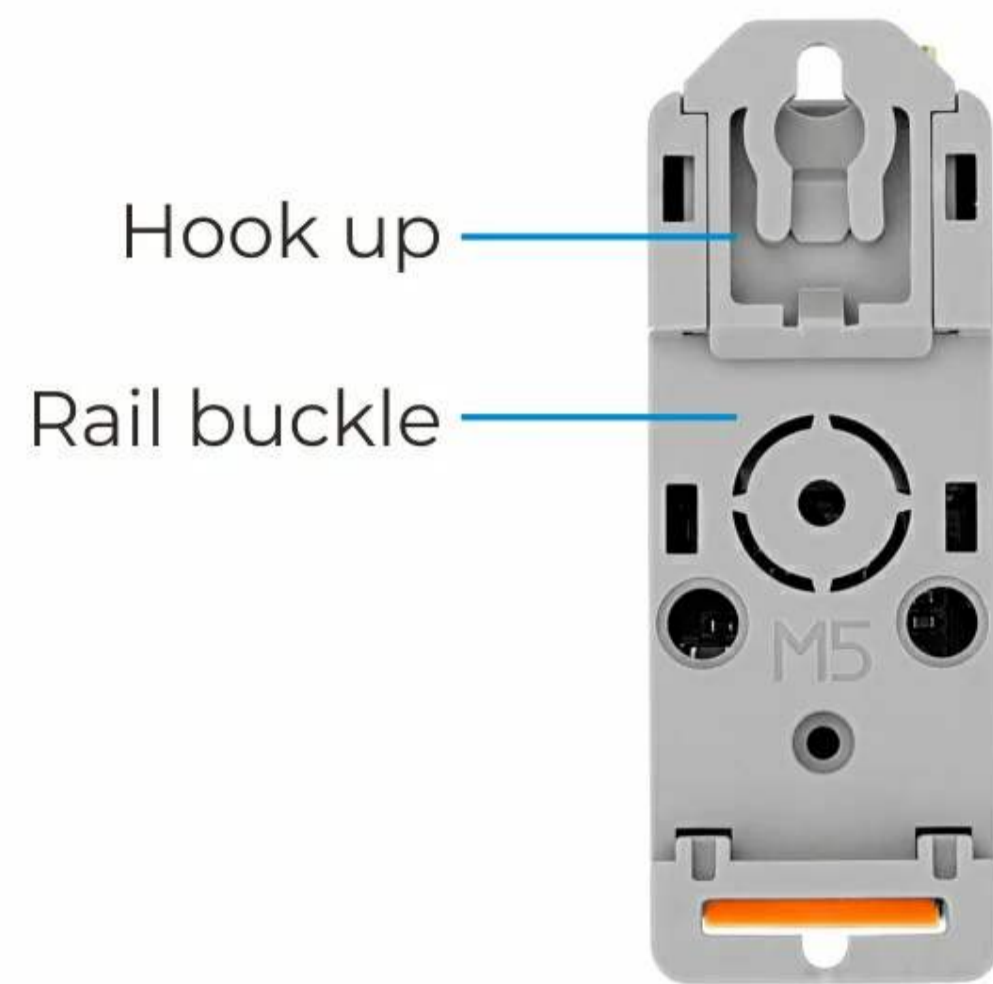


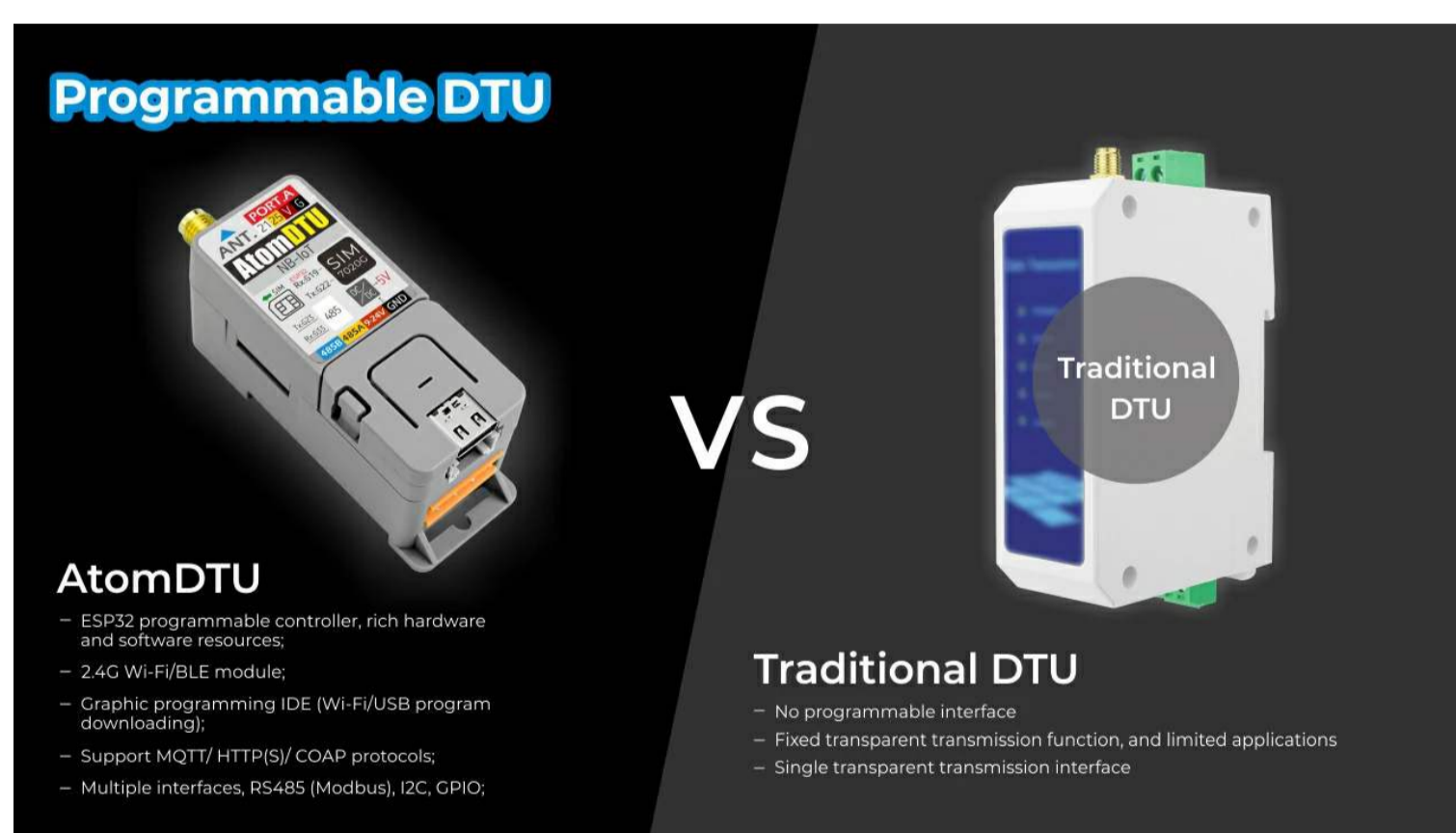
ATOM DTU NB

SKU:K059



Description

ATOM DTU NB is a programmable data transmission unit (DTU) that integrates NB-IoT communication functions. The built-in SIM7020G module covers most of the Cat-NB frequency bands and integrates the SMA external antenna interface to improve the communication quality and signal stability of the device. Unlike the DTU, which generally only has the function of data transparent transmission, the ATOM DTU series adopts a more open architecture design. The controller ATOM LITE can modify the program at will according to the actual business, and the whole machine reserves a variety of interfaces (RS485, I2C, custom interface) for users to expand, which is convenient for the rapid access of sensors and actuators. The self-contained guide rail clamping structure is perfectly embedded in various industrial control sites. **ATOM DTU NB** is very suitable for various low-latency, low-throughput application scenarios (such as remote control, asset tracking, remote monitoring, remote medical treatment, shared bicycles, etc.).



