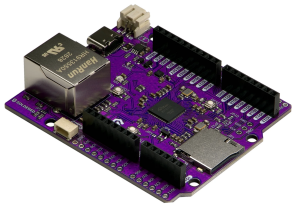
PRODUCT DATASHEET



Soldered NULA Ethernet W55RP20

333407

The Soldered NULA Ethernet W55RP20 combines RP2040 and W5500 for seamless wired Ethernet integration in projects, ideal for industrial use.

Full product documentation, files and tutorials: **solde.red/333407**

CORE ATTRIBUTES

SKU	**333407**
WEIGHT	**21 g**
DIMENSIONS	**68.6 × 58.4 × 15.2 mm**
BARCODE	**732388629404**

DESCRIPTION

Add wired Ethernet to your project without a separate network chip or a heavy software stack. The **Soldered NULA Ethernet W55RP20** is built around WIZnet's **W55RP20**, a single package that fuses the dual-core RP2040 with the W5500 hardwired TCP/IP controller and a 10/100 Ethernet PHY. You get the familiar RP2040 development experience and a full hardware TCP/IP stack on the same chip, so networking runs in silicon instead of eating your CPU time. Perfect for industrial sensors, building automation, data loggers, and any device that needs a reliable wired connection.

The board breaks the W55RP20 out along both long edges. The left side carries an 8-pin and a 10-pin header with power rails and most of the chip's GPIO; the right side adds a further 8-pin and 6-pin header. A separate 3-pin header exposes **SWD** for debugging. An **RJ45 jack with integrated magnetics** handles the Ethernet side, with two status LEDs built into the connector. A **Qwiic connector** gives you tool-free I2C expansion, a **microSD slot** (SPI) covers data logging and storage, and an onboard **TP4056M** charger with a **JST connector** lets you run and charge a Li-ion/Li-po battery. Power and programming come over **USB-C**.

If you know the Raspberry Pi Pico or any RP2040 board, you already know how to program this one. It works with the **Arduino IDE**, **MicroPython**, and **C/C++**, and existing RP2040 code, libraries, and examples run with minimal changes. A **USB-A to USB-C** cable is included in the package, so you can start programming right out of the box.

Note:

- The W55RP20 does **NOT** support auto-MDIX. Use a straight-through cable to a switch or router, and a crossover cable to another W55RP20, a server, or a workstation.
- GPIO logic is **3.3 V and NOT 5 V tolerant**.
- Before connecting a 3.7 V Li-ion battery, please refer to the detailed technical documentation which you can find in the links below.

TECHNICAL DETAILS

- **SoC:** WIZnet W55RP20 (RP2040 + W5500 in one 8 × 8 mm QFN-68)
- **CPU:** Dual-core ARM Cortex-M0+ @ 133 MHz
- **Memory:** 264 KB SRAM, 2 MB Flash, 16 KB ROM
- **Ethernet:** W5500 hardwired TCP/IP (TCP, UDP, IPv4, ICMP, ARP, IGMP, PPPoE), 10/100 Mbps, integrated PHY, 8 sockets, 32 KB TX/RX buffer
- **Ethernet Connector:** RJ45 with integrated magnetics and status LEDs
- **GPIO:** 23 GPIO, labeled IO0-IO29 on the silkscreen (IO17 and IO20-IO25 are used internally by the W55RP20 and not exposed)
- **GPIO Breakout:** Left side 8-pin + 10-pin, right side 8-pin + 6-pin
- **Debug:** 3-pin SWD header (SWD, GND, CLK)
- **Peripherals:** 2x UART, 4x SPI, 3x I2C, 16x PWM, 2× PIO blocks (8 state machines), 12× DMA
- **ADC:** 12-bit (0 - 3.3 V range)
- **MicroSD Reader:** Onboard slot wired, with card power control and card-detect
- **Qwiic Port:** Tool-free I2C expansion
- **Battery Support:** JST connector with onboard TP4056M Li-Ion/Li-Po charger and charge status LED (3.7 V)
- **USB-C:** Power (5 V), programming, and serial communication
- **User Interface:** WS2812 RGB LED, power LED, Ethernet status LEDs, RESET, BOOT, and USER buttons
- **Logic Level:** 3V3 GPIO - NOT 5V tolerant!
- **Development Support:** Arduino IDE, MicroPython, C/C++
- **Mounting:** 4 × 3.2 mm holes (M3), LEGO-compatible
- **Dimensions:** 68.6 × 58.4 mm (2.70 × 2.30 in)
- **Hardware Design:** Open-source, made in EU

