

DATASHEET

NORVI CONTROLLERS
NORVI-GSM-AE04-V-L

Product 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

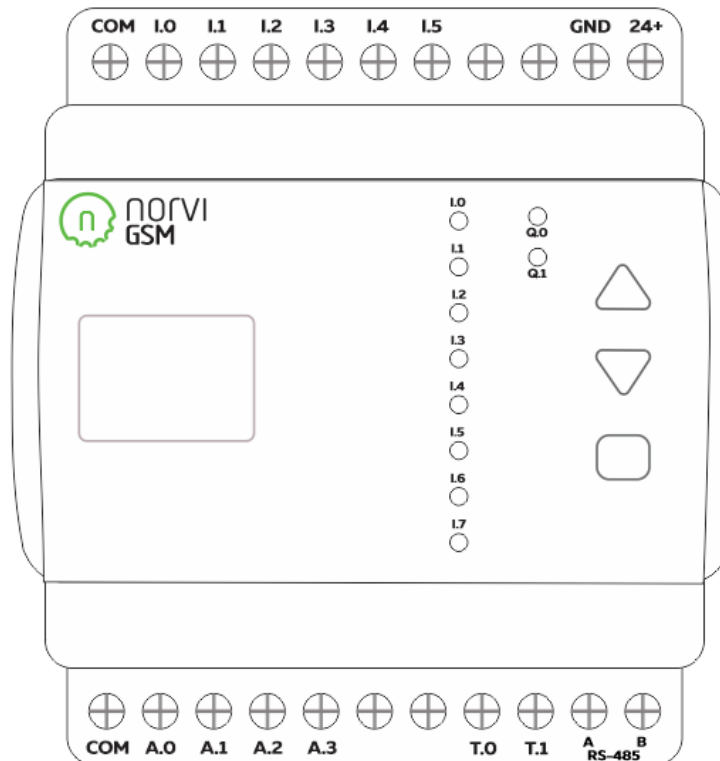


Cellular Communication

Module	SIM7500-E
Brand Name	SIMCom
FCC ID	UDV-201606
TAC	86147503

Expansions Supported

- Analog Input
- Digital Input
- Transistor Output
- Relay Output
- Analog Output



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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 LTE / EDGE - Quectel EC21 RS-485
Inputs and Outputs	6 x Digital Inputs 4 x Analog Inputs 0 - 10VDC 2 x Transistor Outputs
Displays and Visual Indicators	0.96 OLED Display and Indicators

Product Identification

Product Unified Code	NORVI-GSM-AE04-V-L
Product Part Numbers	NORVI-GSM-AE04-V-L

Mechanical Properties

Enclosure	NORVI 204
Mounting / Installation Method	DIN RAIL / MOUNTING TABS
Terminal Type	SCREW TERMINAL
Terminal Arrangement	Top and Bottom
Length	91.0 mm
Height	58.4 mm
Width	70.0 mm

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Environment

IP degree of protection	IP20
Operating altitude	0 - 2000 meters
Operating Temperature	- -10 ... +85° C (14...185 °F)
Storage altitude	0 - 2000 meters
Shock resistance	15 gn for 11ms
Resistance to electrostatic discharge	4kV on contact 8kV on air
Resistance to electromagnetic fields	10 V/m (80 MHz 1GHz) 3 V/m (1.4 MHz 2 GHz) 1 V/m (2 MHz 3 GHz)

Electrical Characteristics

Grid Powered Devices

Rated Supply Voltage (V)	12 ~ 24V DC
Current Consumption (mA)	400mA
Recommended Power Source	1A 24V DC

Processing

SOC / MCU	ESP32-WROOM32
Flash Memory	4MB
ROM	448 KB
SRAM	520 KB
PSRAM	NOT AVAILABLE

Peripherals microSD Card support

Card Type	microSD
Interface	SPI
SD CARD CS	GPIO5
MISO	GPIO19
MOSI	GPIO23
SCLK	GPIO18

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SD Detect	NOT CONNECTED
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Internal RTC

RTC Chip	DS3231
Backup Battery Type	CR2032
Interface	I2C
I2C Address	0x68
SCL Pin	GPIO17
SDA Pin	GPIO16
RESET Pin	GPIO21

