

Serial, MQTT, and Ambient Light Modules

Serial Module

The Serial module lets external hardware send and receive Meshtastic messages over a UART serial connection - enabling integration with microcontrollers, GPS units, custom sensors, and computer software.

Modes of Operation

Mode	Description	Use Case
DEFAULT	Raw bytes in/out, app-layer messages	Arduino/ESP32 integration
SIMPLE	Newline-delimited text in/out	Simple text message bridging
PROTO	Protobuf framing	Full programmatic access
NMEA	Outputs NMEA sentences from node GPS	Feeding position to chartplotters
CALTOPO	CalTopo-compatible position format	SAR map integration

Configuration

```
meshtastic --set serial.enabled true
meshtastic --set serial.mode SIMPLE
meshtastic --set serial.rxd 16
meshtastic --set serial.txd 17
meshtastic --set serial.baud BAUD_9600
```

RXD/TXD pin numbers are board-specific. In SIMPLE mode, text sent to the serial port (terminated with newline) is broadcast as a mesh message; received mesh messages are printed as text to the serial port.

MQTT Module

The MQTT module directly connects a Meshtastic node to an MQTT broker (internet required), enabling cloud integration without a separate gateway computer.

```
meshtastic --set mqtt.enabled true
meshtastic --set mqtt.address "mqtt.meshtastic.org"
meshtastic --set mqtt.username "meshdev"
meshtastic --set mqtt.password "large4cats"
meshtastic --set mqtt.root "msh"
meshtastic --set mqtt.uplink_enabled true
meshtastic --set mqtt.downlink_enabled false
```

`uplink_enabled` sends local mesh packets to the broker. `downlink_enabled` receives packets from the broker and re-broadcasts locally - useful for extending the mesh over the internet but can cause feedback loops if misconfigured. Start with downlink disabled until you understand the topology.

Topic Structure

Meshtastic publishes to: `msh/{region}/{channel_name}/{packet_type}`

Example: `msh/US/LongFast/text` for text messages on the LongFast channel in the US region. Subscribe with wildcards: `msh/US/#` to receive all traffic from US nodes.

Ambient Light Sensor Module

When a supported ambient light sensor (BH1750, VEML7700, or TSL2591) is connected via I2C, this module adjusts the screen backlight brightness automatically based on ambient light conditions - reducing battery drain in dark environments and ensuring readability in sunlight.

```
meshtastic --set ambient_lighting.led_state true
meshtastic --set ambient_lighting.current 10
```

Also works with RGB LED hardware (NeoPixel/WS2812) to set a status color. `current` is the LED current in milliamps (for current-controlled LEDs). For the screen backlight use case, no explicit configuration is needed beyond enabling the module - brightness is automatically managed.

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