



- ESP32-WROOM32 Module
- Built-in 5' Inch LCD Display with Resistive Touch
- Built-in Buzzer
- Built-in microSD Card support
- LVGL Supported Display
- DS3231 RTC with battery backup

- PLC functionality with Arduino
- 4 x Digital Inputs 24V
- 4 x 0 - 10V Analog Inputs
- 4 x Transistor Outputs
- 2.4Ghz WiFi + Bluetooth
- W5500 Ethernet
- RS-485

ESP32-based Embedded HMI Solution with LVGL and Arduino support for IoT and Automation projects

Main	
Range of Product	NORVI HMI Controller
Product Type	Programmable HMI
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	12 - 24V DC
Communication	RS-485 Ethernet
Inputs and Outputs	4 x Digital Inputs 4 x Analog Inputs 4-20mA 4 x Transistor outputs
Displays and Visual Indicators	LCD Display
Complementary	
Product Unified Code	ESP-HMI-5C-VI
Product Part Numbers	ESP-HMI-5C-VI
Mechanical Properties	
Enclosure	OP-300-B
Mounting / Installation Method	DIN Panel Mount / Cutout 116 x 163 mm
Terminal Type	SCREW TERMINAL
Terminal Arrangement	Top and Bottom
Length	179.6 mm
Height	129.6 mm
Width	42.6 mm
Environment	
IP degree of protection	IP20
Operating altitude	0 - 2000 meters
Operating Temperature	-10 - +85C (185 °F)
Storage altitude	0 - 3000 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	
Rated Supply Voltage (V)	24V DC
Current Consumption (mA)	100mA

Recommended Power Source	2W
Processing	
SOC / MCU	ESP32-S3-WROOM32-1-N16R8
Flash Memory	16MB
ROM	384 KB
SRAM	512 KB
PSRAM	8 MB (Octal SPI)
Peripherals	
microSD Card support	
Card Type	microSD
Interface	SPI
SD CARD CS	GPIO37
MISO	GPIO19
MOSI	GPIO12
SCLK	GPIO13
SD Detect	NOT CONNECTED
Internal RTC	
RTC Chip	DS3231
Backup Battery Type	CR2032
Interface	I2C
I2C Address	0x68
SCL Pin	GPIO19
SDA Pin	GPIO20
TFT LED Display	
Display Driver	ER-TFT050-3
Display Size	5 inch
HSYNC	GPIO6
VSYNC	GPIO5
DEN	GPIO4
DCLK	GPIO7
DISP CS	GPIO39
R0	Connected to GND
R1	Connected to GND
R2	Connected to GND
R3	GPIO1
R4	GPIO41
R5	GPIO40
R6	GPIO38
R7	GPIO45
G0	Connected to GND
G1	Connected to GND
G2	GPIO48
G3	GPIO47
G4	GPIO21
G5	GPIO14
G6	GPIO9
G7	GPIO3
B0	Connected to GND
B1	Connected to GND
B2	Connected to GND
B3	GPIO8

B4	GPIO18
B5	GPIO17
B6	GPIO16
B7	GPIO15
INPUTS and OUTPUTS	
Digital Inputs	
Number of Digital Inputs	4
Digital Input Polarity	Sink and Source
Digital Input Maximum Voltage	32V DC
Digital Input Minimum Voltage	18V DC
Maximum Switching Frequency	1 KHZ
IO Connection	Via PCA9535PW
	SCL - Pin 14
	SDA - Pin 15
	I2C Address - 0x73
Terminal Arrangement	Digital Input 0 - IO0
	Digital Input 1 - IO1
	Digital Input 2 - IO2
	Digital Input 3 - IO3
Analog Inputs	
Number of Analog Inputs	4
Analog Input Measurement Range	0-10V
Analog Input Maximum Voltage	38V DC
Analog to Digital Converter (ADC)	ADS1115
Analog to Digital Converter (ADC) Communication	I2C
Analog to Digital Converter (ADC) Address	0x48
Terminal Arrangement	A0 : Analog Input 0 - ADS1115 - 0x48 - AIN0
	A1 : Analog Input 1 - ADS1115 - 0x48 - AIN1
	A2 : Analog Input 2 - ADS1115 - 0x48 - AIN2
	A3 : Analog Input 3 - ADS1115 - 0x48 - AIN3
Transistor Outputs	
Number of Transistor Outputs	4
Transistor Output Type	OPEN COLLECTOR
Maximum Sink/Source Current (mA)	100mA
Maximum Applicable Voltage	40V DC
Maximum Switching Frequency	1 kHz
IO Connection	Via PCA9535PW
	SCL - Pin 14
	SDA - Pin 15
	I2C Address - 0x73
Terminal Arrangement	TR01 - IO4
	TR02 - IO5
	TR03 - IO6
	TR04 - IO7
RS-485 Communication	
Communication Mode	FULL-DUPLEX
Transceiver	SP490CN-L
Unit Load	1
TX Pin	GPIO3

RX Pin	GPIO35
Ethernet SPI - W5500	
Transceiver	W5500
Speed	10BaseT/100BaseTX
Supports Auto Negotiation	Yes
TX/RX Buffer Size	Internal 32 Kbytes Memory
Supported Hardwired TCP/IP Protocols	TCP, UDP, ICMP, IPv4, ARP, IGMP, PPPoE
Number of Simultaneous independent sockets	8
SCSn	GPIO10
MISO	GPIO11
MOSI	GPIO13
SCLK	GPIO12
IO Expander	
PCA9535PW PIN	Connection
1 - A0	Pulled up to 3.3V
2 - A1	Pulled up to 3.3V
3 - RESET	Pulled up to 3.3V
4 - IO0	Digital Input 1
5 - IO1	Digital Input 2
6 - IO2	Digital Input 3
7 - IO3	Digital Input 4
8 - VSS	GND
9 - IO4	Transistor Output 1
10 - IO5	Transistor Output 2
11 - IO6	Transistor Output 3
12 - IO7	Transistor Output 4
13 - INT	Pulled up to 3.3V
14 - SCL	SCL
15 - SDA	SDA
16 - VDD	3.3V