Product Features

- SIM7020G/Global version/Multi-band support
- RS485 communication interface (with 12V input interface, internal integrated DCDC step-down 5V)
- Modbus Master/slave
- Strong signal access capability
- AT command control
- SIM card type: MicroSIM
- External antenna: SMA antenna interface

- Grove expansion interface:
 - I2C x1
 - Custom x1
- Serial communication: UART 115200bps
- Self-contained rail clamping
- Cat-NB frequency band:
 - B1/B2/B3/B4/B5/B8/ B12/B13/B17/B18/B19/ B20/B25/B26/B28/ B66/B70/B71/B85
- Data transmission (kbps):
 - 126(DL)/150(UL)
- Network protocol:
 - TCP/UDP/HTTP/HTTPS/ TLS/DTLS/DNS/NTP/ PING/LWM2M/COAP/ MQTT/MQTTS

Includes

- 1x ATOM DTU NB
- 1x SMA antenna
- 1x SMA red cap
- 1x M2 hexagon wrench
- 1x M2x16 screw
- 1x 3.96-4P terminal

Application

- Smart meter
- Remote monitoring
- Shared bicycles

Certification

- RoHS\REACH\RCM\Telstra\CE(RED)\GCF\ATEX\TIM\Deutsche Telekom\Vodafone\FCC\PTCRB\T-Mobile\IC

