# AI-2030-SP-1 controller
# Operating Manual

industrial control

## CHAPTER 1: CUSTOMER INFORMATION

THANK YOU FOR PURCHASING AN INDUSTRIAL CONTROL PRODUCT

Read all instructions and warnings carefully before mounting, installing and configuring the products.

These instructions have been published by INDUSTRIAL CONTROL and are not subject to any guarantee. The instructions may be withdrawn or revised by INDUSTRIAL CONTROL at any time and without further notice.
Corrections and additions will be added to the latest version of the instructions. Always download the installation instructions from our website, www.incontrol-co.com, for the latest available version. Keep the safety instructions for future reference.

**IMPORTANT! These instructions are intended for end users.**
They can be printed and handed to end users. The installation instructions containing information about the installation and configuration of the 4-20mA Controller unit on the machine is not intended to be passed on to the end user. Only such information that is needed to operate the machine correctly by 4-20mA controller may be passed on to the end user. INDUSTRIAL CONTROL controller are often built into wider applications. Always refer to the applicable local regulations for installation and safety requirements relating to cranes, hoists or other material handling and/or lifting equipment's using INDUSTYRIAL CONTROL products, e.g.: n applicable local and industrial standards and requirements, n applicable occupational health and safety regulations, n applicable safety rules and procedures for the factory where the equipment is being used, n user and safety manuals or instructions of the manufacturer of the equipment where INDUSTRIAL CONTROL controller systems are installed.
INDUSTRIAL CONTROL instructions do not include or address the specific instructions and safety warnings of the end product manufacturer.
INDUSTRIAL CONTROL products are covered by a guarantee/warranty against material, construction or manufacturing faults,
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**ABOUT SYSTEMS**
The 4-20mA controller is composed of small din rail controller for use as a system in small applications as an industrial fire & gas detection system.

## ABOUT THIS DOCUMENT

Every care has been taken in the preparation of this manual. Please inform INDUSTRIAL CONTROL of any inaccuracies or omissions. These End user instructions cover general safety issues, main technical specifications, standard installation, operating instructions, general troubleshooting information and regulatory information. Images shown in this document are for illustrative purposes only.

### Term and symbol definitions

The capitalized terms and symbol used herein shall have the following meaning:

- WARNING! indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- CAUTION! indicates a hazardous situation which, if not avoided, will result in minor or moderate injury.
- IMPORTANT! is used for information that requires special consideration.
- NOTE! is used to address practices not related to physical injury.

This symbol is used to call attention to safety messages that would be assigned the signal words "WARNING" or "CAUTION".

## WARNINGS & RESTRICTIONS

Carefully read through the following safety instructions before proceeding with the installation, configuration, operation or maintenance of the product. Failure to follow these warnings could result in serious injury and property damage.

This product must not be operated without having read and understood the End User instructions, specific technical documentation (when provided), and having received the appropriate training. The purchaser of this controller has been instructed how to use the system safely.

