

Features

- ▶ ESP32-WROOM32 Module
- ▶ GSM / LTE Connection
- ▶ Built-in 0.96 OLED Display
- ▶ microSD Card Support
- ▶ DS3231 RTC with Battery Backup
- ▶ Built-in Button on front panel
- ▶ Digital Inputs
- ▶ Analog Inputs
- ▶ Transistor Outputs
- ▶ DIN-Rail mount



Cellular Options

Quectel EC21

- ▶ Worldwide LTE, UMTS/HSPA(+) and GSM/GPRS/EDGE coverage
- ▶ Supports DFOTA and DTMF

SIMCOM SIM800-C

- ▶ Quad-band GSM/GPRS module
- ▶ DTMF, MMS, MUX
- ▶ Embedded TCP/UDP protocols

Expansions supported

Temperature
MAX31856



Analog
4-20mA / 0 - 10V



Main

Range of product	NORVI GSM	
Product type	Programmable Controller	
Certifications	EN 61131-2:2007 EN 61010-1:2010+A1:2019 EN IEC 61010-2-201:2018	2014/30/EU- Electromagnetic Compatibility (EMC) Annex III, Part B, Module C
Rated supply voltage	24V DC	
Communication	WiFi / Bluetooth GSM / GPRS - SIMCOM SIM800C LTE / EDGE - Quectel EC21	
OLED Display protocol	I2C	
Analog input range	4 - 20mA / 0 - 10V	
Analog input resolution	16 bit	
Transistor Output Rating	500mA 300mW	

Complementary

Number of Expansions	-----
Supply voltage limits	20.4....28.8V
Inrush current	<=50A
Power consumption in W	32.6.....40.4 with all outputs ON
Discrete logic input	Sink or source
Discrete input voltage	24V
Discrete input voltage type	DC
Voltage state 1 guaranteed	>=15 V for input
Voltage state 0 guaranteed	<=5 V for input
Discrete input current	5 mA for input
Input impedance	4.7k Ohm for input
Memory capacity	Refer datasheet of base micro-controller
Battery type	-----
Backup time	-----
Local signalling	1 LED green for PWR
Electrical connection	Removable screw terminal block for inputs and outputs (pitch 5.08 mm)
Mounting support	Top hat type TH35-15 rail conforming to IEC 60715 Top hat type TH35-7.5 rail conforming to IEC 60715 Plate or panel with fixing kit
Height	90.50 mm
Depth	56.60 mm
Width	60.60 mm
Product weight	0.43 Kg