Operator certification

- Telstra*/Vodafone/Deutsche Telekom

Specifications

| Resources | Parameter |
|-------------------------------|--|
| Module | SIM7020G |
| Support Cat-NB frequency band | B1/B2/B3/B4/B5/B8/ B12/B13/B17/B18/B19/ B20/B25/B26/B28/ B66/B70/B71/B85 |
| Network protocol | TCP/UDP/HTTP/HTTPS/ TLS/DTLS/DNS/NTP/ PING/LWM2M/COAP/ MQTT/MQTTS |

| | |
|--------------|------------------|
| Net weight | 32g |
| Gross weight | 40g |
| Product Size | 64 * 24 * 29mm |
| Package Size | 91 * 42 * 24.5mm |



Related Link

◦ Datasheet

- [SIM7020 Series datasheet](#)
- [SIM7020 Series_Ayla_Application Note_V1.03](#)
- [SIM7020 Series_CTBURST_Application Note_V1.01](#)
- [SIM7020 Series_CoAP_Application Note_V1.03](#)
- [SIM7020 Series_EAT_Environment & Compilation & Burning Guide_V1.02.](#)
- [SIM7020 Series_FOTA_Application_Note_V1.02](#)
- [SIM7020 Series_HTTP\(S\)_Application Note_V1.04](#)
- [SIM7020 Series_LWM2M_Application Note_V1.03](#)
- [SIM7020 Series_Low Power Mode_Application Note_V1.05](#)
- [SIM7020 Series_MQTT\(S\)_Application Note_V1.05](#)
- [SIM7020 Series_NVRAM_Application Note_V1.02](#)
- [SIM7020 Series_SAT_Application Note_V1.01](#)
- [SIM7020 Series_SNTP_Application Note_V1.03](#)
- [SIM7020 Series_TCPIP_Application Note_V1.04](#)

◦ AT Command

- [SIM7020 Series_AT Command Manual_V1.05](#)

Pin mapping

◦ SIMCOM7020G

| ATOM | G22(TX) | G19(RX) | 5V | GND |
|-------------|---------|---------|-----|-----|
| SIMCOM7020G | RX | TX | VIN | GND |

