4G_2G DTU

Products Function

V 1.8

This document applies to the following series of products. Please refer to the

product manual for product hardware instructions.

		HF2411
4G Products	Elfin-EG40 RS232 AGB 4G input: 9-18VDC@10W	Elfin-EG40
	Elfin-EG41 Nano SM RS485 46 Input: 9-18/05(@10W	Elfin-EG41
		Gport-G43
2G Products	HF2111A Prover Net Prover	HF2111A



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历史记录

V 1.0 01-24-2018. First Version

V 1.1 01-25-2018. Correction section AT command description

V 1.2 03-22-2018. Add AT+LOCATE commend

- V 1.3 07-25-2018. Add EG model
- V 1.4 11-28-2018. Add HF2411, HF2111A type. Add AT+HTPXX series command
- V 1.5 12-10-2018. Add AT+CMDPW, AT+TCPTO command
- V 1.6 12-19-2018. Add AT+GOTA, AT+GVER command. Add Gport-G43 Type
- V 1.7 02-01-2019. Add AT+APN,AT+SMSID,AT+HOST
- V 1.8 04-29-2019. Update MQTT, websocket, Ali-IOT

1. FUNCTION DESCRIPTION

The products to which this document applies have the following characteristics.

- Connect the device to a PC or other server by establishing TCP/UDP or Telnet to support up to 3 socket communications.
- > One or Two independent serial ports work.
- Support IOTService to remotely modify module working parameters.

1.1. Basic Network Protocol

The products uses IP address for network communication. Transmit by TCP, the data can be ensured without loss or duplication, and reach the communication destination address accurately. And transmit by UDP, the data can be transmitted to the destination address quickly and efficiently.



Figure 1. Network Application

1.2. Working Mode

1.2.1. Transparent Throughput Mode

The device supports a serial interface for transparent throughput mode. In this mode, the user only needs to set some necessary parameters (network communication parameters). After power-on, the device can automatically connect to the default network and server. Use the IOTService software to set communication parameters.







Figure 2. Transparent Throughput Mode

Under this mode, the user's serial device can send data to the specified server on the network through this module. The module can also receive data from the server and forward the information to the serial device.

The user does not need to pay attention to the data conversion process between the serial port data and the network data packet, and the data transparent communication between the serial port device and the network server can be realized by simple parameter setting.

This module supports 3 socket connections, which are SOCKA, SOCKB, and SOCKC, which are independent of each other. Each socket supports TCP client or UDP client.

For TCP connections, users can set the communication method for long or short connections. A short connection means that the connection is initiated when the serial port data is received, and the connection is automatically disconnected after a certain period of time. The server resources are greatly saved, but the connection process takes a certain amount of time, causing data transmission delay, and the server cannot actively send data to the device. Long connection means that data can be sent and received at any time, but it takes up server connection resources.

The data transmission case is as follows:

1、 After setting the following communication parameters command, the device will restart, nat2.iotworkshop.com, port:3006 is High Flying's TCP test server (3008 port for UDP).

AT+NETP=A,1,TCP,nat2.iotworkshop.com,3006,long +ok



2、Waiting for the network LED shows register to the network. After sending the UART data, the server replies with the IP address, port number and received data, as shown below:

8	大傻串口调试软件-3.0AD	QQ:6972972			-	×
	端 □: COM4 ▼ 波特率: 115200 ▼ 数据位: 8 ▼ 校验位: 无 ▼ 停止位: 1 ▼ 状态 ◆ 关闭串口 发送 ◆ ★ 接收 済空接收区 □16进制 停止显示 ✓ 自动清 保存数据 更改文件 data.txt	发帧数 15 发字节数 15 收帧数 13 收字节数 406 清空计数 关于程序 文件行数 当前发送行 2 显示保存发送 2 転点保存方送 2 転点保存发送 美疆字过滤接收 关键字	[2018:01:24:18:07:33][DAT? [2018:01:24:18:07:33][[2018:01:24:18:07:35][DATA:A [2018:01:24:18:07:36][[2018:01:24:18:07:36][DATA:? [2018:01:24:18:07:37][DATA:A [2018:01:24:18:07:37][DATA:A	數收]TCP:223.104.254.155:4164 試送]A 數收]TCP:223.104.254.155:4164 賞送]A 數收]TCP:223.104.254.155:4164 賞送]A 數收]TCP:223.104.254.155:4164 賞送]A 數收]TCP:223.104.254.155:4164		~
	发送区1 清空 手动发送	A				$\hat{}$
	发送区2 清空 手动发送					$\hat{}$
	发送区3 清空 手动发送	AT +#SSSID=ASDFSDF				$\hat{}$



1.2.2. SMS Throughput Mode

In this mode, the UART data can be sent to and receive from short message.

AT+SMSID command to set SMS parameters





1.2.3. SOCKA HTTP Mode

SOCKA channel support HTTP protocol. Under this mode, the user's terminal device can send request data to the specified HTTP server through this module. The module will receive the data from the HTTP server, parses the data and sends the results to the serial device. The user does not need to pay attention to the data conversion process between the serial port data and the network data



packet, and the data request of the serial port device to the HTTP server can be realized by simple parameter setting.



Figure 6. HTTP Mode Transmission

For GET request, the received UART packet AAA will put after the HTTP path (auto add "?" between path and parameters), for POST request, packet is put in the content (auto add Content-Length header information).

Product will send the below data to HTTP Server when UART receive "pppp" data for GET request.

GET /1111?pppp HTTP/1.1 Host: 192.168.83.107

Product will output "DDDDD" when get response from the HTTP server. HTTP/1.1 200 OK Server: nginx

DDDDD



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Figure 7. HTTP GET Request Example

Product will send the below data to HTTP Server when UART receive "pppp" data for POST request.

POST /1111 HTTP/1.1 Host: 192.168.83.107 Content-Length:4

pppp

Product will output "DDDD" when get response from the HTTP server. HTTP/1.1 200 OK Content-Length: 4 Connection: close

DDDD

Operate(2) View(2) Windows(22) Help(H) Language CreateConn CreateServer StartServer Connect DisconnAll DeleteConn Connect	🎾 TCP&UDP测试工具 - [192.168.83.100:2381]				_		\geq
CreateConn CreateServer StartServer Connect Co	Operate(<u>O</u>) View(<u>V</u>) Windows(<u>W</u>) Help(<u>H</u>) Language					
Properties 9 × Client Mode Server Mode Server Mode BestIP: 192.168.83.107):8899 Send Kax Send File Send Received Clear Option HTTP/1.1 200 0K Send-COM4 - SecureCRT Connection: close DDD Type TCP DDD AtucCom Send Hex For AtucSend Eve For AtucSend Eve For TCP DDD Count Send Tizz For / Hotel Send Tizz For / Hotel Send Tizz Count Send Tizz For / Hotel Send Tizz Send Tizz Send StopShow C Count Send StopShow C Clear Pppp Ppp Send Tizz Send Tizz Send Tizz	🔄 🚰 CreateConnn 🔕 CreateServer 🐰 StartSen	ver 淃 🙆 😤 Connec	t 蜜 🛬 DisconnAll 💥 [DeleteConn 💸 🔯	8 -		
Client Mode Server Mode	Properties 4 ×	192.168.83.100	:2381				4 [
Send Speedub/SEV Receive Speedub	 Client Mode Server Mode Local(192.168.83.107):8899 192.168.83.100:2381 	DestIP: 192.168.83.100 DestFort: 2381 ▼ LocalPort 8899 Type TCP ▲tucConn Eve 0 Send 122 Recv 67 Clear Send Speed(B/S): 0	Send AtuoSend Send Hax Send Fi: HTTP/1.1 200 OK Content-Length: 4 Connection: close DDDD Rec StopShow C Save(In Time) POST /1111 HTTP/1.1 Host: 192.168.83.107 Content-Length: 4 PPPP	Eve 100 ms le Send Received 文件(E) 编辑(E) 动 说 G 《 《 《 《 《 《 《 《 《 》 I Serial-COM4 DDDD	Send Clear SecureCR 章膏(V)	」Sto JOpti 选项(C 升↓□C	

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Figure 8. HTTP POST Request Example

The HTTP header information is configured by IOTService tool as follows.