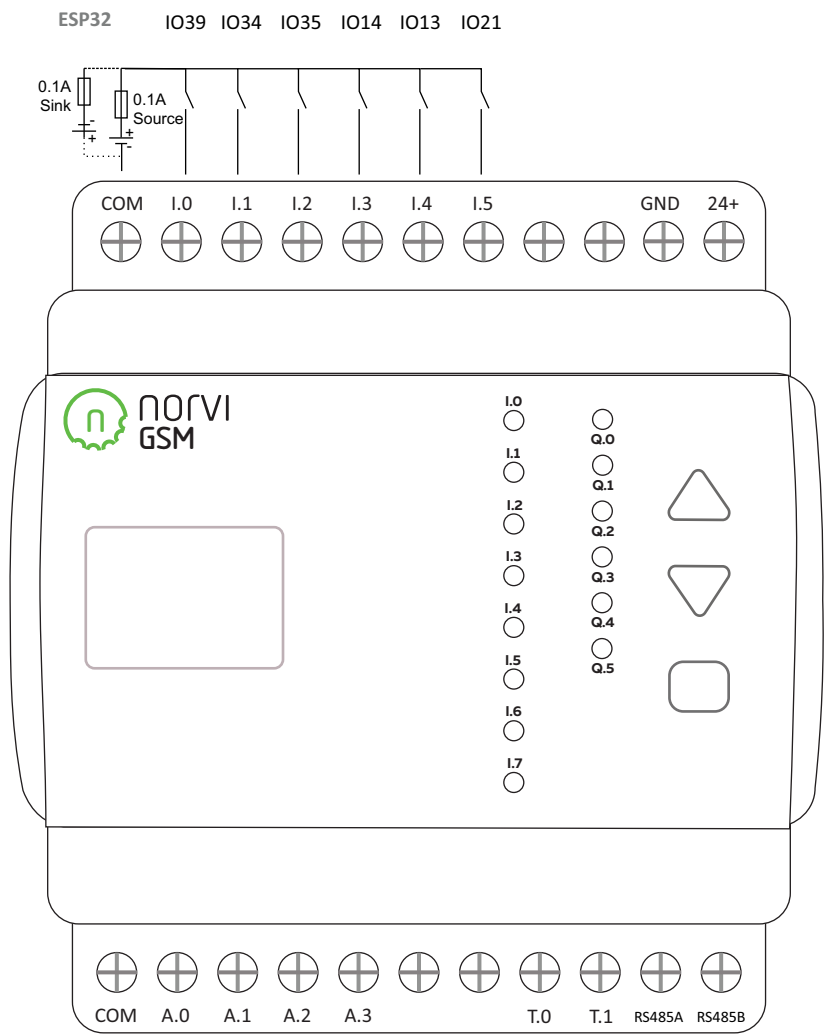
Environment

Resistance to electrostatic discharge	4kV on contact 8kV on air
Resistance to electro magnetic fields	10 V/m (80 MHz 1GHz) 3 V/m (1.4 MHz 2 GHz) 1 V/m (2 MHz 3 GHz)
Immunity to microbreaks	10 ms
Relative humidity	10....95% without condensation in operation
IP degree of protection	IP20
Operating Temperature	-10 ... +85° C (14...185 °F)
Storage Temperature	-25 ... +85° C (-13...185 ° F)
Operating altitude	0...2000m
Storage altitude	0...3000m
Shock resistance	15 gn for 11 ms

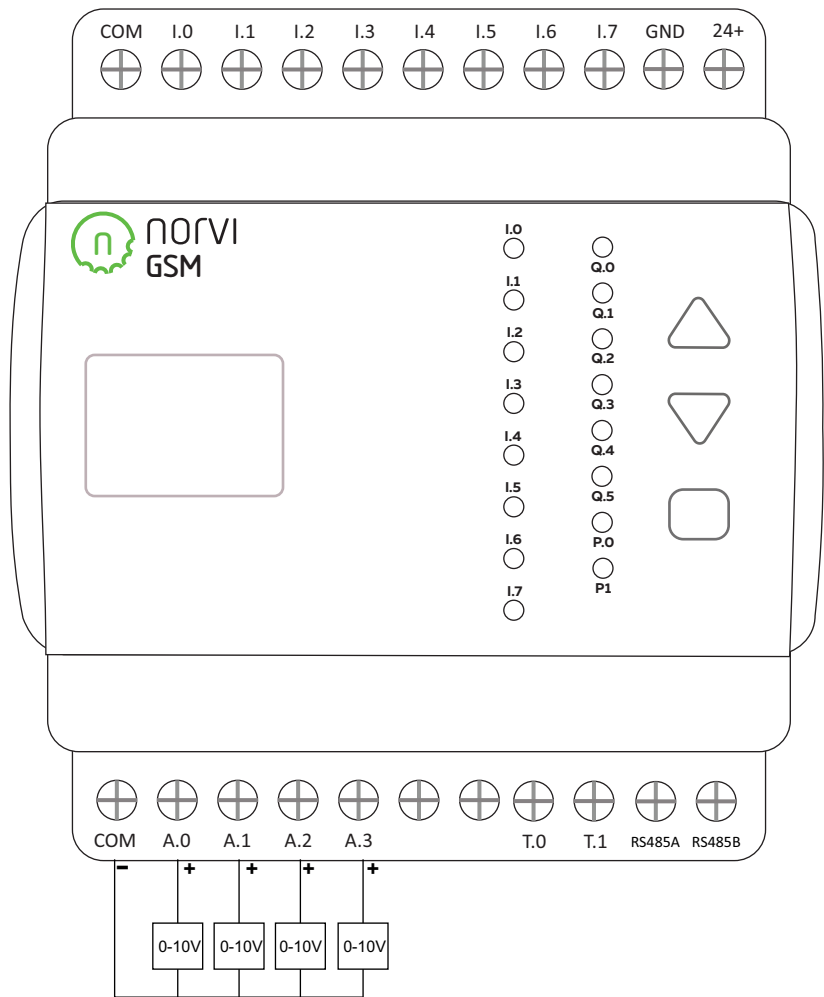
Digital inputs wiring diagram

AE04

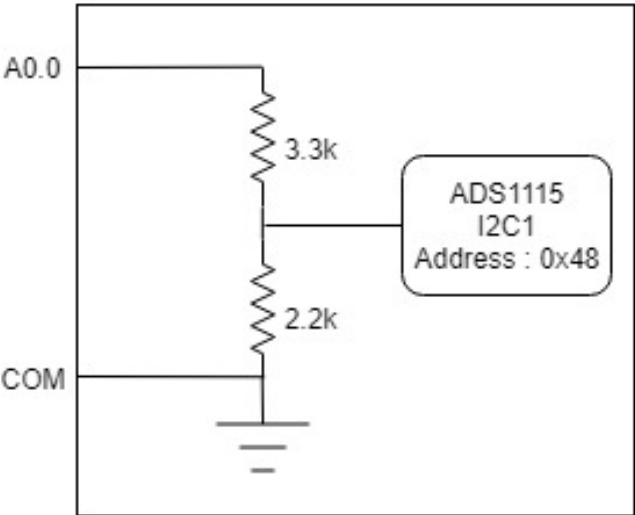
24V DC Sink/Source



Analog input wiring diagram (0-10V)