### Operation

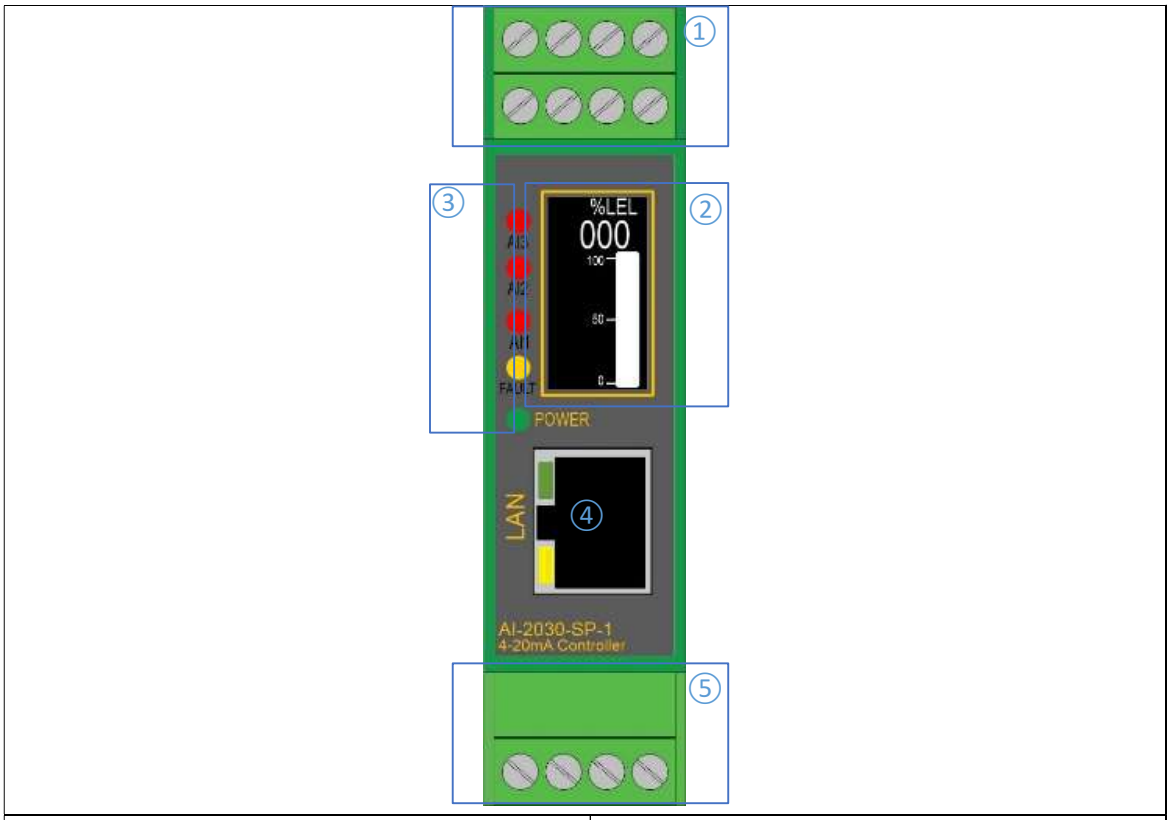
- This controller should not be used in areas where there is a risk of explosion unless you put it in an explosion-proof housing.
- Only qualified personnel should be permitted to access the controller and operate the equipment.
- Always follow operating and maintenance instructions as well as all applicable safety procedures and requirements.
- Do not open the controller housing unless you are qualified.

### Maintenance

- Keep the safety instructions for future reference. Always download the End user instructions from our website for the latest available version.
- Always contact your representative for service and maintenance work on the product.
- If error messages are shown, it is very important to find out what caused them. Contact your representative for help.
- Before maintenance intervention on any remote-controlled equipment:
  A- always remove all electrical power from the equipment.
  B- always follow lockout procedures.

## CHAPTER 2: PRODUCT DESCRIPTION

### CONTROLLER FRONT VIEW




| | |
|---|---|
| 1: Alarm & Fault Terminal | 4: Ethernet connector |
| 2: LCD | 5: Input voltage ,4-20mA input & reset Terminal |
| 3: LED indicator (Fault, Alarm 1, Alarm 2, Alarm 3 | |

### TERMINAL DESCRIPTION

| | Port Description | I/O | Signal type | Terminal No. |
|---|---|---|---|---|
| 1 | Alarm 1 Relay Com | Out | Max1A 125VAC /30VDC | 1 |
| 2 | Alarm 1 Relay No/Nc | Out | | 2 |
| 3 | Alarm 2 Relay Com | Out | | 3 |
| 4 | Alarm 2 Relay No/Nc | Out | | 4 |
| 5 | Alarm 3 Relay Com | Out | | 5 |
| 6 | Alarm 3 Relay No/Nc | Out | | 6 |
| 7 | Fault Relay Com | Out | | 7 |
| 8 | Fault Relay No/Nc | Out | | 8 |
| 11 | +24VDC | In | 7 to 38 VDC | VCC |
| 12 | Ground (0V) | In | | GND |
| 15 | 4-20mA sink /source analog input | In | 0-20mA | S |
| 20 | Foam MOV Close Status | In | +24Vdc Optocoupler protected | R |