🔛 Serial-GPRS Tool		- 🗆 X	🔛 AT+ Helper 🛛 🗙
PC Serial Para	SIM Para	SOCKET	RECV:+ok=A, SEND:AT+NREGEN=A
COM: COM4 V Refr	IMEI: 869300038724609	SOCKET Name: A	RECV:+ok=A,off SEND:AT+NETPID=A
Baudrate: 115200	ICCID: 89860115831007091458	Protocol:	RECV:+ok=A, SEND:AT+NETPIDEN=A
Data Bits: 8	State: Connected	Server Addr: nat2.iotworkshop.com	RECV:+ok=A,off SEND:AT+NETPLK=A
Parity: NONE	RSSI: 25	Connect Mode: Always	RECV:+ok=A,on SEND:AT+HEART=B
Stop Bits: 1		Burst Time: 0	RECV:+ok=B,0, SEND:AT+NREGSND=B
Close COM	Refresh	Rout: uart 💌	RECV:+ok=B,link SEND:AT+NREGDT=B
Read De Clear	😫 Http Setup	× eat Serial:	SEND:AT+NREGEN=B BECV:+ok=B off
Lide AT Using	Type: POST Version: 1.1	▼ Mode: Disable ▼	SEND:AT+NETPID=B RECV:+ok=B,
HE2411 1.0.1/2018 11.26.15:20)	Path: /abcd	Code:	SEND:AT+NETPIDEN=B RECV:+ok=B,off
HF2411 1.0.1(2010-11-2013.30)	Host: httpbin.org	ig Code:	SEND:AT+NETPLK=B RECV:+ok=B,on
Restart Upgrade			SEND:AT+VER RECV:+ok=1.0.1(2018-11-26 15:30)
Reload		SN: 300038724609	SEND:AT+SLEEP RECV:+ok=off
Confirm Setting		ne: HF2411	RECV:+ok=0
	Confirm	Cancel	RECV:+ok=HF2411
Save As Default	HeartBeat Time: 0	IOT En: Enable	Send
Clear Default Config	HeartBeat Serial:	IOT Time: 00 : 00 ~ 23 : 59	Clear Close

Figure 9. IOTService UART Set HTTP Parameter

😫 I.O.T Service	– – × 1	월 Device Setting X
Management (M) Setting (C) Tools (T) Help (H)		System
	-	Welcome: HF2411 SOCKET Name: A
Begin 💥 Stop 🐼 Config 🔍 Status 🗑 VirPath	Connected	SleepEn: Disable Protocol: HTTP
SN DevType MAC Address HostName IP Position	VirPath State SW Ver	Sleep Time: 0 Server Addr:nat2.iotworkshop.com
1 HF2211 F0FE6BE0C80C 2-1 221.4.163.98 Remote	Online 1.31	Longitude: 0.0 Senser Parts 2006
3 HE2411 300038724609 Eport-HE2411 112.65.48.204 China.Shanghai	Online 1.4.10tmp	latituda:
to Device Status		
-	COCINET	Type: POST Version: 1.1
system	SUCKET	UART Dath (abrd
ModuleSN: 30003872460	SOCKET Name: B	UARI No: UARI 1 Paul. yabcu
ICCID: 8986011583100709145	8 Protocol: TCP	Baudrate: 115200 Host: httpbin.org
IMEI: 86930003872460	9 Status: Co	
Connect: DisConne	t Server IP:	Data Brts: 8
GSLQ: 2	Recv Bytes: 43 Recv Frames:	Stop Bits: 1
IP Address: 112.65.48.20	Send Bytes: 12 Send Frames:	Parity: NONE
Product ID: HF2411	Fail Bytes: 0 Fail Frames: 0	
Software Version: 1.0.5 UART No: UART		Flow Control: Disable Confirm Cancel
RTC Time: NTP Disabled Config: 115200,8,1,NONE		UART Protocol: NONE
Up Time: 0-Day 0:22:54 Recy Bytes: 16 Recy Frames: 3		Confirm
Longitude: 0.0 Send Bytes: 93 Send Frames: 4	Keload	HeartBeat Time: 0
Latitude: 0.0 Fail Bytes: 0 Fail Frames: 0	Restart	HeartBeat Serial: Import Export

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Figure 10. IOTService Remote Set HTTP Parameter

1.2.4. SOCKA WebSocket Mode

Device support WebSocket Client send data to WebSocket Server. (Use IOTService or Webpage to config). When in WebSocket Mode, device side will auto add WebSocket protocol header to server when receive UART data. And remove the protocol header and send the content to UART.

More WebSocket Case refer to following link.

http://www.hi-flying.com/download-center-1/application-notes-1/download-item-industry-productsapplication-manual-20180415



Figure 11. Websocket Basic Concept

🗟 Serial-TDU Tool		– – ×	😭 AT+ Helper 🛛 🗙
PC Serial Para	SIM Para	SOCKET SOCKET Name:	RECV:+ok=1,off SEND:AT+UART=1 RECV:+ok=1,115200,8,1,NONE,NFC
Baudrate: 115200	ICCID: 89860118802305380338	Protocol: WEBSOCKET Addr: 123.56.240.29	SEND2A1+NE1P=A RECV+ok=A,1,UDP,123.56.240.29,1883 SEND:AT+NETP=B RECV+ok=B,1,off
Data Bits: 8 Parity: NONE Ping Ti	ime: 60	Port: 1883 :t Mode: Always ▼ ime: 300	SENDERAL FILE LEC RECV+oke=C, loff SEND:AT+HEART=A RECV+ok=A,0, SEND:AT+NREGSND=A
Auto Close CON	ol:	eat Time: 0	RECV:+ok=A,link SEND:AT+NREGDT=A RECV:+ok=A, SEND:AT+NREGEN=A
Quit CMD Detail	UART No:	Cancel Mode: Disable Regist Code:	RECV:+ok=A,off SEND:AT-NETPIDEN=A RECV:+ok=A, SEND:AT-NETPIDEN=A RECV:+ok=A,off
G43 1.0.48(2019-04-1110:30) Restart Upgrade	Baudrate: 115200 V Data Bits: 8 V	Data Tag: Disable	SEND:AT+NETPLK=A RECV:+ok=A,off SEND:AT+VER RECV:+ok=1.0.48(2019-04-11 10:30)
Reload Save CMD Confirm Setting	Stop Bits: I Parity: NONE Flow Control: Disable	System ModuleSN: 262040056110 Welcome: G43	SEND.AT+SLEEP RECV:+ok=off SEND.AT+SLEEPTM RECV:+ok=0 SEND.AT+WEL
Save As Default Clear Default Config	UART Protocol: NONE HeartBeat Time: 0 HeartBeat Serial:	Sleeptn: Disable v Sleep Time: 0 IOT En: Enable v	RECV:+ok=G43
		00: 00 ~ 23: 59	Clear Close

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Figure 12. IOTService Tools UART Config

🕈 Device Setting								\times
System				SOCKET				
Welcome:		G43		SOCKET Name:		A		-
SleepEn:	Disable	• 🔻		Protocol:	Į	WEBSOCKET		-
Sleep Time:		0		Server Addr:			23.56.24	0.29
Longitude:		0.0		Server Port:			1	883
Latitude:		0.0		Connect Mode		Always		-
IOT Time:	0:0	~ 23: 59		Burst Time:				300
UART				Rout:		uart		-
UART No:	UART 1.	🔛 🐨 Websocket E	dit					×
Baudrate:	115200	-		•				
Data Bits:	8	Ping Time:		60				
Stop Bits:	1	Path:						
Parity:	NONE	Protocol:						
Flow Control:	Disable							
	10015							
UART Protocol:	NONE					Confirm	Car	ncel
HeartBeat Time:		0		APN:				-
HeartBeat Serial:				APN User:				
			_	APN Password:				
Confirm	n	Cancel		SMS ID:			#SN	/IS#
Import	t	VirPath		SMS Phone:		10691039	66183236	184
Export	:	Script		SMS Status:		1		

Figure 13. IOTService Network Config

1.2.5. SOCKA MQTT Mode

Device support MQTT Client send data to MQTT Server. (Use IOTService or Webpage to config).