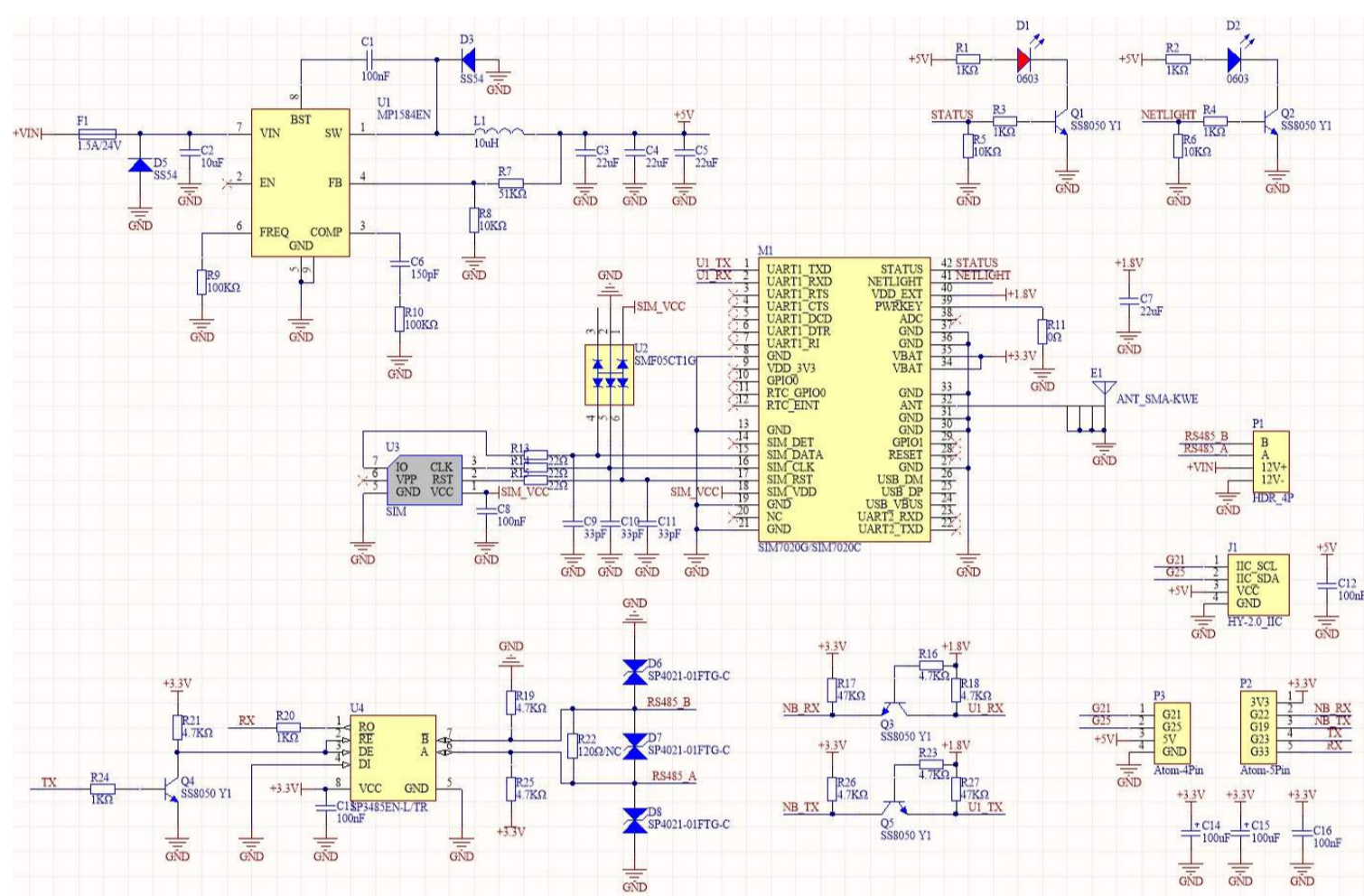
- RS485

| ATOM | G23 | G33 | 5V | GND |
|-------|-----|-----|-----|-----|
| RS485 | TX | RX | VIN | GND |

- I2C

| ATOM | G25 | G21 | 5V | GND |
|------|-----|-----|-----|-----|
| I2C | SDA | SCL | VIN | GND |

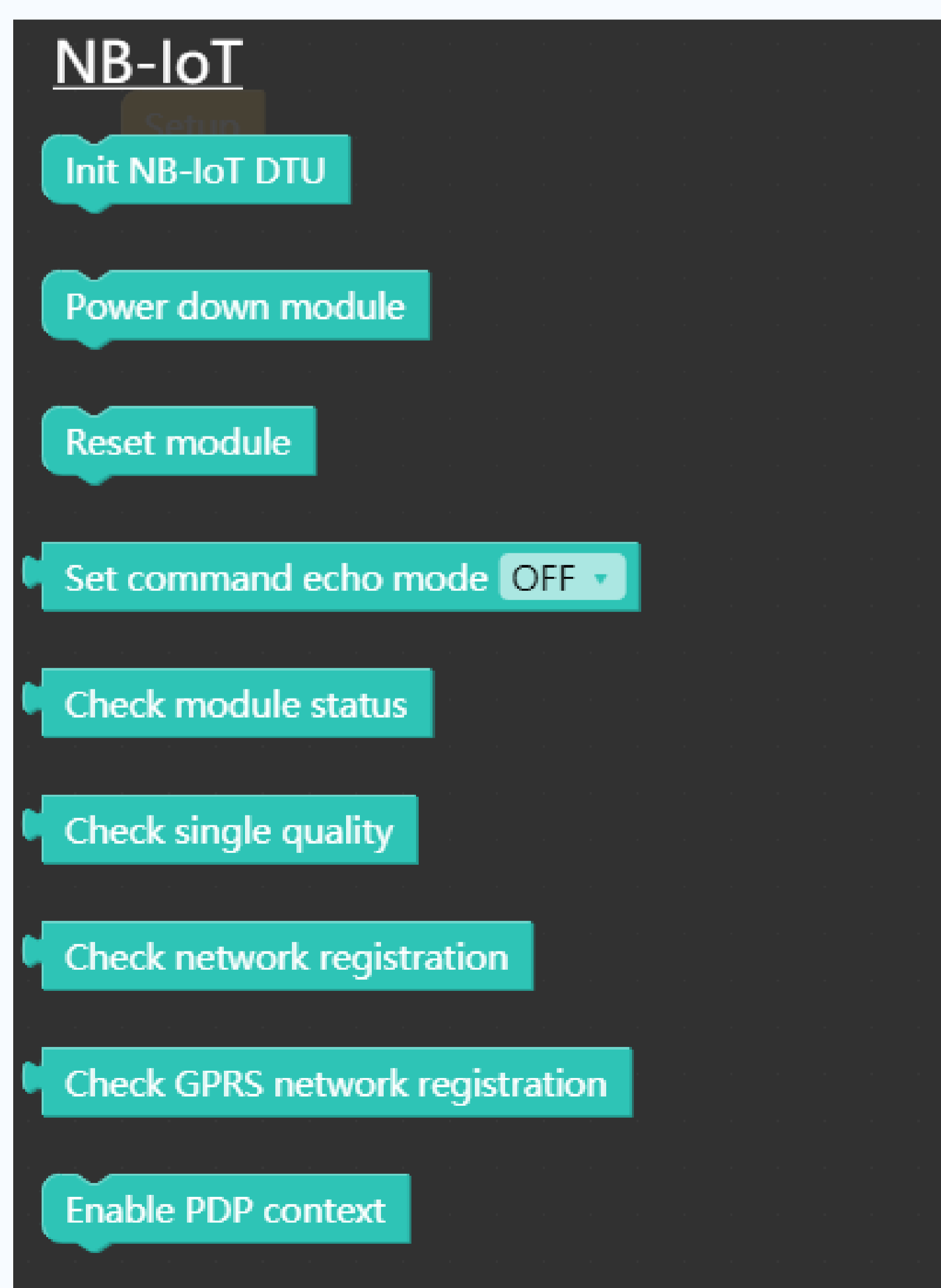
Schematic