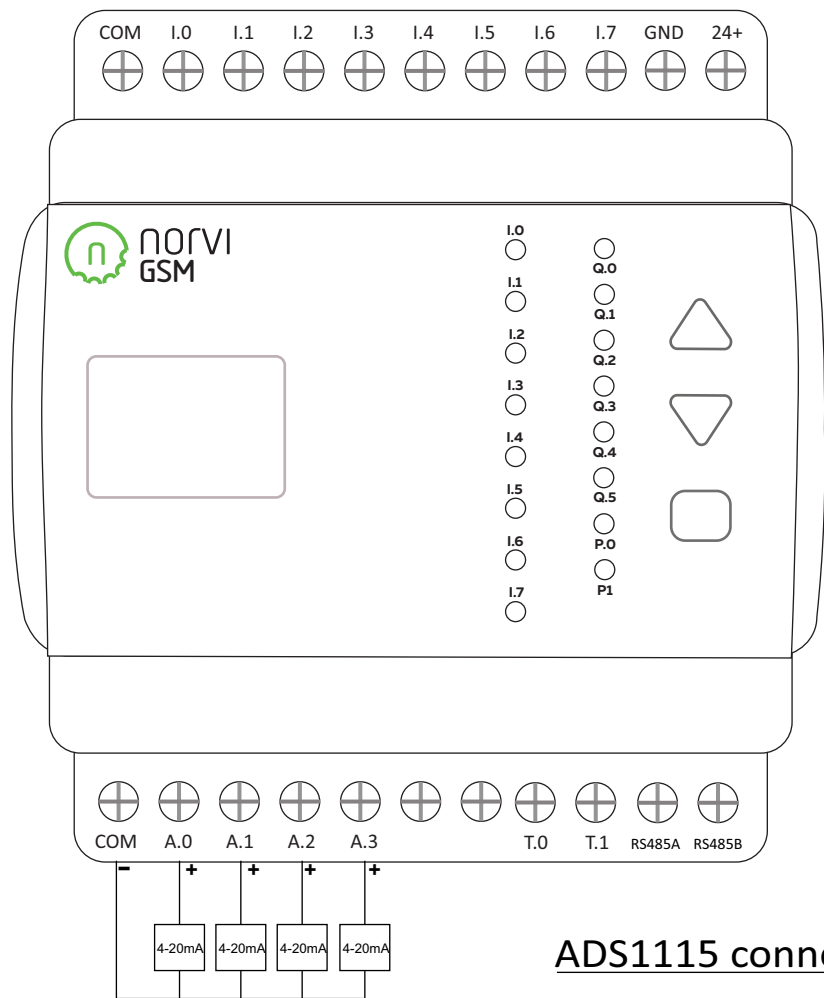
0 - 10 V input to 0 - 4V



ADS1115 connections

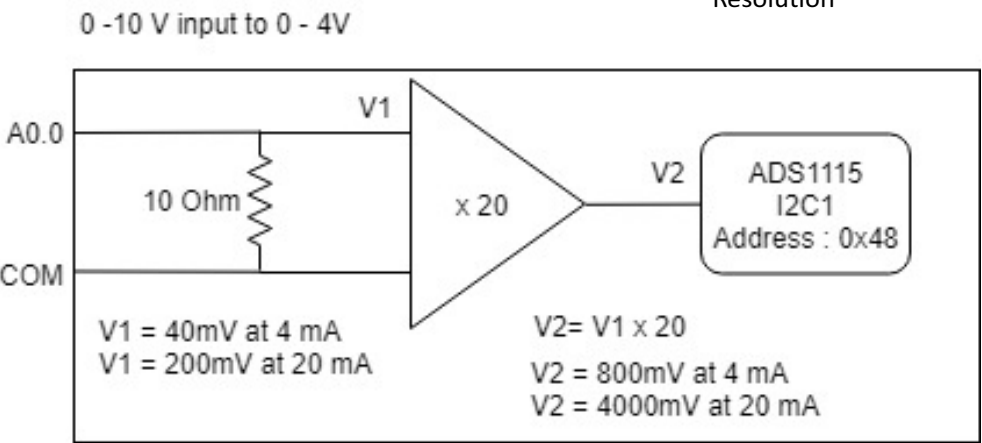
IC Type	ADS 1115	
Communication	I2C	SDA - IO16 SCL - IO17
Module Address	0x48 / 0x49	
Resolution	16 bit	