More MQTT Case refer to following link.

http://www.hi-flying.com/download-center-1/application-notes-1/download-item-industry-productsapplication-manual-20180415





😭 Serial-TDU Tool			– 🗆 🗙	🗟 AT+ Helper 🛛 🕹
PC Serial Para	SIM Para IMEI: 866262040056110	SOCKET SOCKET Name: A Protocol: MOTT	•	RECV:+ok=1,off SENDAT+UART=1 RECV:+ok=1,15200,8,1,NONE,NFC SENDAT+NETP=A RECV:+ok=1,102P122,56,240,291883
Baudrate: 115200 V Data Bits: 8	MQTT Edit		123.36.240.29	SEND:AT+NETP=B RECV:+ok=B,1,0ff SEND:AT+NETP=C RECV:+ok=C,1 off
Parity: NONE	Version: 4 Ping Time: 60	vde: Always	300	SEND:AT+HEART=A RECV:+ok=A,0, SEND:AT+NREGSND=A RECV:+ok=A,link
Auto Close COM Read Device Clear	Client ID: User: Password:	ime:	0	SEND:AT+NREGDT=A RECV:+ok=A, SEND:AT+NREGEN=A RECV:+ok=A,off
Quit CMD Detail G43 1.1.8a(2019-04-22 17:30)	Subscribe Topic:	e: Disable	▼	SENDAI + NEI PID=A RECV:+ok=A, SEND:AT+NETPIDEN=A RECV:+ok=Aoff RECV:+ok=Aoff
Restart Upgrade	Publish Topic:	pde:		ECV:+ok=4,on = SEND:AT+VER RECV:+ok=1.1.8a(2019-04-22 17:30) SEND:AT+SLEEP
Reload Save CMD Confirm Setting	Confirm	Cancel	262040056110 G43	RECV:+ok=off SEND:AT+SLEEPTM RECV:+ok=0 SEND:AT+WEL
Save As Default Clear Default Config	UART Protocol: NONE HeartBeat Time: 0 HeartBeat Serial:	Sleep Time: IOT En: IOT Time: 00 : 00	0 ble ▼ ~ 23: 59	NEL VI+ OK=U43

Figure 15. IOTService Tools UART Config

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Device Setting	× –
System	SOCKET
Welcome: G43	SOCKET Name:
SleepEn: Disable 💌	Protocol: MQTT
Sleep Time: 0	Server Addr: 123.56.240.29
Longitude: 0.0	Server Port: 1883 ×
Latitude: 0.0	MQTT Edit
IOT Time: 0 : 0 ~ 23 : 59	
UART	Version:
UART No: UART 1	Ping Time: 60
Baudrate: 115200 💌	
Data Bits: 8	Client ID:
Stop Bits:	User:
	Password:
Parity: NONE	Subscribe Topic:
Flow Control: Disable	
UART Protocol: NONE	Subscribe Qos:
HeartBeat Time: 0	Publish Topic:
HeartBeat Serial:	Publish Qos:
Confirm Cancel	Confirm Cancel
Import VirPath	SMIS Phone: 1009103966183236184
Export Script	SMS Status:

Figure 16. IOTService Tools Network Config

1.3. Registration Package Function

Under the transparent transmission mode, the registration package function can be enabled. When the connection is established (TCP only) or the serial port data is received, the content of the registration package is automatically added to the server, and the content of the registration package can be used with the version number, ICCID, IMEI, etc. Details refer to AT+NREGDT command.





Figure 17. Transparent Transmission Mode Registration Packet Function Transmission

The example of registration package function is as follows: The following commands respectively enable the registration function of Socket A, set the content of the registration package to version number + signal strength + ABCD, enable the registration package when establishing connection and sending data.

```
AT+NREGEN=A, on
+ok
AT+NREGDT=A,%VER%GSLQABCD
+ok
AT+NREGSND=A, both
+ok
```



1.4. Heartbeat Package Function

In the transparent transmission mode, the heartbeat packet function can be enabled, and the module periodically sends heartbeat data to the server or the serial port. For details, refer to the AT+HEART command. The main purpose of sending to the network is to keep the connection with the server, and to make the connection status valid for modules that are idle for a long time (the data will not be sent to the server for a long time). When the connection is abnormal, the module detects that the heartbeat packet data cannot be sent to the server. If the number of failed transmissions is greater than 3, the module considers that the connection is abnormal and will try to reconnect to the server.

In an application where the server sends a fixed query command to the device, in order to reduce the communication traffic, the user can choose to send a heartbeat packet (query command) to the serial device to replace the sending of the query command from the server.



Figure 19. Transparent Transmission Mode Heartbeat Packet Function Transmission

1.5. Multi-Socket Communication Function

The module supports max 3 sockets for simultaneous communication, and each channel can set serial port channels. In the multi- TCP link connection mode, data from TCP will be forwarded one by one to the serial port. The data coming from the serial port will be copied into multiple copies and forwarded on each TCP link. The specific operation is as follows:



Figure 20. Multi-Socket Communication Transmission

1.6. Multi-Socket Data Differentiation Function

In the multi-Socket application process, user can specify the serial port data to be sent to a specific Socket channel. The data received by the Socket will also be added with the channel tag, so that the serial port can determine which channel sends the data. For details, see: AT+NETPIDEN and AT+NETPID command.



Figure 21. Specify Socket Channel Communication Transmission

1.7. Serial Frame Scheme

When the DTU receives data from the UART, it constantly checks the interval between two adjacent bytes. If the interval is greater than a certain value, then one frame is considered to have ended, otherwise the data is received until the buffer byte (512 bytes). The module determines that the Socket channel is forwarded after the end of one frame on the serial port.

The default 2-byte interval of the module is 200ms, that is, when the interval is greater than 200ms, one frame ends.



Figure 22. Serial Frame Scheme

1.8. Firmware Updates

DTU supports firmware upgrade through serial port and network mode.



🟦 Serial-TDU Tool		- 🗆 X	✿ AT+ Helper ×
PC Serial Para	SIM Para	SOCKET	SEND:+++ SEND:AT+PID
COM	IMEI:	SOCKET Name: A	RECV:+ok=HF2411 SEND:AT+ENTM
		Protocol: OFF 💌	
Baudrate: 115200 🔻		Server Addr:	
Data Bits: 8	Status:	Server Port:	
Parity: NONE 🔻	RSSI:	Connect Mode:	
Stop Bits:		Burst Time:	
Auto Close COM	Refresh	Rout:	
		HeartBeat Serial:	
Read Device Clear	UART	Regist Mode: Disable	
GetIn CMD Detail	UART No:	Regist Code:	
	Baudrate: 115200 💌	Data Tag: Enable	
	Data Bits: 8	Data Tag Code:	
Restart Upgrade	Stop Bits:	_ System	
Reload Save CMD	Parity: NONE	ModuleSN:	
Confirm Setting	Flow Control:	Welcome:	
	UART Protocol: NONE	SleepEn: Enable	
Save As Default	HeartBeat Time:	Sleep Time:	Sand
Clear Default Config	HeartBeat Serial	IOT En: Enable	Sellu
		IOT Time:0 :0 ~0 :0	Clear Close
PC Serial Para COM: COM4 W Refr Baudrate: 115200 W Data Bits: 8 W Parity: NONE W Stop Bits: 1 W Auto Close COM Read Device Clear Quit CMD Detail	SIM Para IMEI: ICCID: Status: RSSI: Upgrade Device Firmware File Name: 0%	SOCKET SOCKET Name: Protocol: OFF Server Addr: Connect Mode: Server Port: Connect Mode: Sel	SEND:+++ SEND:AT-PID RECV+ok=HF2411 SEND:AT+ENTM SEND:+++ RECV:a SEND:3 RECV+ok SEND:AT+E RECV+ok SEND:AT+E RECV+ok=HF2411
Restart Upgrade Reload Save CMD Confirm Setting	Stop Bits: 1 V Parity: NONE V Flow Control: FlowCtrl V	e Close	



