷ 20 mA or 4 ÷ 20 mA ;
- „Source” – defines the method of calculating the value of the output current signal. For all calculations, only the measured temperatures of active sensors are taken into account:
  - “Channel” - the displayed current value will correspond only to the measured temperature value on the selected channel
  - „Min” – the displayed current value will be the value corresponding to the lowest read temperature;
  - „Max” – the displayed current value will be the value corresponding to the highest temperature read;
  - “Average” – the displayed current value will correspond to the average value of the measured temperatures;
- „Scaling” – assigning a temperature value corresponding to the values of the output current 0/4 mA and 20 mA. The scaling range is from -200 °C to 500 °C.
- 

### 7.2.2. CONFIGURATION OUTPUT DO ALARM

The module allows you to signal the lack of temperature measurement on active measurement channels by energizing or losing voltage at the DO alarm output.

Parameters enabling output configuration:

- „Delay” – delay in seconds after which the output is to react after the occurrence of an alarm event;
- „Act. Lvl” – voltage level of the active alarm “0 V” or “+24 V”;
- “No meas.” – alarm triggered when:
  - „Any” – no measurement on any measurement channel;
  - „All” – no measurement on all measurement channels;
  - „Off” - alarm off.

Additionally, the module, through the DO output and a message on the screen, informs about such errors as:

- damage to internal memory;
- clock incorrectly or not set.



## 7.3. INPUTS

### 7.3.1. CONFIGURATION INPUT DI1

DI1 is a binary input. Applying or losing voltage to the input causes the module to start or stop recording the measured temperatures.

Triggering the registration process via input must be previously defined in the registration configuration (MENU/Regist.).

The following parameters are configured for the DI input:



- „Delay” – delay in seconds after which recording is to start, from the appearance of the activation signal;
- „Act. Lvl” – signal level activating registration “0 V” or “+24 V”.

## 7.4. SETTINGS

### 7.4.1. RS485

Configuration of transmission parameters RS485:

- “Address” – the address of the device in the network;
- „Baudrate” – data transmission speed;
- „Parity” – parity bit setting, selectable:
  - “None” – no parity bit;
  - „Odd” – the total number of 1s in the data is odd;
  - „Even” – the total number of 1s in the data is even;
- „Stop Bit” – setting the stop bit between frames “1” or “2”

Using button  we exit without changing the settings, while holding  saves value.





### 7.4.2. UNIT

In the module, you can set one of two units in which the temperature will be displayed:

- „°C” - Celsius
- „°F” – Fahrenheit

### 7.4.3. PASSWORD

Menu allowing you to change the current access password:

- Button  and  are used to select a digit;
- Button  is used to exit without remembering the password;
- Button  is used to select the digit to be modified, and holding it will remember the new password.

### 7.4.4. LANGUAGE

Menu for changing the displayed language:

- Polish
- English
- Russian
- Romanian

The choice of supported languages depends on the current software version.









## 7.5. REGISTRATION

The module allows you to save measurement records in the internal memory, which can later be read using the dedicated MPC4 software.

- „Frequen.“ (Frequency) – a parameter specifying how many units the sample will be saved. The range can be set from 1 to 59;
- „Type“ – method of triggering the start of registration:
  - “Process” - recording starts after applying a signal to the DI input, in accordance with its configuration in point CONFIGURATION INPUT DI1;
  - “Cont.” (Continuous) – recording takes place continuously, regardless of the signal supplied to the DI input.
- „Unit“ – specifies the unit of time in which samples will be saved. Possible to set: Seconds, Minutes, Hours.

## 7.6. CLOCK

Buttons  and  we choose between:

- Date:
  - Button  and  are used to select a digit;
  - Button  is used to exit without remembering the date;
  - Button  is used to select the modified digit, and holding it saves the new date.
- Time:
  - Button  and  are used to select a digit;
  - Button  is used to exit without remembering the date;
  - Button  is used to select the modified digit, and holding it saves the new date.

## 7.7. INITIALIZATION

Using this function restores all settings and parameters to default.

The address where the last sample was saved will also be reset, which means that the recording will start from the beginning of the memory and all data from the zero address will be lost.

## 8. CONNECTION TO A PC

To connect the recorder to a PC, use a USB-485 converter. It is recommended to use the MCU-01 converter from MIKSTER.

The converter should be connected to the device on the port (marked "RS485") with a 2-wire cable in the following places:

- A (Converter) -> A (Recorder)
- B (Converter) -> B (Recorder)

The computer will install the drivers needed for the device to work properly.

If the computer does not find the appropriate driver, install it from the CD included with the converter, or download it from the website [www.mikster.eu](http://www.mikster.eu) in the Software section.

## 9. CONFIGURATOR EASY CORE

The Easy Core Configurator program allows you to configure the module using a PC. Additionally, the software displays current readings and information about the connected module.

To configure, connect the module to a computer using a converter via the RS485 line.

Software available for download at [www.mikster.eu](http://www.mikster.eu)



## 10. RESERVATIONS AND COMMENTS

The EasyCore recorder is a device for professional use and should be used for its intended purpose.

Do not use the device with visible mechanical damage, e.g. cracked housing, damaged wire insulation, broken connectors, etc.

## 11. COPYRIGHTS

### Copyright Disclaimer

All rights reserved. No part of this document may be copied, transmitted, processed, stored in a data retrieval system, or translated into any other language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without prior written consent of MIKSTER Sp. z o.o.

### Disclaimer

The company MIKSTER Sp. zoo. makes no representations or warranties, express or implied, with respect to this publication, including without limitation any implied warranties or conditions of merchantability or fitness for a particular purpose. Moreover, MIKSTER Sp. z o.o. reserves the right to revise this document and to make changes to the content of this publication at various intervals, without the need to notify anyone of such corrections or changes.

All other logos, products or company names mentioned herein may be registered trademarks or copyrights of their respective companies and are used for informational purposes only.

The word and graphic marks MIKSTER, EasyCore, etc. are registered trademarks.