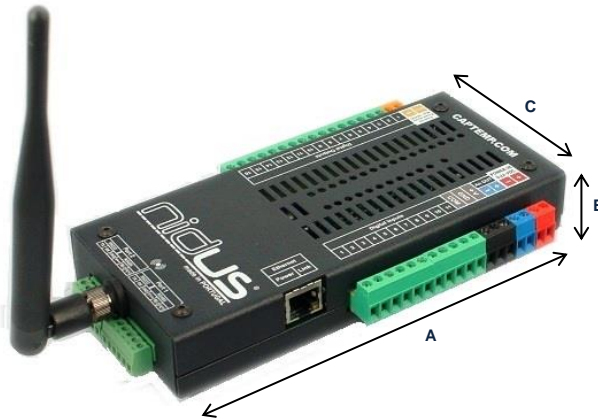
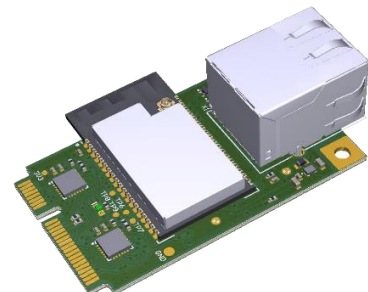
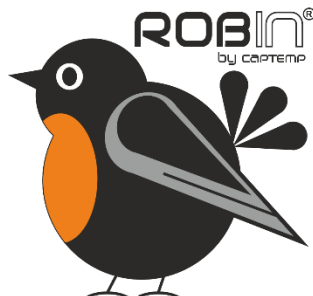


Programmable 32 bits microcontroller – Hardware description



Specifications	NIDUS – Master board			
Size (mm) AxBxC	175 X 35 X 80 (mm)			
Mini PCI Express	1	ROBIN		
Battery	1	3,0 V	CR2032	lithium
Digital inputs	11	Optocoupler protection		
		Isolated inputs accept 12-24V		
		NPN or PNP defined by Jumper	(V++ COM)	(GND COM)
Digital outputs	16	NPN Darlington transistor	I _{max} = 500mA V _{dc} max = 50V	Turn-On Delay = 1us Turn-Off Delay = 2us
Analogue output	1	0-10 V	I _{max} =10mA	11 bits resolution
Serial port	1	TTL	Programming / Serial port	
	2	RS232 / RS485		
Power supply		V _{in} = 9 - 24Vdc	P= 850mW	
Network protocols	TCP/IP, UDP/IP, SNMP, HTML, XML, PUSH/XML, AJAX, SMS and E-mail,			
Data logger	Data logger for more than 500.000 records			
Add-on				
RF module	1	1 TTL	433, 868 or 915 Mhz (ISM) wireless module	

Processor type
(ROBIN)



Specifications
Microprocessor
Network Interface
Flash Memory (Code and File system)
Internal SRAM (Code and Data)
PSRAM
Mass Storage
General-Purpose I/O
Serial Ports
Real-Time Clock
Timers
Watchdog/Supervisor
Pulse Width Modulators
I2C
Power - with Ethernet
Operating Temperature
Encryption features
Supported Protocols
Humidity
Connectors - Headers
Board Size

ROBIN
ESP32-D0WD, 2 low-power Xtensa® 32-bit LX6 microprocessors (80MHz up to 240MHz) 1 UltraLowPower (ULP) Coprocessor (8MHz)
10/100Base-T With RJ-45 connector WIFI 802.11 b/g/n (PCB and IPEX antenna) Bluetooth v4.2 BR/EDR and Bluetooth LE
4/8/16 MB serial Flash
520 KB internal SRAM 8 KB of SRAM in RTC, which is called RTC FAST Memory and can be used for data storage 8 KB of SRAM in RTC, which is called RTC SLOW Memory
8 MB PSRAM External SRAM can be mapped into CPU data memory space
On-board serial Flash
Up to 29 digital I/O through I2C I/O expander Up to 8 digital I/O directly connected to the microcontroller allowing for peripheral mapping
Up to 4 SPI/QSPI Interfaces Up to 1 I2S Interface Up to 3 UART Interfaces (1 reserved for programming) (These features are only available on pins directly connected to the microcontroller)
Yes
Four 64-bit timers with 16-bit prescallers
Yes
1 16 channel LED PWM controller 1 Motor PWM controller with 6 outputs (These features are only available on pins directly connected to the microcontroller)
1 400Kbp/s / 100Kbp/s I2C interface
≈ 150mA average with Wi-Fi enabled + 50mA for ethernet
-40° C to +85° C
Hardware AES, SHA and RSA
HTTP, HTTPS, SSLv3, DHCP, UDP, TCP, SNMP, Telnet, FTP, TFTP, SMTP, POP3 ASIO port, Modbus, MQTT, TLS, Local Control, Serial Slave Link, x509 Certificate Bundle, ICMP Echo, mDNS, Service, Mbed TLS, Websocket, SLIP, SNTP, MDNS, Coap, Cbor
5% to 95%, non-condensing
52-pin Mini PCI Express RJ-45 10/100Base
(18 mm x31 mm x3.3 mm)

Programming environment

<ul style="list-style-type: none"> - Visual Studio Code with the officially supported Espressif Integrated Development Framework (ESP-IDF) Extension [56] - Arduino IDE with the ESP32 Arduino Core - MicroPython A lean implementation of Python 3 for microcontrollers - Espruino – JavaScript SDK and firmware closely emulating Node.js - Lua Network/IoT toolkit for ESP32-Wrover [57] - Mongoose OS – an operating system for connected products on microcontrollers; programmable with JavaScript or C. <p>A recommended platform by Espressif Systems, AWS IoT and Google Cloud IoT</p> <ul style="list-style-type: none"> - Mruby for the ESP32 - NodeMCU – Lua-based firmware - Zerynth – Python for IoT and microcontrollers, including the ESP32