10.T	I.O.T Service − □ ×										
M	Management (M) Setting (C) Tools (T) Help (H)										
	Begin 💥 Stop 😳 Config 🔍 Status 🚏 VirPath										
S	N Dev	Туре	MAC Address	HostName	IP	Position	VirPa	ath State	SW Ver		
	1 G10		000763000208	Eport-G10	112.65.189.244	Pomoto		Online	1.03.16		
	2 E10		F0FE6B3A42FE	Eport-E10	101.88.239.205	Copy Device M	AC	Offline	1.10b		
					-	Device Table Filter					
						Refresh					
						Delete Selected	Device				
						Upgrade Firmware Selected					
						Upgrade Firmw	are All				



1.9. IOTService Software

DTU enables the High Flying's IOTBridge cloud management function by default. Through the IOTBridge cloud platform, the IOTService configuration tool can be configured in a network configuration (this will consume a certain amount of traffic. If it is enabled 24 hours, it can be configured at any time, and the traffic consumption is about 30MB/ Month), you can choose to turn off this feature or set only a specific time period to save to save traffic.

😭 Serial-GPRS Tool					- 🗆 X
PC Serial Para	SIM Para			SOCKET	
COM: COM4 Refr	IMEI:		868575023904842	SOCKET Name:	A
	ICCID:	89860	115831007091458	Protocol:	TCP-CLIENT
Baudrate: 115200	State:		Connected	Server Addr:	nat1.iotworkshop.com
Data Bits: 8	RSSI:		23	Server Port:	3006
Parity: NONE	ID Addrocci			Connect Mode:	Always 💌
Stop Bits:	IF Address.			Burst Time:	0
		Refresh		Rout:	uart1 💌
Close COM		Refresh		HeartBeat Time:	5
Read De Clear	-			HeartBeat Serial:	1111
	UART			Regist Mode:	Both 💌
Show AT Helper	UART No:		uart1 💌	Regist Code:	%VER%GSLQABCD
1.03.16(2018-01-24 11:30)	Baudrate:		115200 💌	Data Tag:	Disable 💌
	Data Bits:		8 💌	Data Tag Code:	
Restart Upgrade	Stop Bits:		1 💌	System	
Reload	Parity:		NONE 🔻	ModuleSN:	000763000208
Confirm Setting	Flow Control:		Disable 💌	Welcome:	Gport-G10
	UART Protoc	ol:	NONE	SleepEn:	Enable 💌
Save As Default	HeartBest Tir	mer	0	Sleep Time:	0
Clear Default Config	HeartBeat Se	rial:		IOT En: IOT Time: 00	Enable ▼): 00 ~ 23: 59

Figure 25. IOTBridge Industrial Cloud Function

The following describes the IOTService tool to configure the DTU by serial port and network.

1.9.1 IOTService Serial Port Configuration

1) Display the serial port tool.

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sonware setting			
Remote Access		Communication	
Remote Access Enable:	Enable	VirPath UDP Port:	28987
IOTBridge Server Addr:	bridge.iotworkshop.com	VCOM Parameter Synch:	Enable 💌
Service Id:	ae-fa95-11e7-b9e9-1bd6fcf8cc21	Others	
Service Name:	Service Name	Language:	English 💌
EMail Alarm		Start up to Tray:	Disable 🔻
EMail Alarm Enable:	Disable	Auto Upgrade:	Disable 🔻
SMTP Address:		Menu Tools:	Show 🔻
SMTP Port:		New Ver:	2.2.01
EMail Account:			Upgrade

2) Open the serial port tool.

10	₫ 1.0.1 Service - □ X											
N	Management (M) Setting (C) Tools (T) Help (H)											
	Begin 💥 Stop Userial Config - GPRS VirPath											
5	SN	DevType	MAC Address	HostName	IP	Position	VirPath	State	SW Ver			
	1	G10	000763000208	Eport-G10	112.65.189.244	Remote		Online	1.03.16			
	2	E10	F0FE6B3A42FE	Eport-E10	101.88.239.205	Remote		Offline	1.10b			

3) Open the serial port according to the current device serial port parameters, click to read the parameters, and the sidebar will display the AT command of the reading process.

PC Serial Para	SIM Para	SOCKET SEND:+++ RECV:+++	
COM: COM4 - Refr.	IMEI:	SOCKET Name: A SEND:AT+E RECV:+ok	
	ICCID:	Protocol: OFF SEND:AT+IO	ITEN 00:00 23:59
Baudrate: 115200	State:	Server Addr: SEND:AT+W	SMAC
Data Bits: 8	RSSI:	Server Port: RECV:+ok=0 SEND:AT+GS	00763000208 SLQ
Parity: NONE		Connect Mode: Always RECV:+ok=1 SEND:AT+IM	,22 IEI
Stop Bits: 1	T Address:	Burst Time: RECV:+ok=8	68575023904842
	Refresh	Rout: RECV:+ok=8	9860115831007091458
Close COM	11	HeartBeat Time: SEND:AT+IM RECV:+ok=4	ISI 160011352509105
Read De Clear		HeartBeat Serial: SEND:AT+W/	ANN
Hite Maria		Regist Mode: Disable SEND:AT+HE	EART=1
Hide A Neiper	UART No:	Regist Code: RECV:+ok=1	,0,IOTWORKSHOP EART=2
	Baudrate:	Data Tag: Enable	
	Data Dite	Data Tag Code:	

4) After reading, the interface displays the working status of the current module. If you need to modify the parameters, click Confirm Setting to modify it. Save it as factory parameter and restore it to the currently saved parameters when you restore the factory parameters. It is recommended to save it after setting.



C Serial Par	ra	SIM Para		SOCKET	
COM	COM4 V Refr	IMEI:	868575023904842	SOCKET Name:	A
		ICCID:	89860115831007091458	Protocol:	TCP-CLIENT
Baudrate:	115200	State:	Connected	Server Addr:	nat1.iotworkshop.c
ata Bits:	8	RSSI:	22	Server Port:	30
Parity:	NONE	IP Address:		Connect Mode:	Always
top Bits:	1			Burst Time:	
			Refresh	Rout:	uart1
	Close COM			HeartBeat Time:	
Read	De Clear			HeartBeat Serial:	1
	Hide AT Helper	OAN		Regist Mode:	Both
	Hide AT Helper	UART No:	uart1 💌	Regist Mode: Regist Code:	Both %VER%GSLQAB
	Hide AT Helper 1.03.16(2018-01-24 11:30	UART No:)) Baudrate:	uart1 💌 115200 💌	Regist Mode: Regist Code: Data Tag:	Both %VER%GSLQAB Disable
	Hide AT Helper	UART No:)) Baudrate: Data Biss:	uart1 V 115200 V 8 V	Regist Mode: Regist Code: Data Tag: Data Tag Code:	Both %VER%GSLQAB Disable
Re	Hide AT Helper 1.03.16(2018-01-24 11:30 start Upgrade	UART No: UART No: Baudrate: Data Bits: Sop Bits:	uart1 115200 8 1	Regist Mode: Regist Code: Data Tag: Data Tag Code:	Both %VER%GSLQAB Disable
Ret	Hide AT Helper 1.03.16(2018-01-24 11:30 start Upgrade Reload	UART No: UART No: Baudrate: Data Bits: Stop Bits: Parity:	uart1	Regist Mode: Regist Code: Data Tag: Data Tag Code: System ModuleSN:	Both %VER%GSLQAB Disable 000763000
Ret	Hide AT Helper 1.03.16(2018-01-24 11:30 start Upgrade Reload Confirm Setting	UART No: UART No: Baudrate: Data Biss: Stop Bits: Parity: Flow Control:	uart1	Regist Mode: Regist Code: Data Tag: Data Tag Code: System ModuleSN: Welcome:	Both %VER%GSLQAB Disable 000763000 Gport-0
Ret	Hide AT Helper 1.03.16(2018-01-24 11:30 start Upgrade Reload Confirm Setting	UART No: UART No: Baudrate: Data Bits: Stop Bits: Parity: Flow Control: UART Protocol	uart1 115200 8 1 NONE Disable NONE	Regist Mode: Regist Code: Data Tag: Data Tag Code: System ModuleSN: Welcome: SleepEn:	Both %VER%GSLQAB Disable 000763000 Gport-0 Enable
Ret	Hide AT Helper 1.03.16(2018-01-24 11:30 start Upgrade Reload Confirm Setting Save As Default	UART No: UART No: Baudrate: Data Bist: Sop Bits: Parity: Flow Control: UART Protocol	uart1 115200 8 1 NONE Disable NONE 1 NONE 1 1 1 1 1 1 1	Regist Mode: Regist Code: Data Tag: Data Tag Code: System ModuleSN: Welcome: SleepEn: Sleep Time:	Both %VER%GSLQAB Disable 000763000 Gport-0 Enable