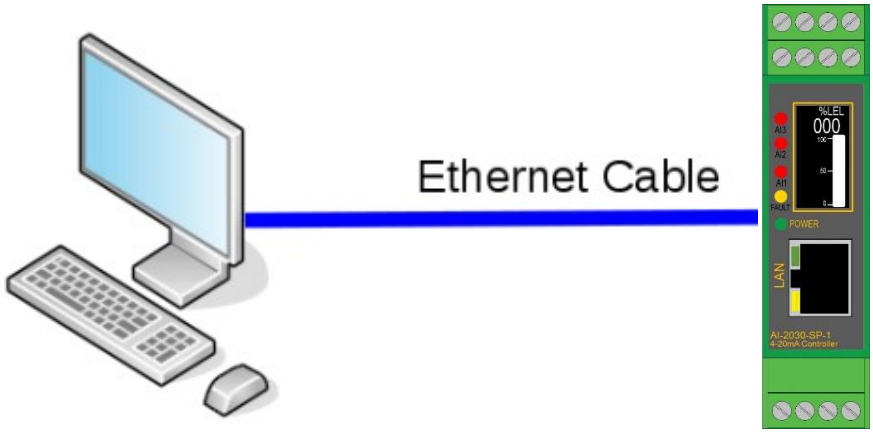
## CHAPTER 3: CONFIGURATION

This section will show you how to configure your new AI controller using the web-based configuration utility.

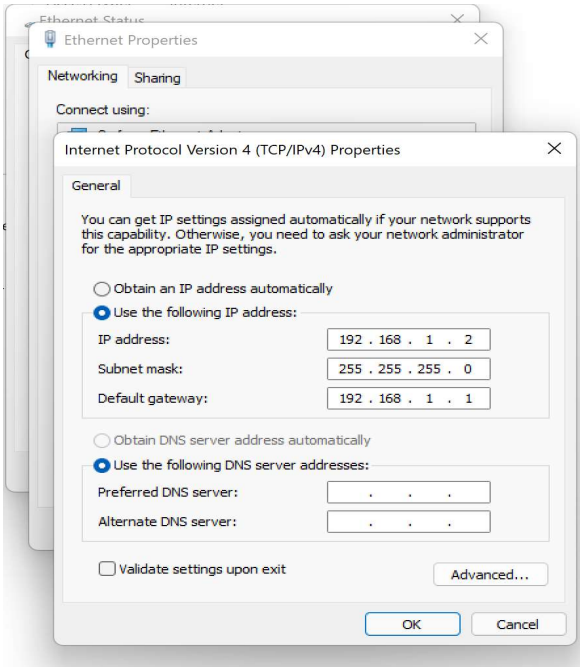
**Web-based Configuration Utility**

If you wish to change the default settings or optimize the performance of the AI-2030-SP-1, you may use the web-based configuration utility.

