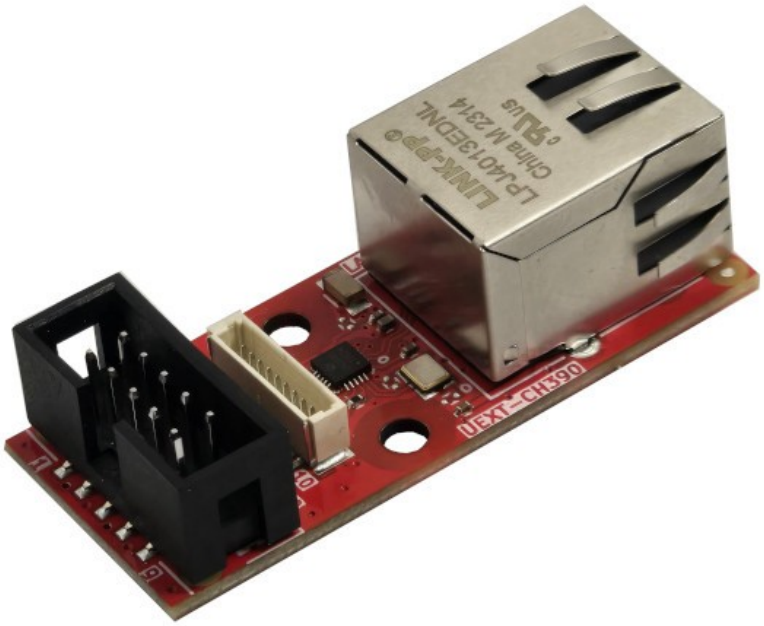


UEXT-CH390

User Manual

Rev.1.0 November 2026

olimex.com

Table of Contents

Introduction to UEXT-CH390....3
Order codes for UEXT-CH390 and accessories:....4
HARDWARE....5
UEXT-CH390 layout:....6
UEXT-CH390 schematic:....7
UEXT connector:....8
SOFTWARE:....9
Revision History....10

Introduction to UEXT-CH390

UEXT-CH390 is UEXT module which adds 100MB Ethernet connectivity to any board with UEXT connector like Raspberry Pi PICO, PICO2 and Espressif ESP32-C3/S2/S3/C5/C6 boards

CH390 is supported in Arduino and ESPHome.

UEXT-CH390 have these features:

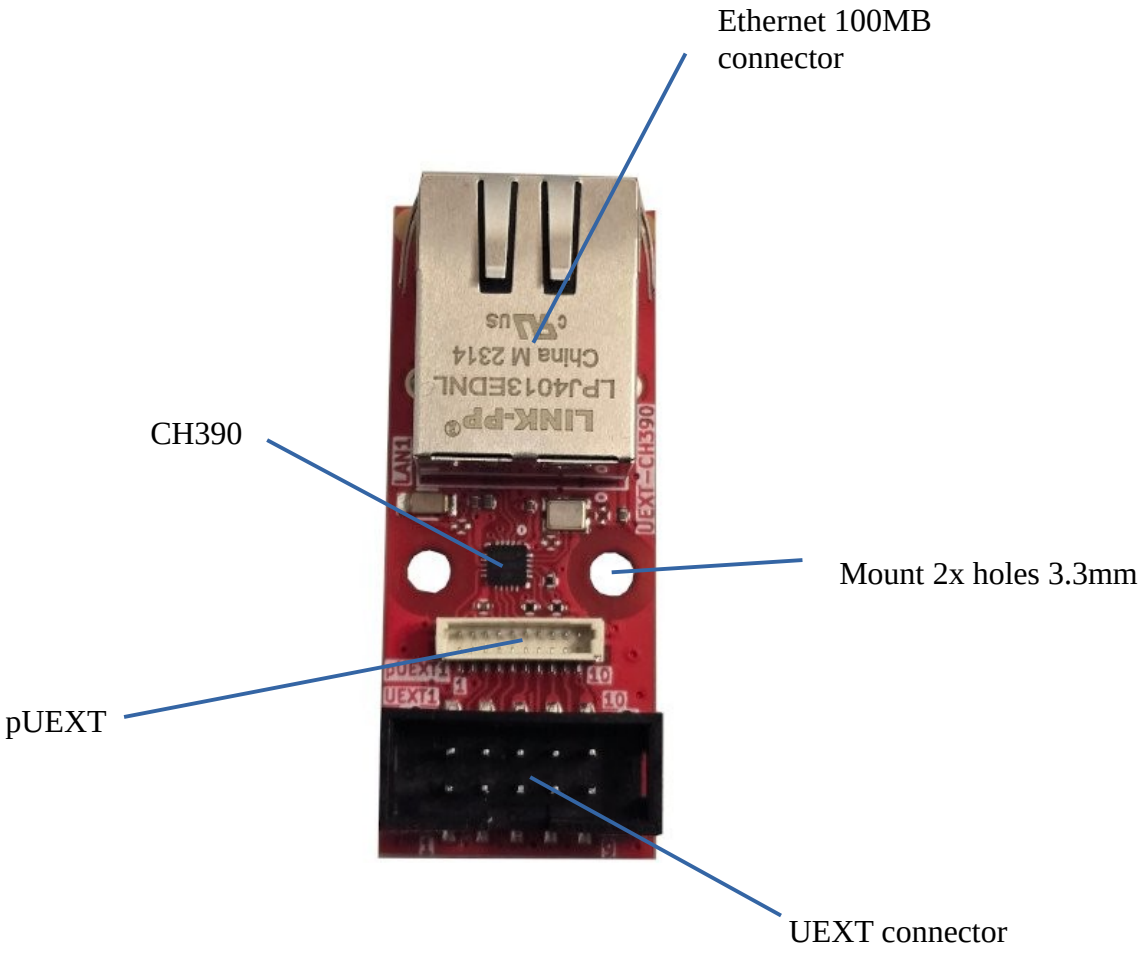
- Ethernet RJ connector with magnetics
- CH390 SPI to Ethernet controller
- UEXT and pUEXT connectors
- Compact size only 50x21 mm