1.9.2 IOTService Network Mode Configuration

1) Logging into the High Flying's IOTBridge website (http://bridge.iotworkshop.com/) to register for an account, or enter through High Flying's official website.

www.hi-flying.com									
			搜索				Q Englis	h 旧站点	
🔮 📙 物联・改变生活	首页	物联模块	物联设备	支持	新闻动态	公司	云平台	商城	

2) After the registration, you can get the UserId (for the device) and the ServiceId (for the IOTService tool).

	I.O.T Bridge 首页	হ								
🖵 首页	E LO.T Service									
园 我的 UserID				at the second						
🔹 设备管理										
LO.T Service		序号	Service ID	操作						
0 #00/#0		1	ac9f94ff-b304-11e7-83f2-bf7237dd37c4	查君						
A RADIES V		2	b4d70190-b304-11e7-83f2-fd3e6d6e9ad5	查若 禁用 劃於						
❹ 退出		3	cbdf75c1-b304-11e7-83f2-bfe0f974d902	章五 禁用 趣除						
		4	e6e863ae-fa95-11e7-b9e9-1bd6fcf8cc21	查看 第用 謝除						

3) After the registration, you can get the UserId (for the device) and the ServiceId (for the IOTService tool), fill in this value in the tool.

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🎡 I.O.T Service							_		\times
<u>M</u> anagement (M) Setting (C) Too	ols (T) Help (H)								
Begin 💥 Stop 💮 C	Config 🔍 Sta	atus 🐺	VirPath					Conn	ected
SN DevType MAC Address Ho	stName	IP	Positior	n	VirPath	State	S	W Ver	
😭 Software Setting									×
Remote Access				Co	ommunication				1
Remote Access Enable:	Enable		-	-v	'irPath UDP Port:	28	987		
IOTBridge Server Addr:	bridge.iotwor	kshop.com		v	COM Parameter Synch:	Er	nable	-	
Service Id:	ae-fa95-11e7-	b9e9-1bd6fo	f8cc21	- 01	there				
Service Name:	Service Name	•		L	anguage:	Er	nglish	-	

4) Insert the SIM card, power on the device, and wait until DTU register to the network.

5) Add the module MAC address to the tool for binding (the MAC address can be obtained through AT+WSMAC, usually we use back 12 characters of IMEI). It is recommended to use the AT+IOTUID command to write the UserId obtained on the IOTBridge to the device to prevent the device from being maliciously bound by other accounts.

	🔯 I.O.T Service		– 🗆 X
1	Management (M) Setting (C) Tools (T) Help (H)		
	Begin 💥 Stop 💭 Config Add Device		X Connected
	SN DevType MAC Address HastName MAC	Address Delete	SW Ver
1	1 G10 000763000208 Eport-010 000763000208	Delete	
	2 E10 F0FE6B3A42FE Eport-E10		
	MAC Addr 00076	5900208 Add Contirm Close	

6) Double-click on the online device to enter the configuration status page.

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Tevice Status					>
System		GSM ModuleSN: ICCID: IMEI: Connect: GSLQ: IP.Address:	000763000208 89860115831007091458 868575023904842 Connected 22	SOCKET SOCKET Name: Protocol: Status: Server IP: Recv Bytes: 815 Send Butes: 252	A TCP-CLIENT Connected 112.124.116.99 Recv Frames: 18 Send Frames: 19
Product ID: Software Version: RTC Time: NTP Di	ADF 1.03.16 sabled	UART UART No: Config: 115200,8,1	UART 1	Fail Bytes: 13	Fail Frames: 1
Up Time: 0-Da	y 0:2:1	Recv Bytes: 5 Send Bytes: 1 Fail Bytes: 0	Recv Frames: 3 Send Frames: 1 Fail Frames: 0	Reload Restart	Edit

7) Click Edit to modify the device operating parameters.

🎡 Device Setting			>
System		SOCKET	
Welcome:	Gport-G10	SOCKET Name:	A
SleepEn	Enable	Protocol:	TCP-CLIENT 🔻
Sieepen.	Lilable •	Server Addr:	nat1.iotworkshop.com
Sleep Time:	0	Server Port:	3006
		Connect Mode:	Always 🔻
UART		Burst Time:	
UART No:	UART 1	Rout:	uart1 💌
Baudrate:	115200 💌	HeartBeat Time:	5
Data Pita		HeartBeat Serial:	1111
Data bits:	0	Regist Mode:	Both 💌
Stop Bits:	1 💌	Regist Code:	%VER%GSLQABCD
Parity:	NONE 💌	Data Tag:	Disable 💌
Flow Control:	Disable	Data Tag Code:	
UART Protocol:	NONE		Cancel
HeartBeat Time:	0	Confirm	VirPath
HeartBeat Serial	: IOTWORKSHOP	Import	Export

1.10. Modbus Protocol

DTU supports ModbusRTU to ModbusTCP for easy connection to Modbus slave devices. The Modbus protocol setting is as below:

🔛 Serial-GPRS Tool						_	
PC Serial Para	SIM Para				SOCKET		
	IMEI:	1	86857502390484	2	SOCKET Name:	A	-
	ICCID:	89860	11583100709145	8	Protocol:	TCP-CLIEN	IT 🔽
Baudrate: 115200 💌	State:		Connected	d	Server Addr:	nat1.iotwork	shop.com
Data Bits: 8	RSSI:		2	5	Server Port:		3006
Parity: NONE 💌	ID Addross				Connect Mode:	Always	-
Stop Bits:	IP Address:				Burst Time:		
		Refresh			Rout:	uart1	-
Open COM					HeartBeat Time:		5
Read De Clear					HeartBeat Serial:		BBBBBBB
	UART				Regist Mode:	Both	-
Hide AT Helper	UART No:		uart1 🔻		Regist Code:		AAAAAA
1.03.16(2018-01-24 11:30)	Baudrate:		115200 💌		Data Tag:	Disable	-
· · · · · · · · · · · · · · · · · · ·	Data Bits:		8 🔻		Data Tag Code:		
Restart Upgrade	Stop Bits:		1		Svstem		
Reload	Parity:		NONE		ModuleSN:	0007	763000208
Confirm Setting	Flow Control:		Disable 🔻		Welcome:	(Gport-G10
					SleepEn:	Enal	ble 🔻
Save As Default	UART Protoco)I: 			Sleep Time:		0
	HeartBeat Tin	ne:	Modbus		IOT En:	Enal	ble 🔻
Clear Default Config	HeartBeat Ser	rial:			IOT Time: 00	: 00 ~	23: 59

Figure 26. Serial Port Modbus Function

1.11. NTP Function

When the IOTBridge function is enabled, the module can obtain the NTP time. Through the AT+NTIME command, the user device can obtain the real time.