Built-in Buttons

Button 1 Pin	GPIO36 Analog Input Level 1
Button 2 Pin	GPIO36 Analog Input Level 2
Button 3 Pin	GPIO36 Analog Input Level 3

OLED Display

Display Driver	SSD1306
Display Size	0.96 inch
SCL Pin	GPIO17
SDA Pin	GPIO16
RESET Pin	NOT CONNECTED

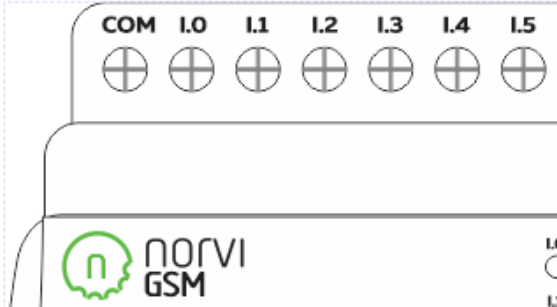
INPUTS and OUTPUTS

Digital Inputs

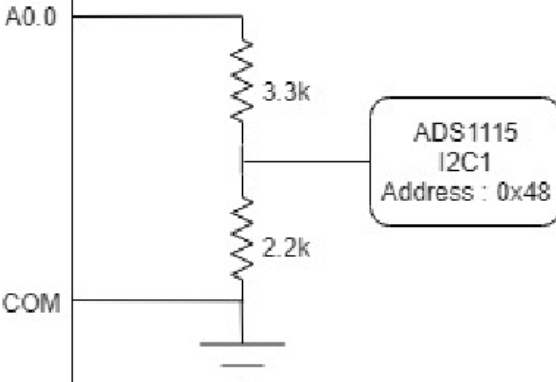
Number of Digital Inputs	6
Digital Input Polarity	Supports both Sink and Source
Digital Input Maximum Voltage	32V DC
Digital Input Minimum Voltage	18V DC
Maximum Switching Frequency	1 kHz

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Terminal Arrangement	 <p>I0 - Digital Input 0 I1 - Digital Input 1 I2 - Digital Input 2 I3 - Digital Input 3 I4 - Digital Input 4 I5 - Digital Input 5</p>
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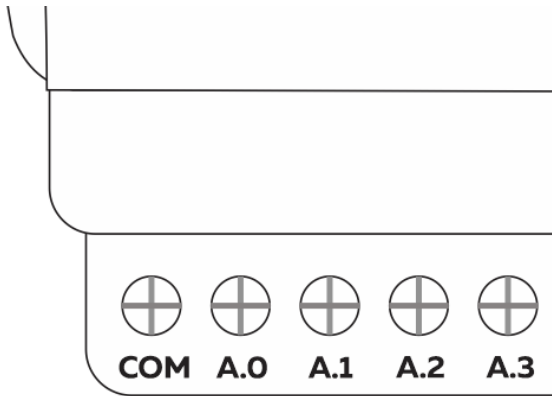
Analog Inputs

Number of Analog Inputs	4
Analog Input Measurement Range	0 - 10V DC
Analog Input Maximum Voltage	12V DC
Analog to Digital Converter (ADC)	ADS1115
Analog to Digital Converter (ADC) Communication	I2C
Analog to Digital Converter (ADC) Address	0x48
Internal Schematic	

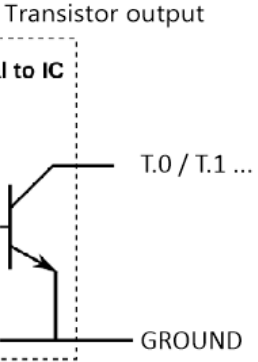
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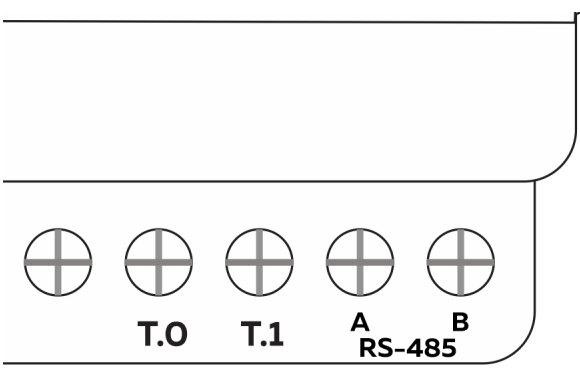
Terminal Arrangement	 <p>I0 - Analog Input 0 - ADS1115 Channel 0 I1 - Analog Input 1 - ADS1115 Channel 1 I2 - Analog Input 2 - ADS1115 Channel 2 I3 - Analog Input 3 - ADS1115 Channel 3</p>
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Transistor Outputs

