

NB DISCO 95 User Manual

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1. Introduction

The NB DISCO 95 is an open-source, ready-to-use IoT development kit with LPWA modules that support LTE Cat M1/Cat NB2 and integrated GNSS. Onboard STM32L431CCT6, USB-to-UART bridge controllers, NFC tag, 3-axis accelerometer, RS485 converter, 3-wire RTD converter, 4-channel 16-bit ADC, brushed low-voltage DC motor driver, and controllable power output.

We have flashed the firmware for each NB DISCO 95. You need to plug in the SIM card that supports the NB network and ensure the device is within the NB network range. Then, connect the sensor and Antenna, power it on, and change the MQTT connection parameters to upload sensor data to the MQTT cloud.

2. Key Features

- LPWA modules supporting LTE Cat M1/Cat NB2 and integrated GNSS
- 2 channels of 0 to 20 mA collection (IN0 and IN1)
- 2 channels of 0 to 22V collection (IN2 and IN3)
- Equipped with NFC tag for upgrading firmware and changing configurations
- Controllable +5v/200mA, 12v/100mA power output
- Support connection to various I2C, RS485, UART sensors
- Support 3-wire PT100 temperature collection
- Change configurations by AT commands
- Micro-USB connector for communication with the host PC and board powering

3. Application

• Smart agriculture



4. Sensor wiring diagram



5. How to use NFC Reader 3911 to communicate with the NB DISCO

95 development kits

5.1 What do you need to prepare?

- $\sqrt{}$ Connect the NB DISCO 95 development board to your PC via Micro USB
- $\sqrt{}$ Connect the NFC Reader 3911 to your PC via Micro USB
- $\sqrt{}$ Download and install <u>Serial port utility</u> Windows® PC software
- $\sqrt{}$ Download and install <u>STSW-ST25PC001 Windows® PC software for ISO15693</u>,

ISO14443-A/B, NFC and industrial readers - STMicroelectronics

The recommended version is 2.6.2

Get Software



5.2 Scan the NFC tags



Step 1: Open the ST25PC-NFC software ST25PC-NFC

- Step 2: Press the NFC Reader 3911 S1 button once to reset the device, The 6 LEDs are fully lit to indicate that the reset is successful;
- Step 3: Click Reader → Disconnect → Connect, When ST25R3911B-DISCO CONNECTED is displayed, it means that the NFC reader 3911 is connected to the PC successfully;



ST25PC-NFC	-	ð	×
File, Reader Tags Demos Help			
Type Connect Disconnect Connect Parameters Information Reader Settings Reader Tools			
Select Inventory Protocols: ✓ ISO15693/NFC Type5 ✓ ISO14443-A/NFC Type2 & Type4 ISO14443-B/NFC Type4B ISO14443-B/SR/ST25TB TYPE1/TOPAZ ISO18092/TYPE3 PICOPASS			
Scan Once Continuous Scan Reset RF Field	1B-DISCO	CONN	ECTED

Step 4: Open the serial port utility tool and press the NB DISCO 95 S1 button once to reset the device. Then hold the NFC reader 3911 close to the ST25DV module of the NB DISCO 95 and click Scan Once.

When connected to ST25PC-NFC PC software, use the NFC reader 3911 to approach the ST25DV module of the NB DISCO 95. The serial port will print Enter FTMManagement, and when it is removed, it will print Exit FTMManagement.





5.3 Get the NB DISCO 95 development board data

Click on the Receive a buffer in a file option, click the start button, wait for the device to collect sensor data, and then save the content as a Recv_sensor_data.txt.