1.12. Virtual Serial Port Function

The virtual serial port function requires the device to enable the IOTBridge service, which requires a certain amount of traffic. The virtual serial port supports the serial port parameter adaptive function (the module baud rate changes with the change of the virtual serial port parameters, and there is no need to manually modify the module working parameters). Virtual COM will use one socket channel, set it to either SOCK A, SOCK B or SOCK C.

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w Device Setting			~	网络加里西 sourcenis THEBEN	
System	SOCKET		😭 VirPath List		\times
Welcome: Gport-G10	SOCKET Name:	A			
SleepEn: Enable 💌	Protocol:	TCP-CLIENT 🔻			
	Server Addr: n	at1.iotworkshop.com	🗟 VirPath Edit	×	
Sleep Time: 0	Server Port:	3006	Vircom VirThrough VPath D2D		
	Connect Mode:	Always 💌			
UART	Burst Time:		Socket ID:	Α 🗸	
UART No: UART 1	Rout:	uart1 💌	Serial Port:	COM1 💌	
Baudrate: 115200 💌	HeartBeat Time:	5	Rout	uart1	
	HeartBeat Serial:	BBBBBBB	Nout.	uarti V	
	Regist Mode:	Both 💌			
Stop Bits: 1	Regist Code:	AAAAAA			
Parity: NONE 💌	Data Tag:	Disable 💌	Conf	irm Cancel	
Flow Control: Disable 💌	Data Tag Code:				
UART Protocol: NONE		Cancel			-
HeartBeat Time: 0	Confirm	VirPath		Add VPath Cl	lose
HeartBeat Serial: IOTWORKSHOP					

Figure 27. Virtual Serial Port Function

1.13. HIS Script Funciton(Only 4G Product Support)

Hi-flying I.O.T script(HF IOT Script, short fot HIS). It is used for data transfer of IOT industrial device. When download the script in to the industrial device, the following functions can be achieved.

- Automatically send data to UART or Socket at regular time, which can be recognized as Modbus primary station.
- After receive data from UART or Socket, data will transferred based on script.

See following link for more about HIS Script.

http://www.hi-flying.com/download-center-1/application-notes-1/download-item-his-script



Device Setting System Welcome: SleepEn: Disable Sleep Time: Edit Script	HF2411 SOCKET SOCKET Name: Protocol: Server Addr:	A 🗸	× 用的资料. 发明专利 docx
			Load Script Update Script Delete Script
			Read Script Para
			Confirm
	APN Password:		
Confirm Can	sMS ID:	#SMS#	
Import VirPa	SMS Phone:	13564758458	
Export Scri	pt SMS Status:	0 💌	

Figure 28. Scirpt Funciton

2. AT INSTRUCTION INTRODUCTION

2.1. Working Mode

After the product is powered on, it enters the default mode, that is, the transparent transmission mode. The user can switch the working mode to the AT command line mode through the serial port specific data. The default UART port parameters of the module are configured as follows:

Quick Connect		×
<u>P</u> rotocol: P <u>o</u> rt: <u>B</u> aud rate: <u>D</u> ata bits: P <u>a</u> rity: <u>S</u> top bits:	Serial COM5 115200 8 None 1 V	Flow Control DTR/DSR <u>RTS/CTS</u> XON/XOFF
□Sho <u>w</u> quick	connect on star	✓Saye session □Open in a <u>t</u> ab Connect Cancel

Figure 29. Default UART Parameters

In the command line mode, the user can use the UART port to set the module through the AT command.

<Notes>: The AT command debugging tool recommends using the SecureCRT software tool (other serial tools are also available, but not convenient for SecureCRT). The following instructions use the SecureCRT tool.

2.1.1. Switching to Command Mode

Switching from transparent mode to command mode is divided into 2 steps:

Enter "+++" on the serial port, and the module will return a confirmation code "a" after receiving "+++"; Enter the confirmation code "a" on the serial port. After receiving the confirmation code, the module returns "+ok" to confirm and enter the command mode.

Serial-COI3 - SecureCRI	
文件 (E) 编辑 (E) 查看 (Y) 选项 (Q) 传输 (E) 脚本 (S) 工具 (L) 帮助 (H)	
XIXI 🖓 🖓 XI 🗅 🛍 👫 🍃 🗟 🛃 🌋 🏌 🎯 🛃 🖕	
Serial-COM3	×
a+ok	<u>~</u>
	±
	~
就绪	26行, 90列 VT100 大写 数字 🤃

Figure 30. Switching to Command Mode

<Notes>:

When you enter "+++" and the confirmation code "a", the serial port is not echoed, as shown in the figure above.

Entering "+++" and "a" needs to be completed within a certain period of time to reduce the probability of entering the command mode by mistake during normal operation. Specific requirements are as follows:



In the command mode, the module can be set or queried by the AT+ command under the UART port, and the operation can be restarted, or the AT+ command can be used to return to the transparent transmission mode. The AT+ instruction is detailed in the next section.

2.2. Send AT Command in Transparent Transmission Mode

After set AT+CMDPW command value, the module support response AT command for special data format as "prefix"+"AT comman"+"\r", it is very useful for query some status in transparent transmission mode. It saves the steps of changing to AT command mode.

The following example, we first set AT+CMDPW=HF, then send the following data in transparent mode, and get the AT command response. This data won't be sent to socket.



COMSettings PortNum COM4 COM port data receive 28 6F 6B	PortNum COM4 COM Port data receive 28 68
BaudR 115200 -	BaudR 115200 -
DPaity NONE	
DataB 8 bit StonB 1 bit	StopB 1 bit StopB 1 bit
Close HFAT+WMDDE=STA	48 46 41 54 28 57 4D 4F 44 45 3D 53 54 41 0D
in ASCII	Receive to file

2.3. SMS AT Command

The SMS AT command refers to sending [AT+] by SMS to query and set parameters.

2.4. Overview of the AT Instruction Set

The AT+ command can be input directly through a serial port debugger such as a Hyper Terminal, or it can be programmed. As shown in the figure below, through the SecureCRT tool, AT+H is a help command that lists all the instructions and instructions (some commands are not implemented, which is subject to the description of this document).

```
AT+H
+ok
   AT+H:show help
   AT+PING: General PING command.
AT+ENTM: Goto Through MOde.
   AT+WSMAC: Set/Get Module MAC Address.
   AT+SRST:Soft Reset the Module.
   AT+SMEM:show system memory stat
AT+GSMAT: Send internal at command.
   AT+Z: Reset the Module.
   AT+WEL: Set/Get welcome message.
   AT+SLEEP: Set/Get sleep mode.
   AT+SLEEPTM: Set/Get enter sleep mode time.
   AT+VER:Get application version.
   AT+APPVER:Get user application version.
   AT+RELD: Reload the default setting and reboot.
   AT+FCLR: Clear Fsetting.
   AT+CFGRD: Get current system config.
   AT+CFGTF: Save Current Config to Default Config.
AT+UART: Set/Get the UARTO/UART1 Parameters.
   AT+UARTTM: Set/Get the UART frame interval.
   AT+MODBUS: Enable/Disable the UART MODBUS.
```

Figure 31. AT Instruction Set

2.4.1. Instruction Syntax Format

The AT+ instruction uses an ASCII-based command line. The format of the instruction is as follows:

- Format Description
 - <>: Indicates the part that must be included
 - []: Indicates an optional part
- Command Message

AT+<CMD>[op][para-1,para-2,para-3,para-4...]<CR>

- AT+: Command message prefix
- CMD: Instruction string;
- [op] : Instruction operator, specified as parameter setting or query
 - "=" : Indicates parameter setting
 - "NULL" : Indicates the query
- [para-n]: Input when parameter setting, such as query is not required
- <CR>: Terminator, carriage return, ASCII code 0x0a or 0x0d

<Notes>:

When user enter a command, the "AT+<CMD>" character is automatically echoed to uppercase and the parameter portion remains unchanged.