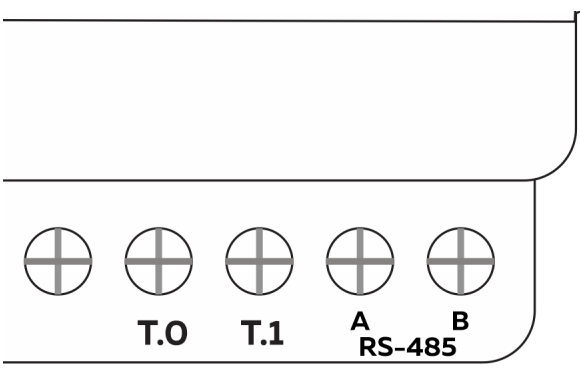
Number of Transistor Outputs	2
Transistor Output Type	OPEN COLLECTOR
Maximum Sink/Source Current (mA)	100mA
Maximum Applicable Voltage	36V DC
Maximum Switching Frequency	1 kHz
Internal Schematic	

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Terminal Arrangement	 <p>T0 - Transistor Output 0 - GPIO12 T1 - Transistor Output 1 - GPIO2</p>
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Communication Channels RS-485 Communication

Communication Mode	HALF-DUPLEX
Transceiver	MAX485
Unit Load	1/4
Flow Control / Direction Control Pin	GPIO22
TX Pin	GPIO26
RX Pin	GPIO25
Terminal Arrangement	

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GSM / LTE Communication

Model of GSM Modem	SIM7500A
Manufacturer	SIMCom
FCC ID	UDV-201606
TAC	86147503
Method of Handling	AT Command over UART
Default Baud Rate	115200 bps
RESET Pin	GPIO21
TX Pin	GPIO33
RX Pin	GPIO32

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GPIO Map

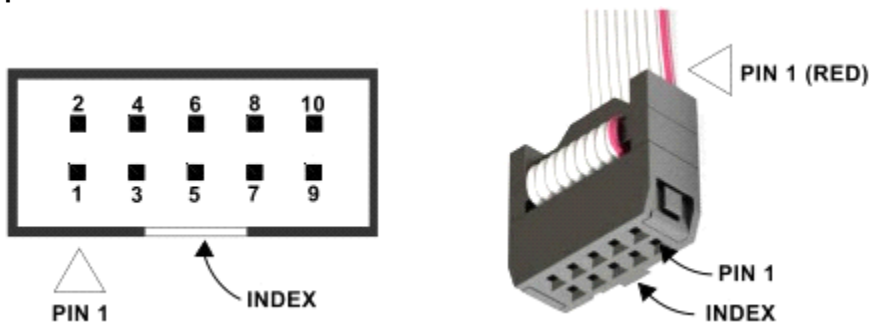
GPIO	Description	Usage
0	outputs PWM signal at boot	NRST
1	debug output at boot	RX0 - USB
2	connected to on-board LED	OUTPUT 2 (Transistor)
3	HIGH at boot	RX0 - USB
4		
5	outputs PWM signal at boot	Digital Input 5
6	connected to the integrated SPI flash	
7	connected to the integrated SPI flash	
8	connected 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		Digital Input 4
14	outputs PWM signal at boot	Digital Input 3
15	outputs PWM signal at boot	Chip Select - microSD
16		SDA - I2C
17		SCL - I2C
18		SCLK - microSD
19		MISO - microSD
21		RESET GSM Module
22		RS-485 Flow Control
23		MOSI - microSD
25		RS-485 - RXD
26		RS-485 - TXD
27		
32		RX- GSM Module

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33		TX - GSM Module
34	input only	Digital Input 1
35	input only	Digital Input 2
36	input only	Front Panel Buttons
39	input only	Digital Input 0

Expansion Port



PIN	ESP32 Connection
1	NOT CONNECTED
2	TXD0
3	5V DC
4	RXD0
5	BOOT IO0
6	NOT CONNECTED
7	3.3V DC
8	SCL - GPIO17
9	GROUND
10	SDA - GPIO16

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