Type UID E0025067B185BF07 ST25DV-I2C Picture Transfer × ST25DV-DISCOVERY - FTM demos Stave to File	
E0025067B185BF07 ST25DV-DISCOVERY - FTM demos	
E Save to File	
← → ↑ ∨ C C T 転 中搜索 ♪ Check board version	
组织・新建文件夹 重・ ? Firmware Upgrade Send a picture	
名称 修改日期 类型 Receive a picture	
→ 作天 Send a 100k-byte random buffer	
■ 桌面 ★ Recy sensor data 文本文档 Receive a buffer in a file	
Kety sensor data X4XH Stop watch demo	
■ 文档 🖈	
	-
Select Inver 文件名(N): Recv_sensor_data ○ ✓ ISO156 保存类型(T): ○ ✓ ISO144 □ ○	
ISO144 TYPE1/ 1 隐藏文件夹 4 保存(S) 取消	
ISO18092/TYPE3 4. Select an action:	
Scan Once 2 Start Stop Pause Resume	
Continuous Scan Transfer progress: Transfer time: 00:01:67	

View Recv_sensor_data.txt file content and serial port logs as follows.



5.4 Set the NB DISCO 95 development board configurations

First, Move the NFC reader 3911 board away from the ST25DV module, then use the

AT+QCFG command to query the current configuration of the NB DISCO 95 development board. Remember to press the ENTER key to wrap the line after the AT command. The serial port logs are as follows.



Suppose the following configurations need to be changed.



Use the NFC reader 3911 to approach the ST25DV module of the NB DISCO 95.





Finally, Move the NFC module away from the ST25 module and use the AT+QCFG command to see if the configuration has changed. The serial port logs are as follows.

	+- 🗖 🕸
Serial Port Setting Port COM3(USI ~ Baudrate 9600 ~ Data Bits 8 ~ Parity None ~ Stop Bits 1 ~ Flow Type None ~	OK FTM_SEND_DATA finished Exit FTMManagement AT+QCFG +VER: v1.0 +BAT: 3306 +UPINTERVAL: 20 +UPFORMAT: 1 +MQTTTLS: 0 +SERVERADDR: mqtt.thingsboard.cloud,1883
Receive Setting Text Hex Auto Feed Line Display Send Display Time	<pre>+MQTTCLIENTID: dukFdr6ZpuBIZZHwMEa +MQTTUSERNAME: dukFdr6ZpuBIZZHwMEa +MQTTPASSWORD: helloworld +MQTTPUBTOPIC: v1/devices/me/telemetry +MQTTSUBTOPIC: null OK</pre>
Send Setting • Text	AT+QCFG Send

5.5 Upgrade the firmware of the NB DISCO 95 development board

Use the NFC reader 3911 to approach the ST25DV module of the NB DISCO 95.

Click on the Firmware Upgrade option and select a firmware Application_NFC_OTA.bin.



The update is successful when an update applied log appears on the serial port. The serial port logs are as follows.



Serial Por	rt Setting	Exit FTMManagement
Port	COM3(USI ~	GPO_Activated Enter FTMManagement
Baudrate	9600 ~	Exit FTMManagement
Data Bits	8 ~	GPO_Activated
Parity	None ~	Fw upgrade started
Stop Bits	1 ~	
Flow Type	None ~	•••••••••••••••••••••••••••••••••••••••
		• • • • • • • • • • • • • • • • • • • •
Receive Se	etting	YOGEJAY L431 Bootloader v1.0
	U	update applied
O Text	⊖ Hex	NB DISCO 95 v1.1

6. Which AT commands are supported by the NB DISCO 95

Please refer to the document <u>AT commands for NB DISCO 95.docx</u>, Please use the NFC function or AT commands when the MCU is idle.

7. How to connect to ThingSpeak using NB DISCO 95

Step 1: Sign up for a ThingSpeak account;

Step 2: Add a new device and channel in ThingSpeak;





⊂ ThingSpeak ™	Channels 🔻	Apps 🔻	Dev
My Channels	My Channel	S	
	My Image Channels		
New Channel	Watched Channels		earc
	Public Char	nnels	

Step 3: Check the box to enable the field, and enter a field name in the ThingSpeak channel