Response Massage

+<RSP>[op] [para-1,para-2,para-3,para-4…]<CR><LF><CR><LF>

- +: Response message prefix;
- RSP: Respons string, including:
 - "ok" : Indicate success
 - "ERR": Indicate failure
- [op] : =
- [para-n] : Return parameters when querying or error code when error

occurs

- <CR>: ASCII code 0x0d;
- <LF>: ASCII code 0x0a;
- Error Code

Table1. Error Code Description

Error Code	Notes
-1	Invalid command format
-2	Invalid command
-3	Invalid operator
-4	Invalid parameter
-5	Operation not allowed

2.4.2. AT Instruction Set

Table2. List of AT+ Instruction Set

Instruction	Description	
<null></null>	Null	
Management Instruction Set		
Н	Help	
E	Open/Close Show Back Function	
CMDPW	Set/Query AT command prefix character for sending AT command in throughput mode.	

Instruction	Description		
WEL	Set / Query Boot Welcome Message		
HOST	Set/Query hostname in the IOTService		
ENTM	Enter Transparent Mode		
VER	Query Software Version		
GVER	Query GPRS software version(Only 4G product support)		
APPVER	Query Custom Software Version Number		
RELD	Restore User Default Parameters, Automatically Restart		
CFGTF	Save the Current Parameter as the User Default Parameter		
FCLR	Restore Factory Parameters, Automatically Restart		
SRST	Software Restart		
Z	Hard Restart		
	UART Instruction Set		
UART	Set/Query Serial Port Parameters		
UARTTM	Set/Query the Two-Frame Time Interval When the Serial Port		
	Receives Data.		
MODBUS	Set/Query Modbus TCP to Modbus RTU Function		
	Network Instruction Set		
NETP	Set/Query Network Protocol Parameters, the Settings Will Take Effect After Reset		
NETPLK	Set/Ouery Communication Channel TCP Connection Status		
ТСРТО	Set/Query socket TCP timeout		
NETPIDEN	Set/Ouery Whether Display From Which Communication Channel		
	the Data Comes From, and the Setting Will Take Effect After		
	Reset.		
NETPID	Set/Query the Communication Channel Number Tag Value.		
DATA	Set/Query Channel Send/Receive the Number of Bytes		
NREGEN	Set/Query Communication Channel Number Registration Package		
	Function		
NREGDT	Set/Query Communication Channel Number Registration Package		
	Custom Data		
NREGSND	Set/Query the Transmission Method of the Communication		
	Channel Number Registration Package		
HEART	Set/Query Communication Channel Number Heartbeat Packet		
	Data		
НТРТР	Set/query HTTP request type		
HTPURL	Set/query HTTP url resources and version		
HTPHEAD	Set/query HTTP header.		
WEBSOCKET	Set/query WebSocket content.		
MQTOPIC	Set/query MQTT topic content		
MQLOGIN	Set/query MQTT login content		
MQID	Set/query MQTT client id content		
LOCATE	Set/Query Latitude and Longitude.		
UPGRADE	Application Firmware Upgrade Via Serial Port or Network		
GOTA	4G core module firmware upgrade		
0.5710	Network Testing Instruction Set		
GETIP	Query the IP Address of the Specified Domain Name		
PING Query Whether the Address is Reachable			
GPRS Status			
GSLQ	Query GPKS Signal Strength		
1217120	Query GSIVI Status		

Instruction	Description		
Module Information Query Set			
ICCID	Query Module ICCID Code		
IMEI	Query IMEI Code		
IMSI	Query SIM Card's IMSI Number		
Upgrade Instruction Set			
UPURL	Set / Query the URL Address of the Remote Upgrade		
Other Instruction Set			
APN	Set/Query APN information.		
NTIME	Query NTP Real Time Function		
IOTEN	Set/Query IOTBrdige Function		
IOTUID	Set/Query IOTBrdige's UserID		
PID	Query Module Model for Configuring Tool to Identify Device		
PCID	Set/Query the Module Users' Defined Name for Display in the		
	Configuration Tool		
NDBGL	Open/Close Debug Information Output		
SCRIPT	HIS script operation.		

2.4.2.1. AT+H

Function: Help .

Format:

AT+H<CR>

+ok=<command help><CR><LF><CR><LF>

- Parameter
 - command help: Command help instruction.

2.4.2.2. AT+E

- Function: Open/Close show back function.
- Format:
 - Query Operation:
 - AT+E<CR>

+ok=<status><CR><LF><CR><LF>

- Set Operation:
- AT+E=<status><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - status: Echo status
 - on: Open echo, default [on]
 - off: Close echo

2.4.2.3. AT+CMDPW

- Function: Set/Query AT command prefix character for sending AT command in throughput mode. Setting is valid after reset;
- Format:

Query Operation

AT+CMDPW<CR>

+ok=<data><CR><LF><CR><LF>

- Set Operation
- AT+CMDPW=<data><CR>
- ok<CR><LF><CR><LF>
- Parameters:

◆ mode: Default is blank for disable t 是 his function. The maximum is 20 chacter length, once has been set, the AT command in transparent transmission mode function is enabled (AT+H and AT+WSCAN are not supported). Do restore to factory operation to disable and clear the setting.

When set this value to "HF", then can get response of "+ok=STA" (Hex: 2B 6F 6B 3D 53 54 41) for send "HFAT+WMODE\r" (Hex: 48 46 41 54 2B 57 4D 4F 44 45 0D, AT command should end with 0D or 0A).

2.4.2.4. AT+WEL

- Function: Set/Query boot welcome message.
- Format:

```
    Query Operation:
    AT+WEL<CR>
    +ok=<message><CR><LF><CR><LF>
    Set Operation:
```

```
AT+WEL=<message><CR>
```

+ok<CR><LF><CR><LF>

- Parameter:
 - message: Welcome message, default is product type such as 【Gport-G10】; If it is 【off】, means this function be closed, max 10 bytes.

2.4.2.5. AT+HOST

- Function: Set/Query hostname in the IOTService.
 - Format:
 - Query Operation:
 AT+HOST<CR>
 +ok=<message><CR><LF><CR><LF>
 Set Operation:
 AT+HOST=<message><CR>
 +ok<CR><LF><CR><LF>
 Parameter:
 - message: Hostname message, default is **[Eport-HF2411]**, max 30 bytes length.

Х

🔡 I.O.T Service

<u>M</u> ar	<u>M</u> anagement (M) Setting (C) Tools (T) Help (H)							
Begin 💥 Stop 😳 Config 🔍 Status 🚏 VirPath								
SN	DevType	MAC Address	HostName	IP	Position	VirPath	State	SW Ver
1	HF5111B	ACCF23202222	port-HF5111E		Local		Offline	1.32.09
2	HF8104	F0FE6BE04EC8	port-HF8104	112.96.192.58	Remote		Online	1.50.02u
3	HF8104	F0FE6BE04FF0	port-HF8104	122.97.174.47	Remote		Online	1.50.02u
4	HF8104	F0FE6BE04DD4	port-HF8104	122.97.175.120	Remote		Online	1.50.02u
5	HF8104	F0FE6BE04E0C	port-HF8104	112.96.68.135	Remote		Offline	1.50.02u
6	HF8104	F0FE6BE051B4	port-HF8104	180.170.213.43	Remote		Offline	1.50.02r

2.4.2.6. AT+ENTM

- Function: Enter the transparent mode.
- Format:
- AT+ENTM<CR>

+ok<CR><LF><CR><LF>

After the command is executed correctly, the module switches from command mode to transparent transmission mode.