After power on, connect Ethernet cable from PC to AI-2030-SP-1

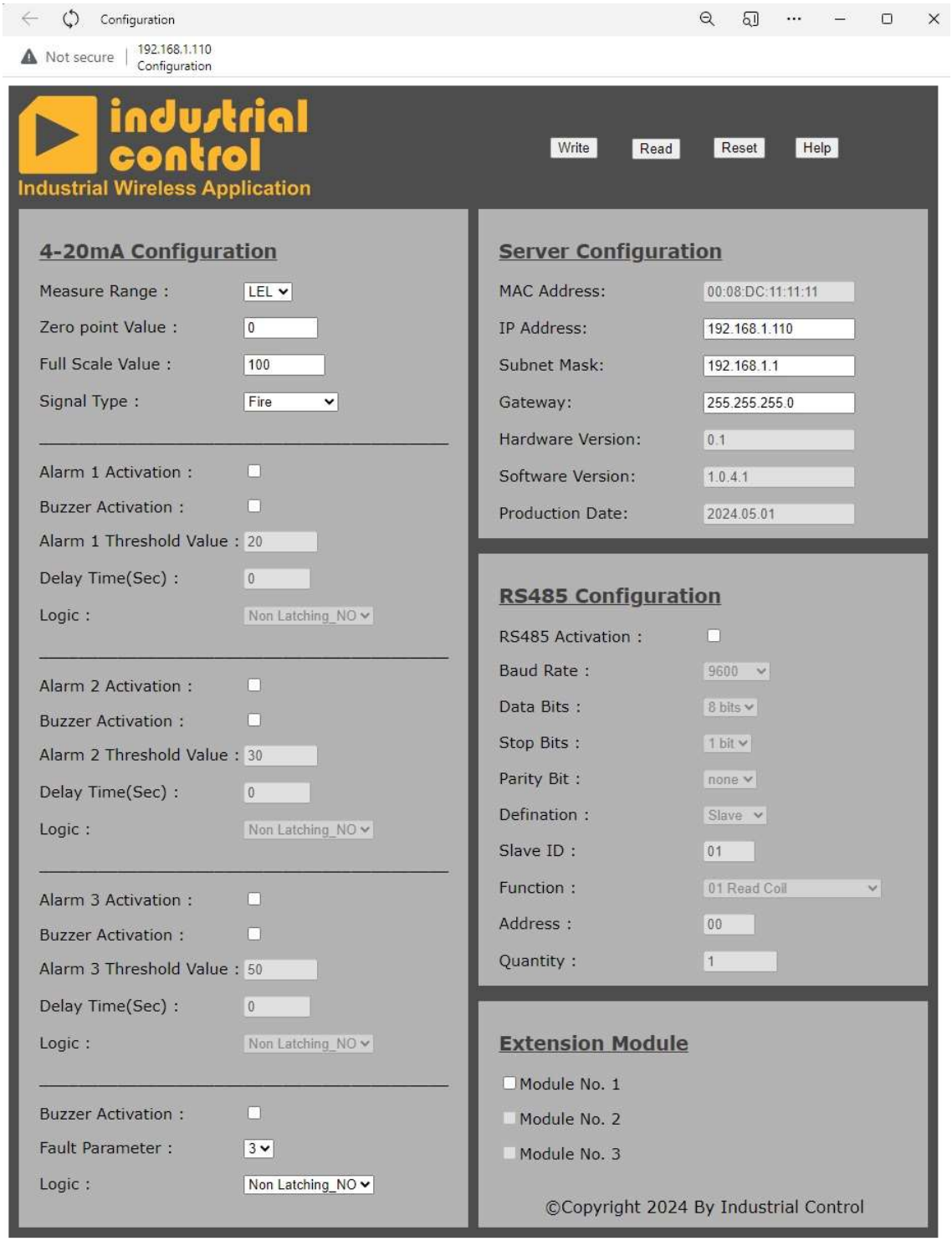



Go to control panel -> network and sharing center -> Ethernet properties and setup TCP/IPv4 as manual.