Private View Public View	w Channel Settings	Sharing	API Keys	Data Import / Export
Channel Setting	gs			Help
Percentage Complete Channel ID	30% 23			Channels s can hold a in a chann [,]
Name	mqtt_test			Chann • Perce
Description				nam∉ ● Chan
Field 1	SHT3x_Temp			• Desci
Field 2	SHT3x_Hum			• Field: up to
Field 3	RTD_Temp			MetaTags:
Field 4	Soil_Temp			• Link1
Field 5	Soil_Moisture			• Show
Field 6	Soil_EC			0
Field 7	ADS115_IN2			0
Field 8	ADS115_IN3			0

settings;

Step 4: Copy the MQTT Credentials and other configurations to the configuration file;



MQTT Devices / Edit NB DISCO 95 test1

Edit NB DISCO 95 test1

Device Information

Name	NB DISCO 95 test1
Description	Enter optional information about this device for later reference.

MQTT Credentials

Use these MQTT credentials to publish and subscribe to ThingSpeak channels. Learn More



Authorize channels to access ①

Select a Channel		/
		Add Channel
Authorized Channel 1	Allow Publish	Allow Subscribe
mqtt_test (2		×
Send_sensor_configuration ThingSr × 文件 编辑 查看	+	
AT AT+UPINTERVAL=10 AT+UPFORMAT=1 AT+MQTTTLS=1 AT+SERVERADDR=mqtt3.thingspeak.co AT+MQTTCLIENTID=IScoHwIBKw0+0C AT+MQTTUSERNAME=IScoHwIBKw0+0C AT+MQTTPASSWORD=xoKt5O6S AT+MQTTPUBTOPIC=channels/C AT+MQTTSUBTOPIC=null AT+CS AT	om,8883 Di OCUKig Di OCUKig Di OCUKig Di OCUKig Di OCUKig Di OCUKig Di OCUKig Di OCUKig	

Step 5: Write the configuration file to NB DISCO 95 via NFC Reader 3911;

Step 6: Reset the NB DICO 95 and wait for the data to be uploaded to the platform;



Step 7: View the data on ThingSpeak private view and compare whether the data is correct.

You can also refer to the video tutorial in the video directory for more details.

If you don't have an NFC Reader 3911 board, you can use the onboard USB-to-UART bridge to change the device configuration via AT commands.

8. How to connect to ThingsBoard using NB DISCO 95

Step 1: Sign up for a ThingsBoard account;

Step 2: Add a new device in ThingsBoard;



Step 3: Copy the MQTT Credentials and other configurations to the configuration file;

NB D Device	ISCO 98 details	5 test1				? >	<
< De	tails	Attributes	Latest telemetry	Alarms	Events	Relations	• >
Open de	tails page	Manage	credentials	anage owner an	d groups	Check connectivity	
Delete d	levice				/		
🕻 Сору	device Id	🕻 Сору	access token				

Check connectivity			×
HTTP Use the following instructions for se	MQTT nding telemetry on behalf o	of the device using shell	CoAP
Windows	MacOS	🛕 Linux	Docker
Install necessary client to	ols		
Use the instructions to downl	oad, install, setup and ru	un mosquitto_pub	Documentation
Execute the following con	nmand		MQTT
mqtt.eu.thingsboard.	cloud -p 1883 -t	v1/devices/me/te	elemetry -u "tW 🔽
Execute the following comr	nand		MQTT
83 -t v1/devices/me/te ∢	lemetry -u "tWKA	ezytnM9qrgAkpPx	J" -m "{tempera 🔽
 Send_sensor_configuration 文件 编辑 查看 	Thingsl × +		
AT AT+UPINTERVAL=10 AT+UPFORMAT=0 AT+MQTTTLS=0 AT+SERVERADDR=mqtt.eu. AT+MQTTCLIENTID=tWKAe AT+MQTTUSERNAME=tWK AT+MQTTPASSWORD=helle AT+MQTTPUBTOPIC=v1/de AT+MQTTSUBTOPIC=null AT+CS AT	thingsboard.cloud,18 zytnM9qrgAkpPxJ AezytnM9qrgAkpPx oworld vices/me/telemetry	883 J	

Step 4: Write the configuration file to NB DISCO 95 via NFC Reader 3911;

Step 5: Reset the NB DICO 95 and wait for the data to be uploaded to the platform;

Step 6: View the data on ThingsBoard latest telemetry and compare whether the data is correct.