Analog input wiring diagram (4-20mA)

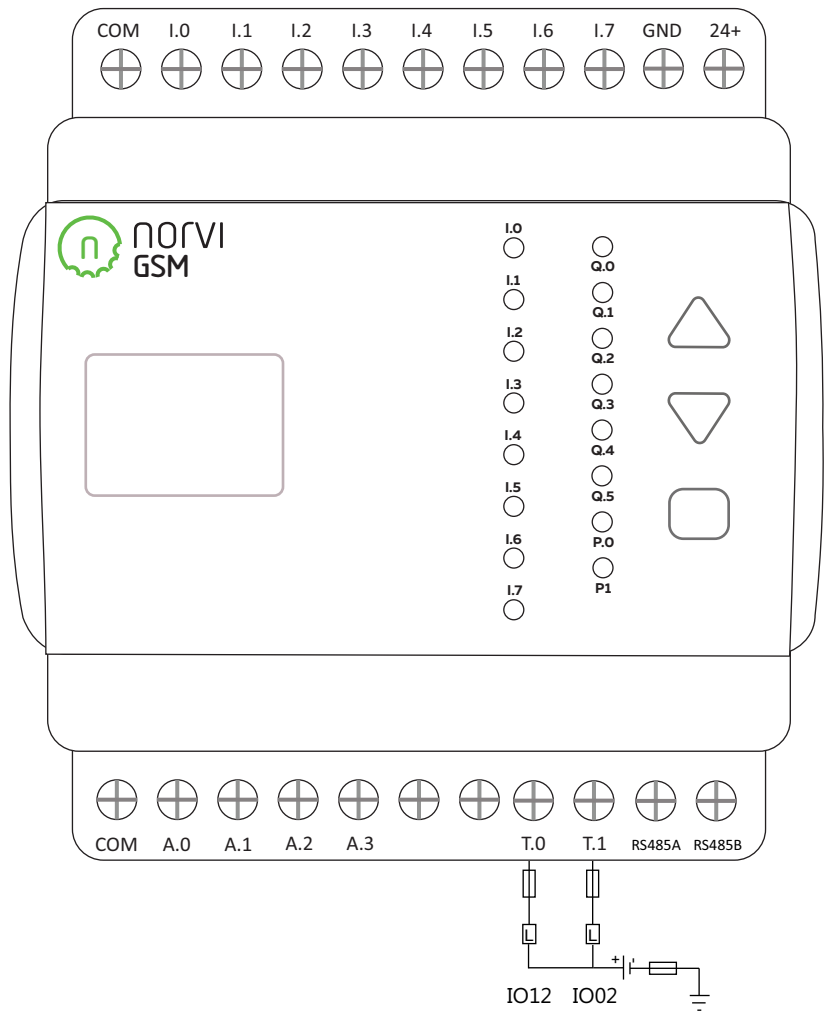


ADS1115 connections

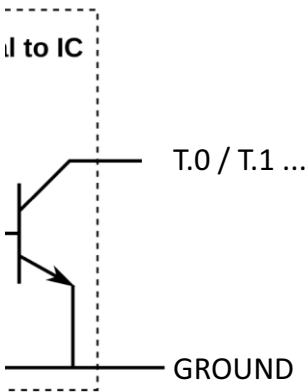
IC Type	ADS 1115	
Communication	I2C	SDA - IO16 SCL - IO17
Module Address	0x48 / 0x49	
Resolution	16 bit	