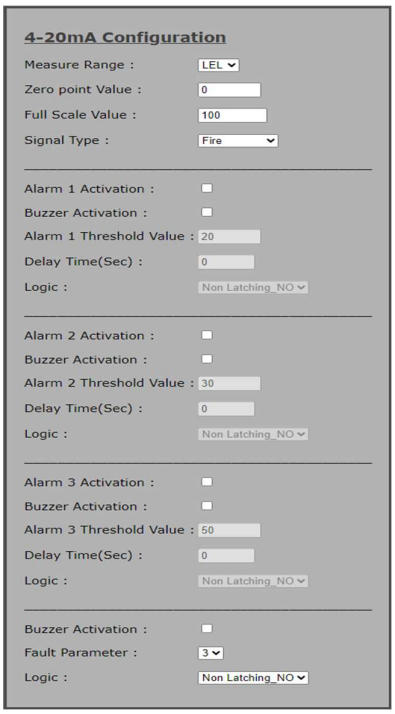


To access the configuration utility, open a web browser such as Internet Explorer or Firefox and enter http://192.168.1.110 in the address field.

**Note: our recommendation is Microsoft edge browser.**



## 4-20mA Configuration




**Measure Range:** It identifies the device measurement range or unit for the analogical devices.
The available values are those listed in below:
(**%LEL**, **ppm**, **%02**, **mA**, **°C**, **rH**, **V**, **bar**, **dB**, **rpm)**

**Zero Point Value:** It identifies the zero point of range.
It is possible to change this parameter by manually keying-in the number.
The admitted value is: -999.0 to 999.0
Setting up the value between -99.9 and 99,9, it will come expressed in tenth.

**Full Scale Value:** It identifies the full scale of range.
It is possible to change this parameter by manually keying-in the number.
The admitted value is: -999.0 to 999.0
Setting up the value between -99.9 and 99,9, it will come expressed in tenth.

**Signal Type:** Indicates the type of signal on MODBUS RTU. The value is selected from a list. The available values for this parameter are:
Fire**,** supervisory, gas, fault, hidden**,** buzzer

**Alarm 1 Activation:** Check the box or uncheck to enable/disable the Alarm 1 relay

- Buzzer activation: Check the box or uncheck to enable/disable the Alarm 1 Buzzer

- Alarm 1 Threshold Value: It identifies the alarm threshold of the device.

- Alarm 1 Delay time: it indicates alarm delay time in seconds. Value must be included between 0 and 60.

-Alarm 1 Logic: It identifies the operating logic. The value is selected from a list. Admitted values are:
**(latching normally open, latching normally close, non-latching normally open, non-latching normally close)**

**Alarm 2 Activation:** Check the box or uncheck to enable/disable the Alarm 2 relay

- Buzzer activation: Check the box or uncheck to enable/disable the Alarm 2 Buzzer

- Alarm 2 Threshold Value: It identifies the alarm threshold of the device.

- Alarm 2 Delay time: it indicates alarm delay time in seconds. Value must be included between 0 and 60.

-Alarm 2 Logic: It identifies the operating logic. The value is selected from a list. Admitted values are:
**(latching normally open, latching normally close, non-latching normally open, non-latching normally close)**

**Alarm 3 Activation:** Check the box or uncheck to enable/disable the Alarm 3 relay

- Buzzer activation: Check the box or uncheck to enable/disable the Alarm 3 Buzzer

- Alarm 3 Threshold Value: It identifies the alarm threshold of the device.

- Alarm 3 Delay time: it indicates alarm delay time in seconds. Value must be included between 0 and 60.

-Alarm 3 Logic: It identifies the operating logic. The value is selected from a list. Admitted values are:
**(latching normally open, latching normally close, non-latching normally open, non-latching normally close)**

**Fault:** This is a parameter for fault status.

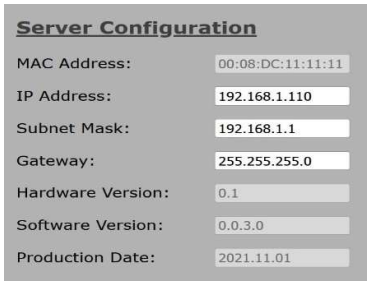
- Buzzer activation: Check the box or uncheck to enable/disable the Fault Buzzer

- Fault Parameter: The admitted value is from 1.0 to 3.8.