You can also refer to the video tutorial in the video directory for more details.

If you don't have an NFC Reader 3911 board, you can use the onboard USB-to-UART bridge to change the device configuration via AT commands.

9. How to use BG95 USB to debug BG95-M2 module with AT Commands

Step 1: Install the software in the Tools directory;



Step 2: Please use a Micro USB cable to connect BG95 USB to the PC;

Step 3: Please input AT+NBDEBUG=1 to put the device into BG95-M2 debug mode;

Serial Port Utility - Personal Edition		-		×				
File Edit View Tools Control Help								
Ē∞▶Ⅱ■♀+─ Шŵ	•							
Serial Port Setting Port COM4(USB-SERIAL CH340) ~ Baudrate 9600 ~ Data Bits 8 ~ Parity None ~ Stop Bits 1 ~ Flow Type None ~ Receive Setting Text Hex Auto Feed Line Display Send	SHT3x_Temp:-300.00C SHT3x_Hum:0.0% RTD_Temp:-300.00C Soil_Temp:-300.00C Soil_Ec:00S/cm ADS115_IN0:0.000MA ADS115_IN0:0.000V ADS115_IN2:0.000V ADS115_IN3:0.000V The next data will be sent after 15s and then at UPINTERVAL intervals Please use the NFC function when the MCU is idle AT+NBDEBUG=1							
🗌 Display Time	ок							
Send Setting ● Text	Activating BG95 module BG95 status 0 RDY AT OK BG95yy POWER ON APP RDY	3						
	AT+NBDEBUG=1	2 [Send					

Step 4: Check the serial port of the BG95-M2 analog in Device Manager;

文件(F) 操作(A) 查看(V) 帮助(H)
🗢 🏟 🖬 👔 🖬 😽 💭
> Neural processors
> 🏺 USB 连接器管理器
> 🔐 安全设备
> 🛄 处理器
> 🔚 传感器
> 🛶 磁盘驱动器
> 🍇 存储控制器 🛛 🛛 🛛
> 🚍 打印队列
> 邊 电池
→ 📲 调制解调器
📕 Quectel USB Modem #3
✓ 幕 端口 (COM和 LPT)
Quectel USB DM Port (COM13)
Quectel USB NMEA Port (COM14)
USB-SERIAL CH340 (COM4)

Step 4: Use QCOM_V1.8.2 PC software to debug the BG95-M2 module via the AT command.