Transistor outputs wiring diagram



Transistor output



Product data sheet

Programming

NORVI GSM

AE04 Series

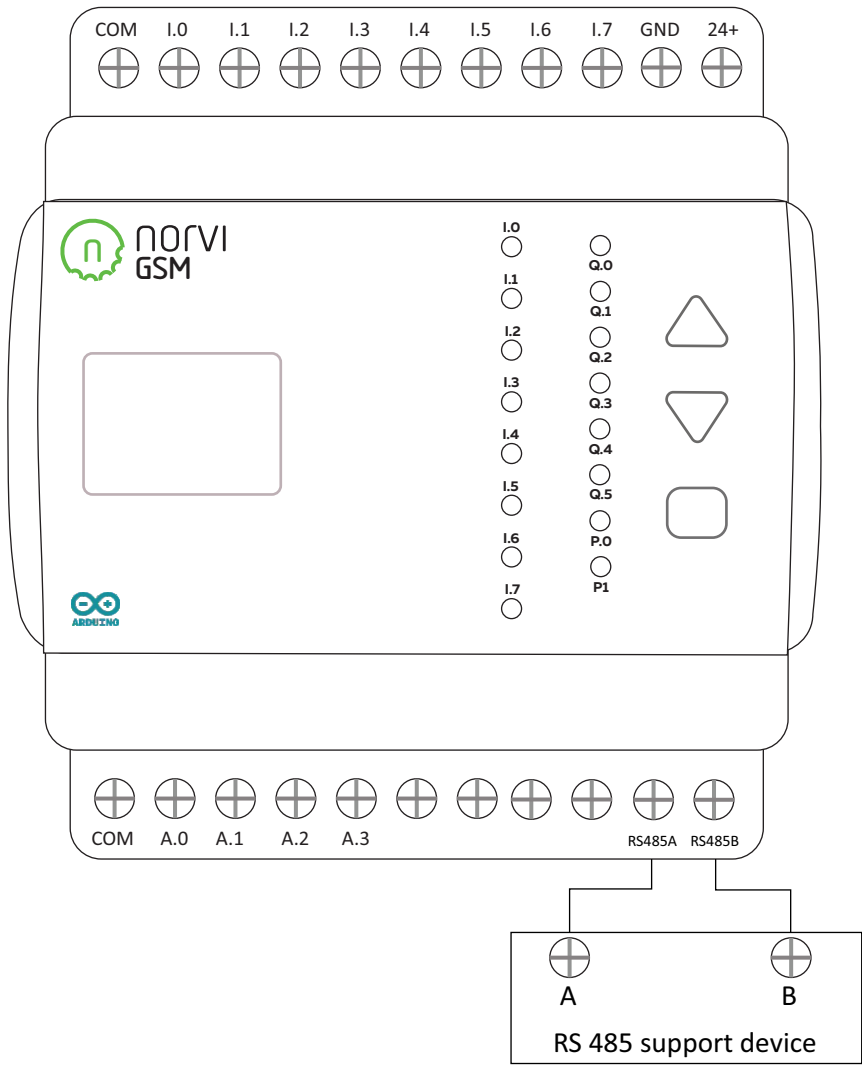
Cellular Connected ESP32

GPIO MAP

GPIO	Pin Description	Pin Status
0	outputs PWM signal at boot	NRST
1	debug output at boot	TX0
2	connected to on-board LED	OUTPUT 2 (Transistor)
3	HIGH at boot	RX0
4		
5	outputs PWM signal at boot	SCSN
6	connected to the integrated SPI flash	
7	connected to the integrated SPI flash	
8	connected to the integrated SPI flash	
9	connected to the integrated SPI flash	
10	connected to the integrated SPI flash	
11	connected to the integrated SPI flash	
12	boot fail if pulled high	OUTPUT 1 (Transistor)
13		INPUT 5(Digital)
14	outputs PWM signal at boot	INPUT 4(Digital)
15	outputs PWM signal at boot	SD_CS(microSD)
16		SDA(Analog IN, OLED, RTC)
17		SCL(Analog IN, OLED, RTC)
18		SCLK(microSD)
19		MISO(microSD)
21		INPUT 6(Digital), GSM RESET
22		RS485 - FC
23		MOSI(microSD)
25		RS485 - RXD
26		RA485 - TXD
27		
32		GSM RX
33		GSM TX
34	input only	INPUT 2(Digital)
35	input only	INPUT 3(Digital)
36	input only	BUTTONS
39	input only	INPUT 1(Digital)

*GPIO21 use for GSM RESET in AE04 LTE version only

RS485 wiring diagram



RS485 connections

IC Type	MAX485	
Communication	UART	
Baud Rate	Configurable / 9600bps Default	
Connection	RXD	IO25
	TXD	IO26
	FC	IO22

Product data sheet

Programming

NORVI GSM

AE04 Series

Cellular Connected ESP32

0.96 OLED Display parameters

Display driver	SSD1306
Communication	I2C IO16(SDA) - IO17(SCL)
Module Address	0x3C
Resolution	128 x 64

GSM Connection

Display driver	SIM800C
Communication	UART
Baud Rate	Configurable / 9600bps Default
Connection	RXD IO32 TXD IO33 RESET IO21