Example

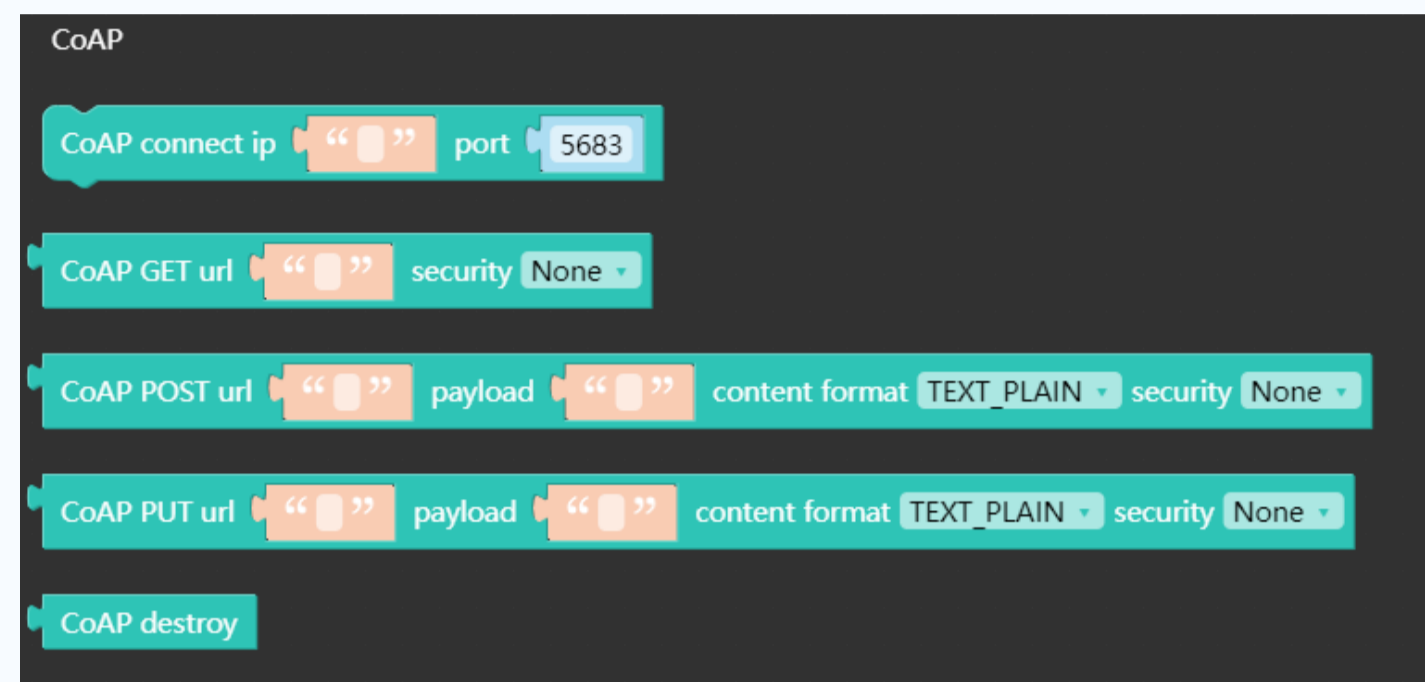
UIFlow

Feature Introduction

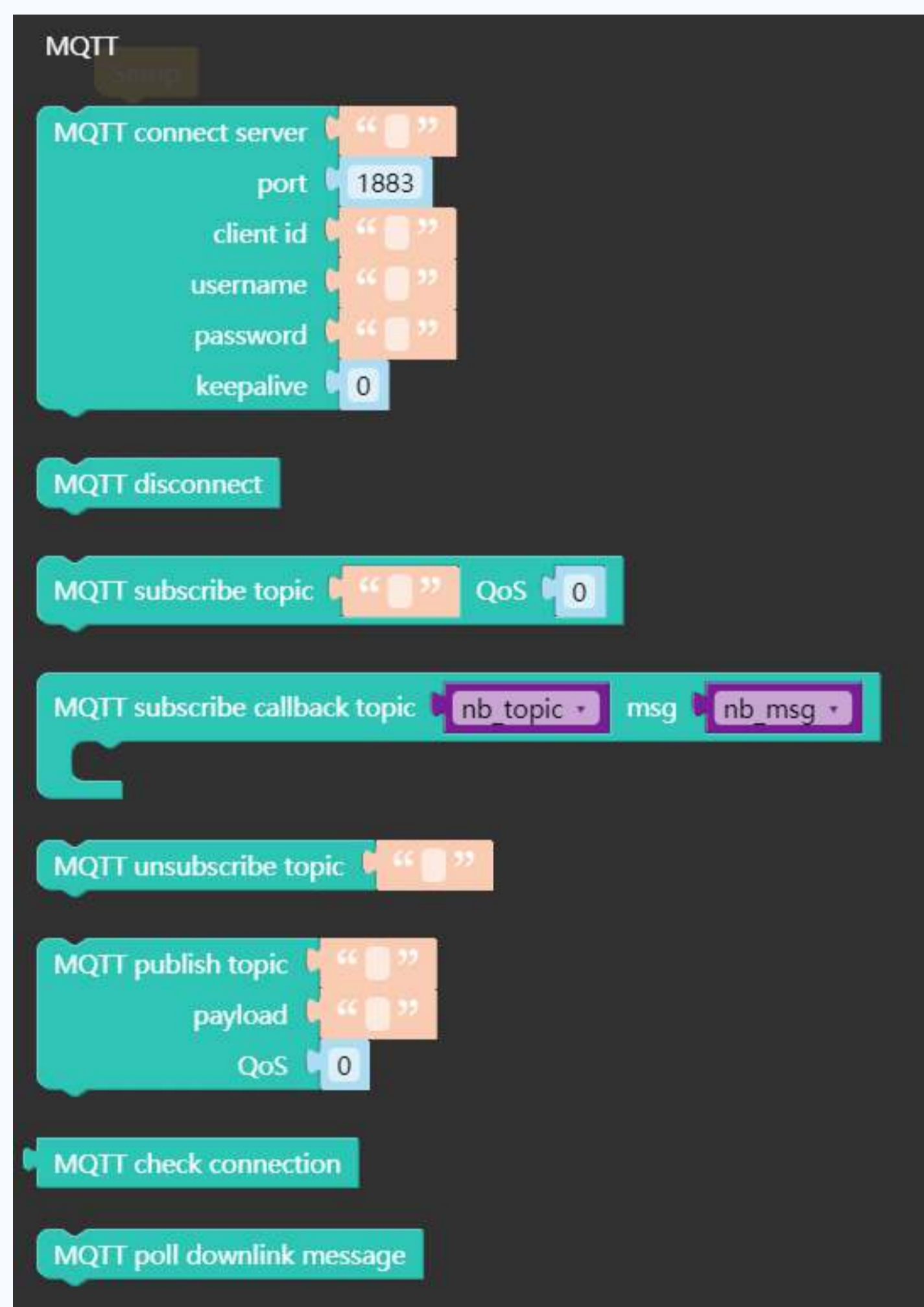


- Init NB-IoT DTU Initialize NB-IoT DTU

- **Power down module** Power down the module
- **Reset module** Reset the module
- **Set command echo mode** Set command echo
- **Check module status** Check status of the module
- **Check single quality** Check quality of the single
- **Check network registration** Check the registration of the network
- **Check GPRS network registration** Check the registration of the GPRS network
- **Enable PDP context** Enable Packet Data Protocol