QCOM_V1.8.2	-	-				
COM Port S	tting		Command List			
COM Port: 12 V Baudrate: 115200 V	StopBits: 1 The Parity	None 👻 🗖 Ch	oose All Commands	HEX	E	nter
			AT+VER=?		~	1
ByteSize: 8 Tlow Control: No Ctrl Flow	~	Close Port 2:	AT+RESET		•	2
		3:	AT+RDS		~	3
[2024-12-29_12:29:01:395]		▲ 4:	AT+BAT=?		~	4
[2024-12-29_12:29:01:395]+QCCID: 8 [1.1.1]		5:	AT+UPFORMAT=1		~	5
[2024-12-29_12:29:01:395]OK [2024-12-29_12:29:05:934]		6:	AT+UPFORMAT=0		~	6
[2024-12-29_12:29:05:934]+CGATT: 0		7:	AT+UPINTERVAL=10		•	7
[2024-12-29_12:29:05:934] [2024-12-29_12:29:05:934]OK		8:	AT+MQTTTLS=0		~	8
[2024-12-29_12:29:22:879] [2024_12-29_12:29:22:879]		9:	AT+MQTTTLS=1		•	9
[2024-12-29_12:29:22:879] [2024-12-29_12:29:22:879]		☐ 10	AT+SERVERADDR=mqtt3.thingspeak.com,8883		•	10
[2024-12-29_12:29:22:879]OK [2024-12-29_12:32:49:477]		L 11	AT+MQTTCLIENTID=IScoHwIBKw0vOCAFAQE		~	11
[2024-12-29_12:32:49:477]+CSQ: 13,99		☐ 12	AT+MQTTUSERNAME=IScoHwIBKw0vOCAFA		v	12
[2024-12-29_12:32:49:477] [2024-12-29_12:32:49:477]OK		□ 13	AT+MQTTPASSWORD=xoKt5O6SXUe4RO19j		•	13
[2024-12-29_12:32:50:982] [2024-12-29_12:32:50:982]+CSO: 13.99		14	AT+MQTTPUBTOPIC=channels/2372811/publis		v	14
[2024-12-29_12:32:50:982]		□ 15	AT+MQTTSUBTOPIC=null		•	15
[2024-12-29_12:32:50:982]OK		☐ 16	AT+CS		•	16
		L 17	AT+QCFG		•	17
		□ 18	:			18
		1 9	:			19
		▼ □ 20	:			20
[2024-12-29_12:28:57:278] Open COM Port Success		□ 21	:			21
		□ 22				22
		□ 23	AT+GMR		•	23
		□ 24	AT+NBDEBUG=1		•	24
Operatio		25	AT+QCCID		•	25
Clear Information	Show\r\n Show Tin	ne 🗌 🗌 26	AT+CGATT?		•	26
Input String	Show In HEX Send Wit	h Enter 🛛 🗆 27	AT+QCSQ		~	27
		28	AT+CSQ		~	28
	Se	end Command 29	AT+QPOWD=1	Г	~	29

10. Flash memory layout

PARTITION	Address	Size
Bootloader	[0x00000 - 0x04FFF]	20KB
FW header	[0x05000 - 0x057FF]	2KB
APP	[0x05800 - 0x1E7FF]	100KB
FOTA	[0x1E800 - 0x377FF]	100KB
Reserved	[0x37800 - 0x3F7FF]	32KB
USER APP Params	[0x3F800 - 0x3FFFF]	2KB

11. How to upgrade the NB DISCO 95 firmware

11.1 Via NFC Reader 3911

Please refer to Section 4.5.

11.2 Via STM32CubeProg

Step 1: Download and install <u>STM32CubeProg - STM32CubeProgrammer software for all</u> <u>STM32 - STMicroelectronics</u> Windows® PC software, the recommended version is 2.14.0;



Get Software

	Part Number	General Description	Latest version 🔶	Download 🍦	All versions
+	STM32CubePrg-Lin	STM32CubeProgrammer software for Linux	2.17.0	Get latest	Select version $$
+	STM32CubePrg-Mac	STM32CubeProgrammer software for Mac	2.17.0	Get latest	Select version $$
+	STM32CubePrg-W32	STM32CubeProgrammer software for Win32	2.17.0	Get latest	Select version \smallsetminus
+	STM32CubePrg-W64	STM32CubeProgrammer software for Win64	2.17.0	Get latest	Select version V
					2.14.0 🛓
					2.13.0 📩
					2.10.0 🛓 💌

Step 2: Short-circuit the boot pin and 3V3 pin through the yellow jump, then press the S1 button once to reset the device;







Step 3: Open STM32CubeProgrammer PC software STM32Cub...

Prg ST	M32CubeProgrammer			- 🗆 X
STM32 CubeP	Deta Information Notice	.19	f 🕨	y 🔆 🏹
≡	Memory & File editing			Not connected
	Device memory Open file +	1	UART	- 3 Connect
.	Address Size Data width 32-bit - Find Data 0x Read	•	UAP Port	RT configuration
OB			Baudrate	115200
CPU			Parity	Even 👻
swv			Data bits	8 🔻
			Stop bits	1.0 🔻
	No data to display		Flow control	Off 🗸
			RTS	0 🗸
			DTR	0 🔻

Step 4: Click Open file option to select firmware Application.bin;