RTC parameters

Display driver	DS3231
Communication	I2C IO16(SDA) - IO17(SCL)
Module Address	0x68
Battery Backup	YES

microSD card access

Connection	SCK IO18 CS IO5 MISO IO19 MOSI IO23
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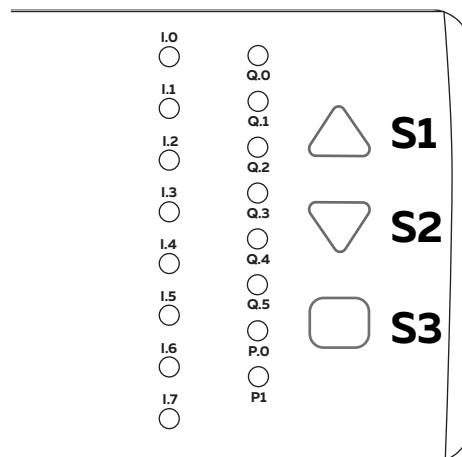
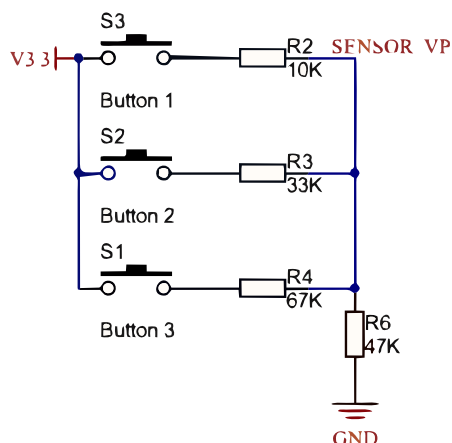
Built in buttons

Read mode	ADC (Analog to Digital Conversion)
Analog IO	GPIO 36 / SENSOR_VP

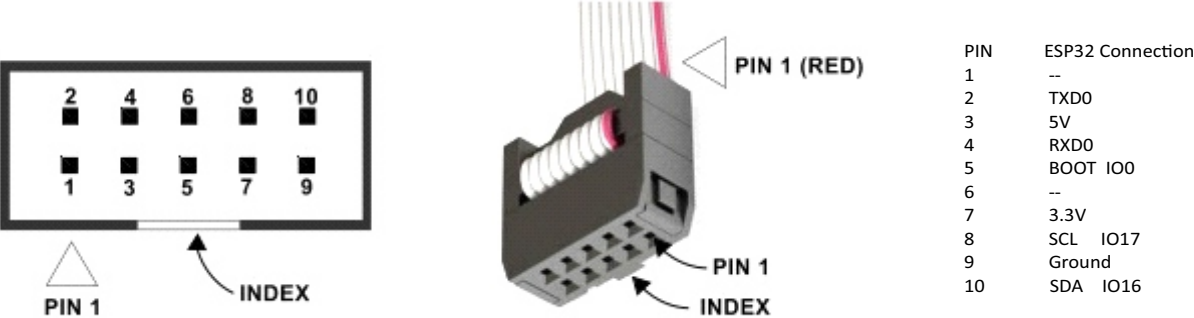
RS 485

IC Type	MAX485
Communication	UART
Baud Rate	Configurable / 9600bps Default
Connection	RXD IO25 TXD IO26 FC IO22