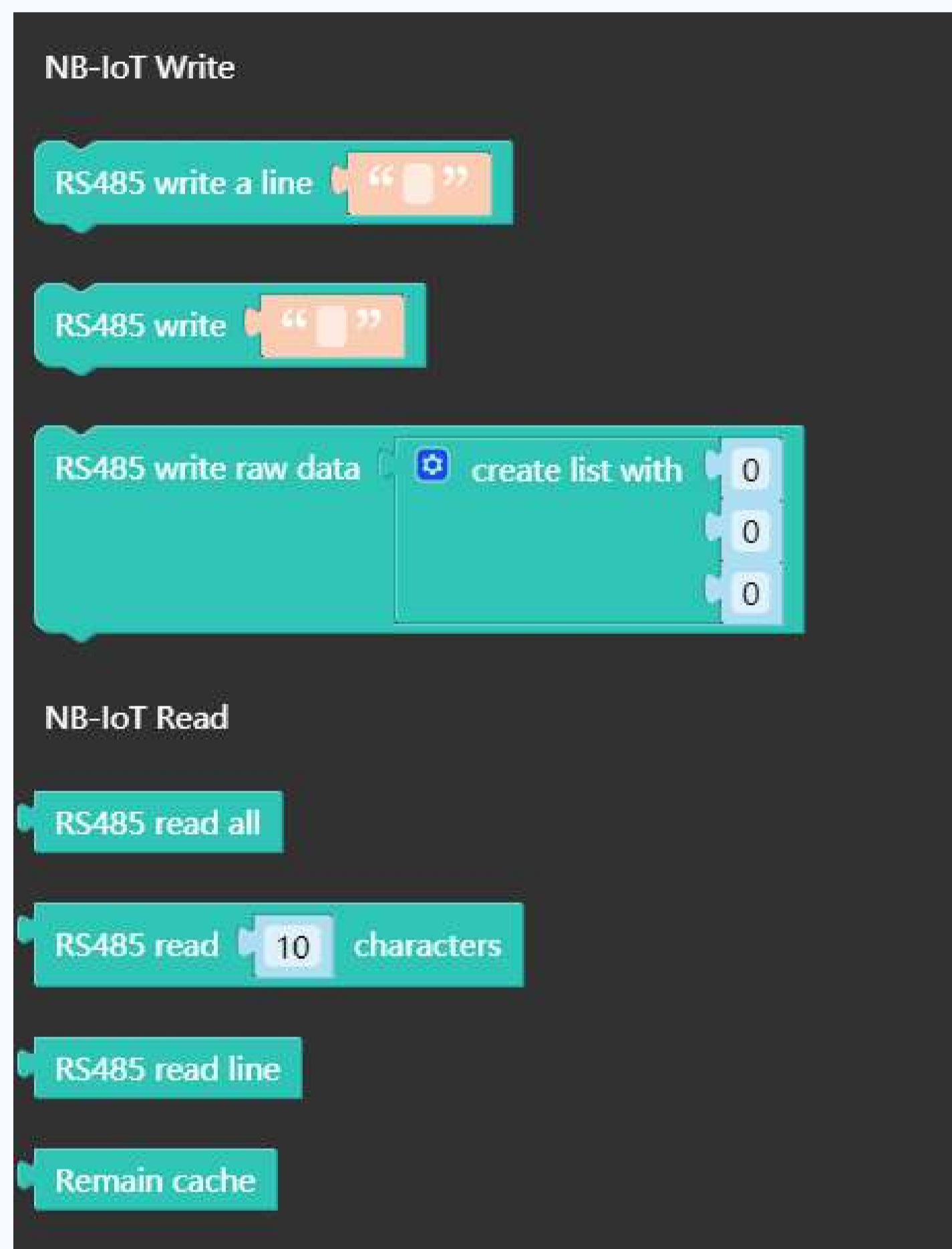


- **CoAP connect ip port** Establish CoAP connection
- **CoAP GET url security** Use GET to make a request
- **CoAP POST url payload content format security** Use POST to make a request
- **CoAP PUT url payload content format security** Use PUT to make a request
- **CoAP destroy** Destroy CoAP connection