& File editing				Data Information Notice		il 🛃 🔋	V 📉 🔺	$\Sigma / $
& File editing								
					Conne	cted		
ory Open file +						UART	 Disco 	nnect
x08000000 👻 Size	0x400	Data width 32-	bit 🔻 Find D	Data Ox Read	•	UART	configuration	
ss 0	4	8	с	ASCII		Port	COM4	- Ø
0 20008D8	080001A1	08002AF3	080029AF	Ø jó*¯)	^	baudrate	115200	•
0 08002AF1	08000305	08004191	00000000	ñ*A		Parity	Even	
00000000	00000000	00000000	0800314D	M1		Data bits	8	-
0 080003DB	00000000	08002B4B	0800314F	0K+01		Stop bits		
0 080001BB	080001BB	080001BB	080001BB	»»»		5000 510	1.0	-
0 080001BB	080001BB	080003DD	080003E1	»»Ýá		Flow control	Off	-
0 080003E3	080003E5	080003E7	080001BB	ãåç»		RTS	0	
0 080001BB	080001BB	080001BB	080001BB	»»»		DTD		
0 080001BB	080001BB	080001BB	080001BB	»»»		DIK	0	-
0 080001BB	080001BB	080001BB	080003E9	»»é		Read Unprotect (MC	U)	
					\checkmark	TZEN Regression (M	cu)	
	xx08000000 ▼ Size ss 0 0 200008D8 0 08002AF1 0 00000000 0 080003D8 0 080001B8 0 080001B8 0 080001B8 0 080001B8 0 080001B8 0 080001B8	Dx08000000 Size 0x400 ss 0 4 00 200008D8 080001A1 00 08002AF1 08000305 00 00000000 00000000 00 08001BB 080001BB 00 080001BB 080001BB	xx88000000 Size 0x400 Data width 32- ss 0 4 8 0 20008D8 080001A1 08002AF3 0.0 08002AF1 08000305 08004191 0.0 000000000 000000000 0000000000000 000000000000000000000000000000000000	Dx08000000 Size 0x400 Data width 32-bit Find I ss 0 4 8 C 00 200008D8 080001A1 08002AF3 080029AF 00 08002AF1 08000305 08004191 00000000 00 00000000 00000000 0800314D 0800314D 00 080003DB 080001BB 080001BB 080001BB 080001BB 00 080001BB 080001BB 080003DD 080001BB 080001BB 00 080003E3 080003E5 080003E7 080001BB 00 080001BB 080001BB 080001BB 080001BB 00 08001BB 080001BB 080001BB 080001BB 00 080001BB 080001BB 080001BB 0	xx88000000 Size 0x400 Data width 32-bit Find Data 0x Read ss 0 4 8 C ASCII 0x Read 00 200008D8 080001A1 08002AF3 080029AF Ø jó*)x 0x Read 00 200008D8 080001A1 08002AF3 080029AF Øjó* 0x No 00 08002AF1 08000305 08004191 0000000 ñ* A 0 08000300 08000100 08000100 0800314D	XXX08000000 Size 0x400 Data width 32-bit Find Data 0x Read ss 0 4 8 C ASCII 00 200008D8 080001A1 08002AF3 080029AF Ø jÓ*). 0 00000000 00000000 080024F1 08000305 08004191 00000000 ñ* A 0 00000000 00000000 08000100 0800314D M1 00 080003DB 00000000 0800284B 0800314F 0	Data width 32-bit Find Data Ox Read Cat ss 0 4 8 C ASCII Baudrate 00 200008D8 080001A1 08002AF3 080029AF Ø jó*). Port 00 200008D8 080001A1 08002AF3 080029AF Ø jó*). Port 00 00000000 00000000 ñ*A O Port 00 08002AF1 08000305 08004191 0000000 ñ*A Port 00 080003DB 08000100 080001181 0000000 ñ*A M11 Data bits 10 080001BB 080001BB 080001BB 080001BB Nono325 Stop bits 10 080001BB 080001BB 080001BB Nono327 O80001BB Nono327 Nono326 10 080001BB 080001BB 080001BB Nono327 Nono326 Nono326 Nono326 10 080001BB 080001BB 080001BB Nono326 Nono326 Nono326 Nono326 Nono326 <tr< td=""><td>Data width 32-bit Find Data Ox Read Other ss 0 4 8 C ASCII Port COM44 00 200008D8 080001A1 08002AF3 080029AF 0 1 0 A Port COM44 8udrate 115200 00 080001A1 08002AF3 080029AF 0 M Port COM44 8udrate 00 08000100 08000100 0800314D M M Port COM44 8udrate 115200 00 0000000 0000000 0800314D M M Port COM4 00 080001B8 080001B8 080001B8 080001B8 Stop bits 10 00 080001B8 080001B8 080001B8 N N N N N N Port Com4 Budrate 115200 Porty Even Data bits 8 Stop bits 10 Port Com4 Budrate 10 Data bits 8 Stop bits 10</td></tr<>	Data width 32-bit Find Data Ox Read Other ss 0 4 8 C ASCII Port COM44 00 200008D8 080001A1 08002AF3 080029AF 0 1 0 A Port COM44 8udrate 115200 00 080001A1 08002AF3 080029AF 0 M Port COM44 8udrate 00 08000100 08000100 0800314D M M Port COM44 8udrate 115200 00 0000000 0000000 0800314D M M Port COM4 00 080001B8 080001B8 080001B8 080001B8 Stop bits 10 00 080001B8 080001B8 080001B8 N N N N N N Port Com4 Budrate 115200 Porty Even Data bits 8 Stop bits 10 Port Com4 Budrate 10 Data bits 8 Stop bits 10