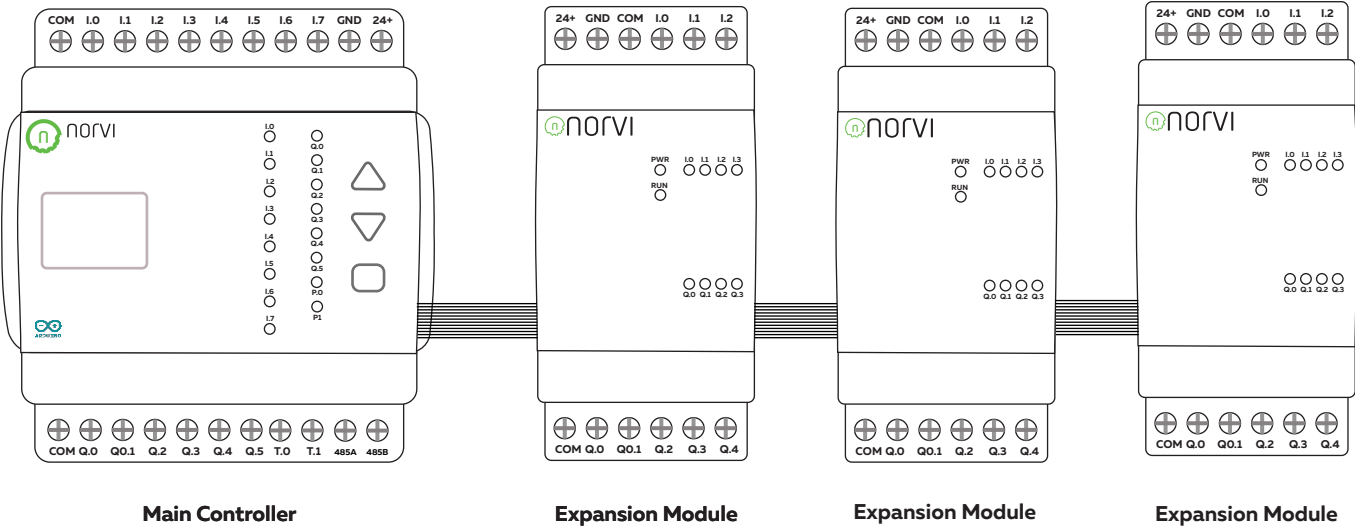
Voltage levels 3



Expansion port



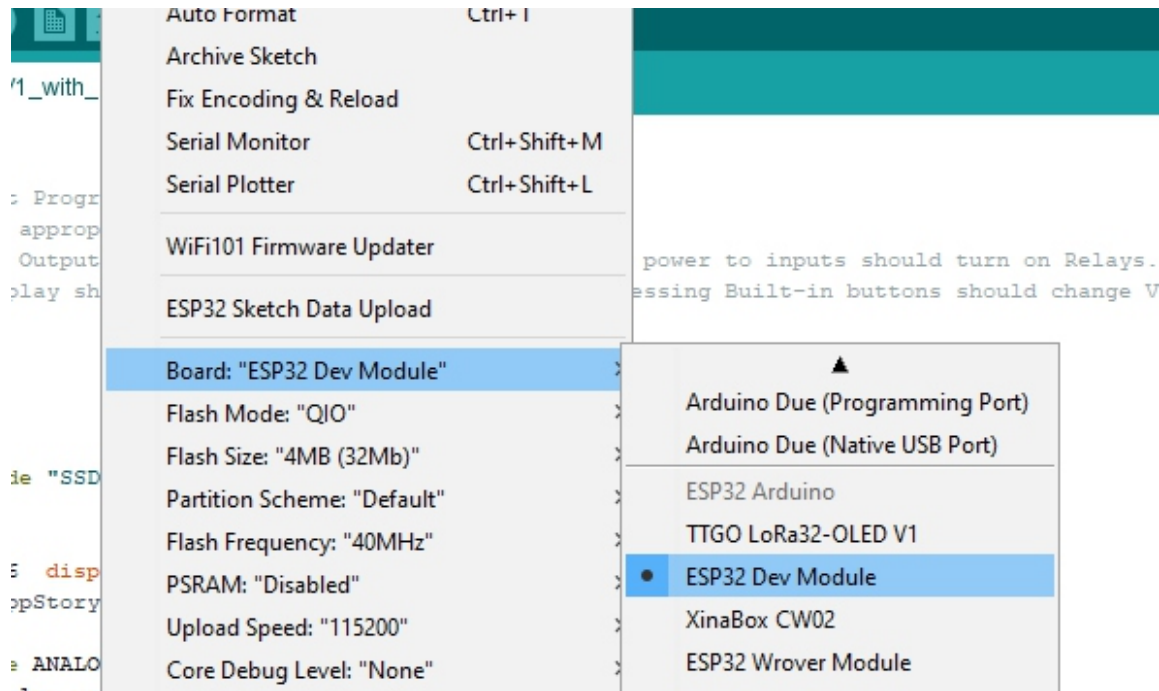
Expansion modules



- Expansion modules connects to the right side of the controller
- Upto 6 expansion modules can be connected on one controller
- Expansion modules use I2C, UART and GPIO on the expansion port
- Depending on the model, some expansion modules require external power

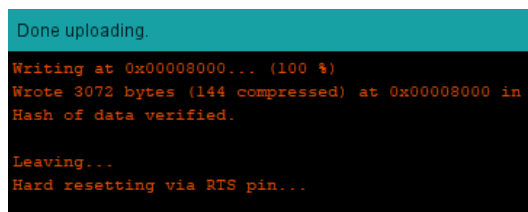


Programming procedure



Board	ESP32 Dev Module
Flash Mode	QIO
Flash Size	4MB
Flash Frequency	10MHz
PSRAM	Disabled
Upload Speed	115200

After successful uploading of program following message appears.