Order codes for UEXT-CH390 and accessories:

UEXT-CH390	UEXT SPI 100MB Ethernet module
CABLE-IDC10-15cm	cable for normal UEXT connector
pUEXT-CABLE-10-10-50MM	cable for pUEXT connector
RP2040-PICO30U-16	Raspberry Pi PICO with 30 GPIOs and pUEXT connector

HARDWARE

UEXT-CH390 layout:



UEXT-CH390 schematic:

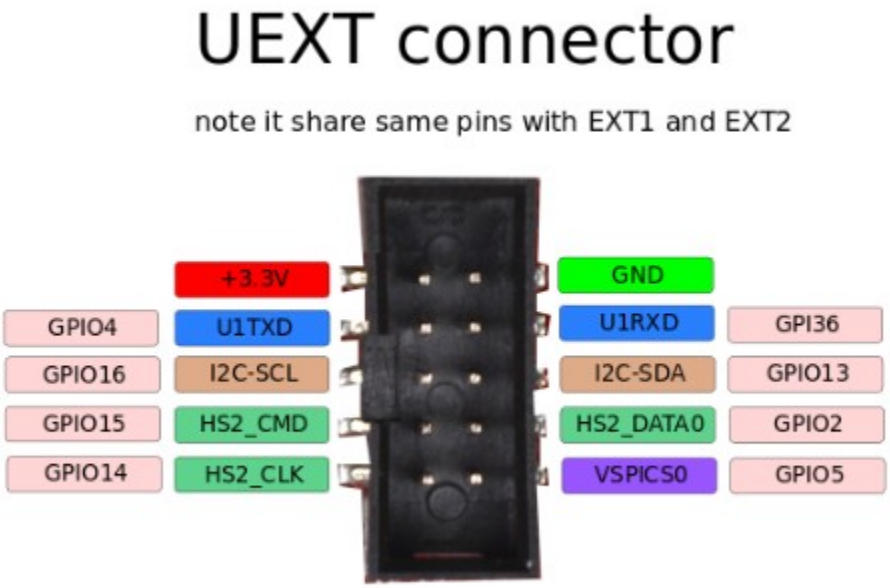
UEXT-CH390 schematic in PDF format on GitHub

UEXT connector:

UEXT connector stands for Universal EXTension connector and contain +3.3V, GND, I2C, SPI, UART signals.

UEXT connector can be in different shapes.

The original UEXT connector is 0.1” 2.54mm step boxed plastic connector. All signals are with 3.3V levels.



As the boards become smaller and smaller some smaller packages were introduced too beside the original UEXT connector

- mUEXT is 1.27 mm step boxed header connector which is with same layout as UEXT

- pUEXT is 1.0 mm single row connector (this is the connector used in RP2040-PICO30)

Olimex has developed number of MODULES with this connector. There are temperature, humidity, pressure, magnetic field, light sensors. Modules with LCDs, LED matrix, Relays, Bluetooth, Zigbee, WiFi, GSM, GPS, RFID, RTC, EKG, sensors and etc.

SOFTWARE:

UEXT-CH390 repository have these software:

- Raspberry PICO SDK
- ESPHome with Home Assistant

Revision History

Revision 1.0 November 2026