	Download		
Step 5: Click		_	ļ

to change the address to 0x08005800;

Prg ST	M32CubeProgrammer								-	
STM32 CubeP	rogrammer					🚯 Data Informatio	n Notice 🐽 f		⊻ 🔀	57
≡	Memory & File	editing							🔵 Conr	nected
	Device memory A	pplication.bin ×	+					UART	👻 Dis	connect
.	Address 0x0	▼ Size	0xD7DC	Data width 32-	bit 🔻 Find D	lata Ox	Download 🔻	U	ART configuratio	n
OB	Address	0	4	8	с	ASCII	Read		COM4	- 0
	0x0000000	20003980	080059A1	0800D281	0800BE4B	.9. ¡YÒК¾	Save As		115200	
CPU	0x0000010	0800D141	08007A21	0801101D	0000000	AÑ!z	Verify		Even	•
swv	0x0000020	0000000	0000000	0000000	0800F755	U÷	Address 0x0200520		8	-
	0x0000030	08007D65	0000000	0800D655	0800FAE5	e}UÖåú	71001035			
	0x0000040	080059BB	080059BB	080059BB	080059BB	»Y»Y»Y»Y	Compare memory w	th file	1.0	
	0x0000050	080059BB	080059BB	08007D8D	08007D97	»Y»Y}}	Compare two files	bl	Off	Υ.
	0x0000060	08007D99	08007D9B	08007D9D	080059BB	.}}¥»Y		RTS	0	-
	0x0000070	08007CBD	080059BB	080059BB	080059BB	½ »Y»Y»Y				
	0x0000080	080059BB	080059BB	080059BB	080059BB	»Y»Y»Y»Y			0	· · ·
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and wait for the firmware download to complete.

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12. Sleep current

After the device sends uplink data or processes a task, it will enter sleep mode.

You need to unplug the 3 yellow jump caps in the red box, and then measure the sleep current.

The purpose of removing the jump cap is to disconnect from the CH340E.

The sleep current is about 96uA@5V





13. Package information

- 1 X IP68 Soil Temp, Moisture, and EC sensor with a cable length of 2m
- 1 X Class-A PT100 temperature sensor with a cable length of 1m
- 2 X Micro USB cable
- 1 X SHT30 temperature and humidity sensor with a cable of 1m
- 1 X NB DISCO 95 board
- 1 X SMA to IPEX1 RF connector
- 1 X Active GPS/BD Antenna
- 1 X LTE Antenna

14. Support

Please send an email to dove.huang@aliyun.com.