-Fault Logic: It identifies the operating logic. The value is selected from a list. Admitted values are:
**(latching normally open, latching normally close, non-latching normally open, non-latching normally close)**

### Server Configuration/Hardware & software version

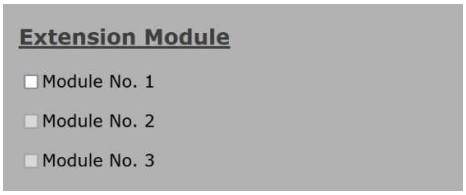
Users can change the IP address with this setting.




### Extension Module

Check the box to enable the module No.1 to 3. If you do not want to use extension module, uncheck the box to disable all the functions.

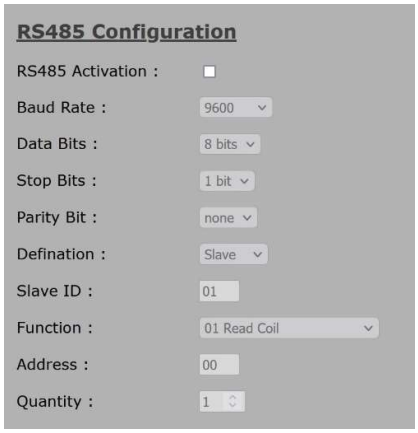
This mode to use extension external relay module with Modbus

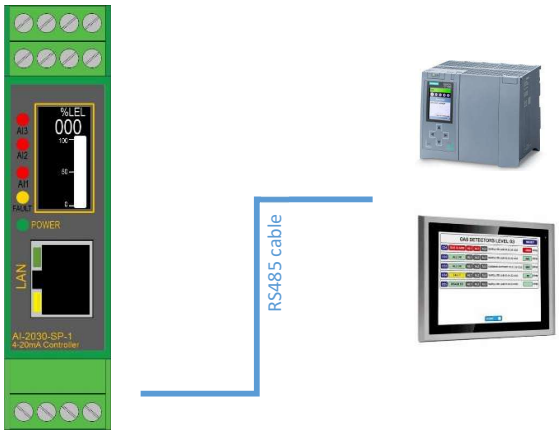



### RS485 Configuration

Check the box to enable the RS485. If you do not want to use extension module, uncheck the box to disable all the functions.

This mode to use connect AI-2030-SP-1 controller to Master HMI ,PLC via RS485 Modbus.



## CHAPTER 5: GUARANTEE, SERVICE, REPAIRS AND MAINTENANCE

INDUSTRIAL CONTROL products are covered by a guarantee/warranty against material, construction, and manufacturing faults. During the guarantee/warranty period, INDUSTRIAL CONTROL may replace the product or faulty parts. Work under guarantee/warranty must be carried out by INDUSTRIAL CONTROL or by an authorized service center specified by INDUSTRIAL CONTROL.

The following are not covered by the guarantee/warranty:

1- Faults resulting from normal wear and tear.

2- Parts of a consumable nature.

3- Products that have been subject to unauthorized modifications.

4- Faults resulting from incorrect installation and use.

5- Damp and water damage.

Maintenance:

1- Repairs and maintenance must be carried out by qualified personnel.

2- Only use spare parts from INDUSTRIAL CONTROL.

3- Contact your representative for service or any other assistance.

4- Keep the product in a clean, dry place.

5- Keep contacts and antennas clean.

6- Wipe off dust using a slightly damp, clean cloth.

## CHAPTER 6: TECHNECAL DATA

| | |
|---|---|
| **Size / protection** | L:99mm W:22.5mm H: 111mm / IP20 |
| **Area classification** | Safe area |
| **Operating Temperature** | -5 to 70°C |
| **Power supply / consumption** | Normal 24Vdc (7 ~38Vdc) / Max 90mA |
| **Power up time** | 2 sec |
| **Accuracy** | < 0.2 mA |
| **insulation material /inflammability** | PA66 / UL94V-0 |
| **Weight** | 150g |