SPECIFICATIONS

MCU PART NUMBER	W55RP20
MCU CLOCK (MHZ)	133 MHz
SRAM (KB)	264 KB
FLASH (MB)	2 MB
WIFI	None
BLUETOOTH	None
GPIO COUNT	23
QWIIC COMPATIBLE	Yes
BREADBOARD COMPATIBLE	Yes
BATTERY CONNECTOR	Jst 2Pin
ONBOARD BATTERY CHARGER	Yes
SUPPLY VOLTAGE	5V
LOGIC LEVEL	

	3V3
DEV ENVIRONMENTS	Arduino IDE, MicroPython, C/C++ SDK

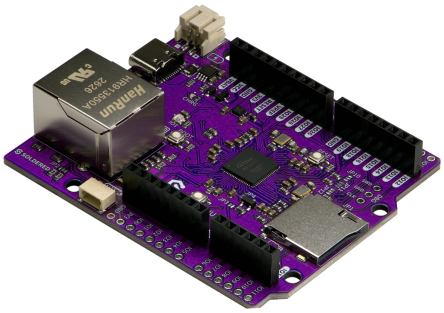
DOCUMENTS

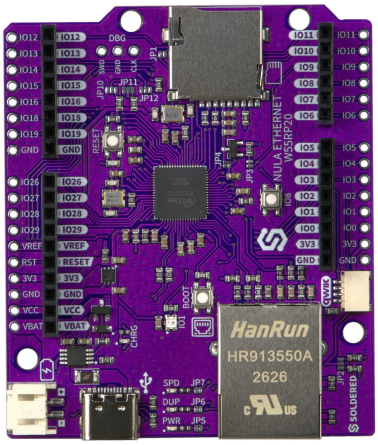
Main IC Datasheet · EN	https://cms.soldered.com/products/333407/documents/ic-datasheet/333407_ic-datasheet_699d1f.pdf

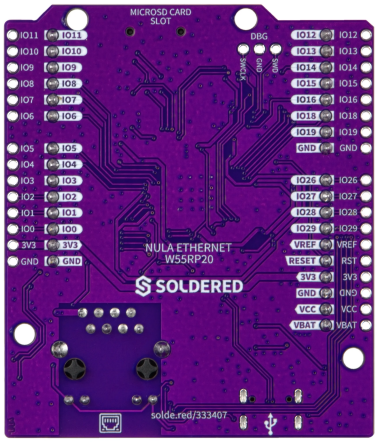
LINKS

Full Documentation	https://docs.soldered.com/nula_w55rp20/overview/
Hardware Details	https://docs.soldered.com/nula_w55rp20/hardware/
Product Page	https://soldered.com/products/soldered-nula-ethernet-w55rp20
Produktseite	https://soldered.com/de/products/soldered-nula-ethernet-w55rp20
Stranica proizvoda	https://soldered.com/hr/products/soldered-nula-ethernet-w55rp20
Arduino Library	https://github.com/earlephilhower/arduino-pico
Pinout	https://cms.soldered.com/products/333407/media/333407_pinout-png_99119a.png

GALLERY




NULA ETHERNET
W55RP20
HanRun
HR913550A
2626


MICROSD CARD
SLOT
NULA ETHERNET
W55RP20
SOLDERED
solde.red/333407