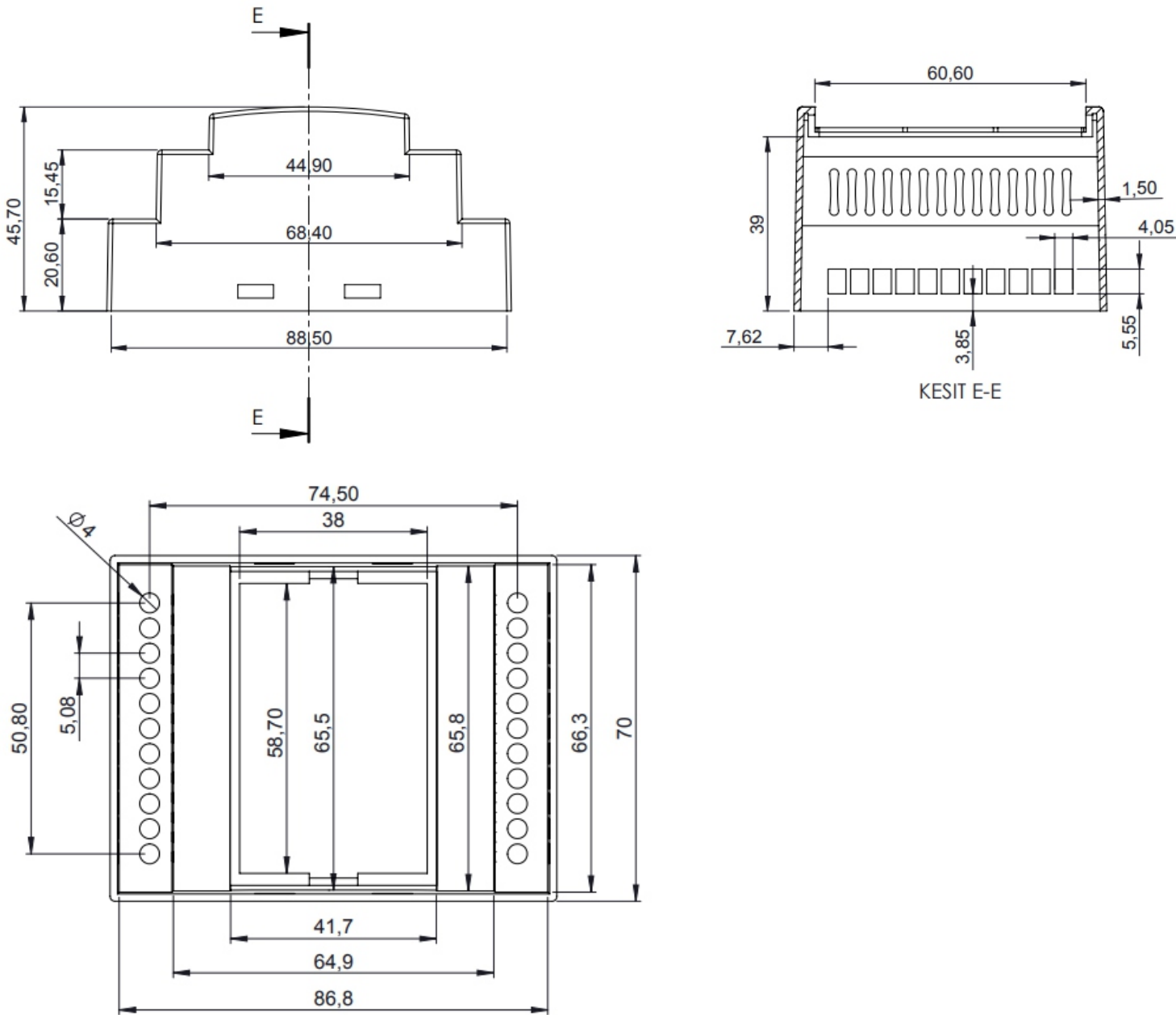
esp32 Boards must be installed under board manager, it is recommended to use the latest version of esp32 board driver for Arduino.

Due to installation of different drivers and older versions of libraries, Arduino fails to upload the program to the controller. In most cases it is due to failure to enter boot mode of the device.

The device can be forced to boot mode by connecting the BOOT IO0 of the expansion port to the GND pin with a jumper wire. Arduino is able to upload the program to controller while the controller is in boot mode.

After uploading the program , the connection between the BOOT IO0 and GND must be removed to run the uploaded program.

Dimensions





Reach-Us

Technical Support

E-mail : info@icd.lk

Forum : <https://norvi.lk/forums/>

Sales Inquiries

E-mail : bhanuka@icd.lk

Web : <https://norvi.lk/support/>

Order Online

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