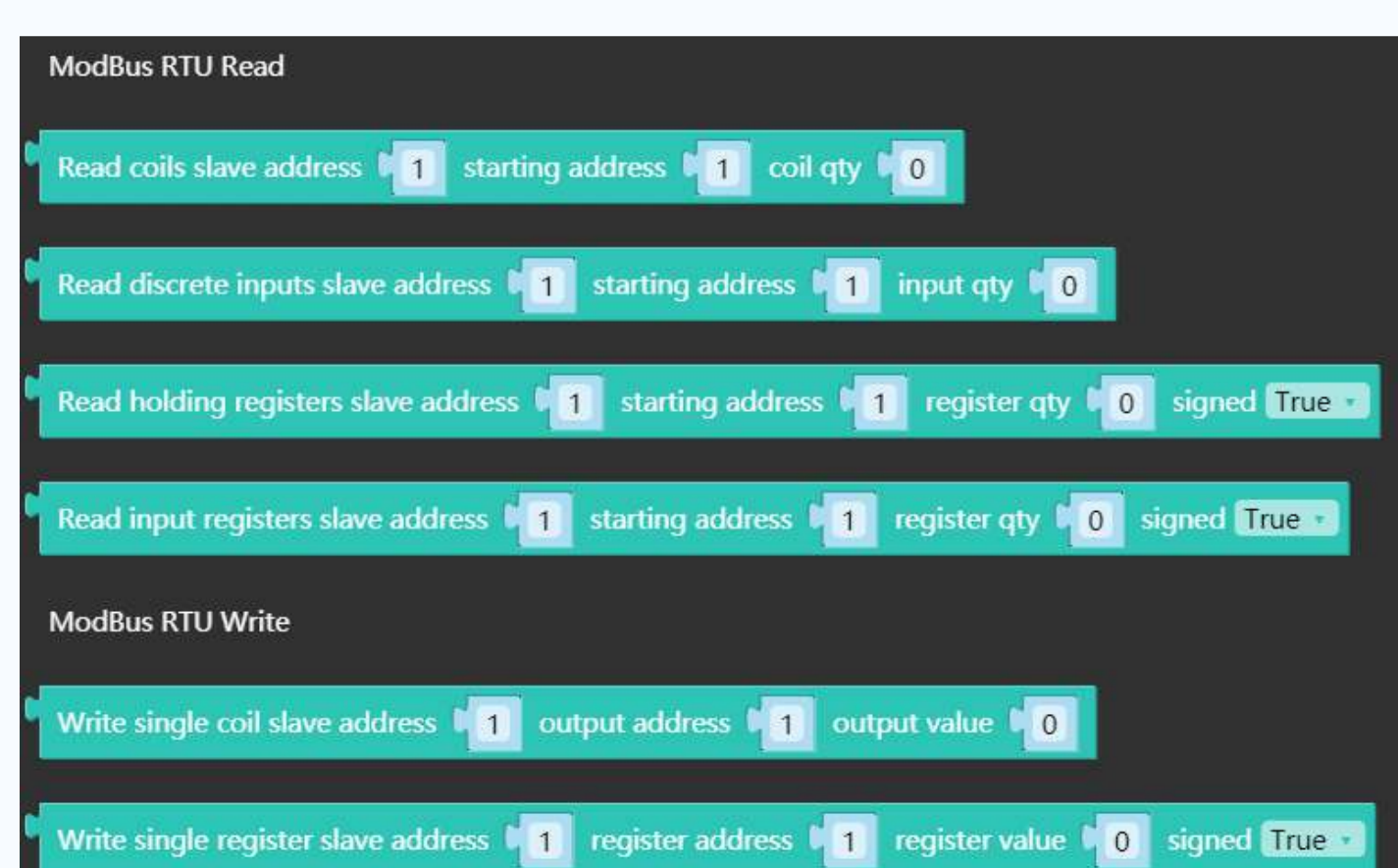


- **MQTT connect server port client id username password keepalive** Use the MQTT protocol to connect to the server
- **MQTT disconnect** Disconnect MQTT connection
- **MQTT subscribe topic QoS** Subscribe a topic
- **MQTT subscribe callback topic msg** Echo the topic and content of the subscription
- **MQTT unsubscribe topic** Unsubscribe the topic

- **MQTT publish topic payload Qos** Publish a topic
- **MQTT check connection** Check MQTT connection
- **MQTT poll downlink message** Poll downlink message



- **RS485 write a line** Write a line of data
- **RS485 write** Data input
- **RS485 write raw data create list with** Write raw data in list form
- **RS485 read all** Read all data of RS485
- **RS485 read characters** Read the number of characters of RS485
- **RS485 read line** Read the data of a line of RS485
- **Remain cache** Remian cache of RS485



```

Write multiple coils slave address 1 starting address 1 output value 0
Write multiple register slave address 1 starting address 1 register value 0 signed True

```

- **Read coils slave address starting address coil qty** Read the data of the coils
- **Read discrete inputs slave address starting address input qty** Read the data of the discrete inputs
- **Read holding registers slave address starting address register qty signed** Read the data of the holding registers
- **Read input registers slave address starting address register qty signed** Read the data of the input registers
- **Write single coil slave address output address output value** Write data to a single coil
- **Write single register slave address register address register value signed** Write data to a single register
- **Write multiple coils slave address starting address output value** Write data to multiple coils
- **Write multiple register slave address starting address register value signed** Write data to multiple register

Usage

Receive the information published by the subscribed topic, when receiving the 'ON' or 'OFF' command, turn on or off the LED indicator, and respond to the topic

MQTT TEST

- [Download the ATOM DTU NB M5F program file](#)

Arduino

- [ATOM DTU NB - MQTT](#)
- [ATOM DTU NB - HTTP](#)

Video