2.4.2.7. AT+VER

- Function: Query software version.
- Format:
 - AT+VER<CR>

+ok=<ver><CR><LF><CR><LF>

- Parameter:
 - ver: The product software version number: three bytes, the big version number, the small version number, the test version number.

2.4.2.8. AT+GVER

- Function: Query GPRS software version(Only 4G product support)
 - Format:
 - AT+VER<CR>

+ok=<ver><CR><LF><CR><LF>

- Parameter:
 - ver: The GPRS software version number, it will return +ERR=-2 before the GPRS initialization finished.



2.4.2.9. AT+APPVER

- Function: Query custom software version number
- Format:

AT+APPVER<CR>

+ok=<ver><CR><LF><CR><LF>

- Parameter:
 - ver: Products' custom software version number.

2.4.2.10. AT+RELD

- Function: Restore user default parameters, automatically restart
- Format:

AT+RELD<CR>

+ok<CR><LF><CR><LF>

2.4.2.11. AT+CFGTF

Function: Save the Current Parameter as the User Default Parameter.
 AT+CFGTF<CR>
 +ok<CR><LF><CR><LF>

2.4.2.12. AT+FCLR

- Function: Restore factory parameters, automatically restart
- Format:
 - AT+FCLR<CR>

+ok=rebooting...<CR><LF><CR><LF>

2.4.2.13. AT+SRST

- Function: Software restart.
- Format:
- AT+Z<CR>

+ok<CR><LF><CR><LF>

The IO control state can be maintained. For general applications, use a hard restart..

2.4.2.14. AT+Z

- Function: Hard restart.
- Format:
 - AT+Z<CR>

+ok<CR><LF><CR><LF>

The IO control state is initialized.

2.4.2.15. AT+UART

- Function: Set/query the serial port operation, and the settings will take effect after reset.
- Format:
 - Query Operation:
 - AT+UART=<id><CR>
 - +ok=<id,baudrate,data_bits,stop_bit,parity,flowctrl><CR><LF><CR><LF>
 - Set Operation:
 - AT+UART=<id,baudrate,data_bits,stop_bit,parity,flowctrl><CR>
 - +ok<CR><LF><CR><LF>
- Parameter:
 - ♦ id: Serial port number
 - 1: Port 1
 - 2: Port 2 (G10, G11, G12 support)
 - baudrate: Baud rate, default 【115200】。
 - 600, 1200,2400,4800,9600,19200,38400,57600,115200,230400,460800
 - data_bits: Date bit, default 【8】
 - 7,8
 - stop_bits: Stop bit, default 【1】
 1,2
 - parity: Check bit, default [NONE]
 - NONE
 - EVEN
 - ODD
 - flowctrl: Hardware flow control (CTSRTS), only serial port 1 supports hard flow control, default [NFC]
 - NFC: No hardware flow control
 - FC: Hardware flow control (EG1X, EG43 don't support)
 - HD: Half-duplex mode for RS485.

2.4.2.16. AT+UARTTM

- Function: Set/Query the Two-Frame Time Interval When the Serial Port Receives Data.
- Format:
 - Query Operation:
 - AT+UARTTM=<id><CR>
 - +ok=<id><interval><CR><LF><CR><LF>
 - Set Operation:
 - AT+UARTTM=<id><interval><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Serial port number
 - 1: Port 1
 - 2: Port 2 (G10, G11, G12 support)
 - interval: Serial port division interval, default 【200】 ms, range 10~1000ms

2.4.2.17. AT+MODBUS

- Function: Set/query Modbus TCP to Modbus RTU function.
- Format:

Query Operation:
 AT+MODBUS=<id><CR>
 +ok=<id><status><CR><LF><CR><LF>
 Set Operation:
 AT+MODBUS=<id><status><CR>
 +ok<CR><LF><CR><LF>

Parameter:

- id: Serial port number
 - 1: Port 1
 - 2: Port 2 (G10, G11, G12 support)
- status: Modbus RTU to TCP function
 - on: Enable
 - off: Disable, default 【off】

2.4.2.18. AT+SMSID

- Function: Set/query SMS parameters, the settings will take effect after reset.
- Format:
 - Query Operation:

AT+SMSID<CR>

+ok=<id,status[,number]><CR><LF><CR><LF>

Set Operation:

AT+SMSID=<id,status[,number]><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: SMS identifier, default is "#SMS#", add this identifier at the beginning of UART data, the packet will then sent to SMS, not to socket.
 - status: SMS function mode
 - 0: Disable SMS number update, always sent to the set number.
 - 1: Enable SMS number update, default is 1. If receive SMS from phone, it will auto update the number, the next received packet will send to this update number.
 - number: phone number.

2.4.2.19. AT+NETP

- Function: Set/Query network protocol parameters, the settings will take effect after reset
- Format:
 - Query Operation:
 - AT+NETP=<id><CR>
 - +ok=<id,uart,protocol,IP[,port,mode,time]><CR><LF><CR><LF>
 - Set Operation:

AT+NETP=<id,uart,protocol,IP[,port,mode,time]><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - uart: Serial port number, to which the data is sent after receiving the communication channel, including the following parameters.
 - 1: Port 1, default 【1】
 - 2: Port 2, (G10, G11, G12 support)
 - protocol: Protocol type, including the following parameters.
 - ♦ Off: off status, 5 channels default to 【off】。
 - \diamond TCP: TCP mode.
 - $\diamond \quad \mathsf{UDP:}\,\mathsf{UDP}\,\mathsf{mode.}$
 - ♦ HTTP: HTTP mode, only Socket A support this

- ♦ WEBSOCKET: WebSocket mode, only Socket A support this
- ♦ MQTT: MQTT mode, only Socket A support this
- iP: Target IP address, support domain name, max 50 bytes, default [nat2.iotworkshop.com]
- port: Protocol port number, decimal number, 1 to 65535, default 【3006】.
- mode: TCP connection type. This parameter is available only in TCP or HTTP mode. The default [long], includes the following parameters.
 - ♦ Long: Long connection.
 - Short: Short connection. connection is established when data is sent, and time is disconnected when there is no data.
- time: TCP short connection disconnection delay time, this parameter is only available under short connection, the range is 1~100 seconds, the default is 【3】 seconds.

Commend example:

- 1、 SOCKA is set to TCP communication
 - a) Long connection: AT+NETP=A,1,TCP,nat2.iotworkshop.com,3006,long
 - b) Short connection: AT+NETP=A,1,TCP,nat2.iotworkshop.com,3006,short,3
- 2、 SOCKA is set to WebSocket, MQTT
 - a) AT+NETP=A,1,WEBSOCKET,123.56.240.XX,1883
 - b) AT+NETP=A,1,MQTT,123.56.240.XX,1883
- 3 SOCKB is set to UDP communication
 - a) AT+NETP=B,1,UDP,nat2.iotworkshop.com,3008

2.4.2.20. AT+NETPLK

- Function: Set/query communication channel TCP connection status
 - Format:
 - Query Operation:
 - AT+NETPLK=<id><CR>

+ok=<id,status><CR><LF><CR><LF>

Set Operation:

AT+NETPLK=<id,value><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - status: Connection status.
 - On: Connected
 - Off: Not connected, default [off]
 - value: Manually open/close TCP connection.
 - on: Start TCP connection
 - off: Close TCP connection

2.4.2.21. AT+TCPTO

- Function: Set/Query socket TCP timeout; Setting is valid after reset.
- Format:
 - Query Operation:
- AT+TCPTO=<id><CR>

+ok=<id,time><CR><LF><CR><LF>

- Set Operation:
- AT+TCPTO=<id,time><CR>
- +ok<CR><LF><CR><LF>
- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.

- B: Socket B channel.
- C: Socket C channel.
- time: TCP timeout value.
 - 0: Turn off this function
 - 1~600: Seconds of time out, default 【300】

Module begin to count time when TCP channel don't receive any data, clear time counter when TCP channel receive any data. If the time counter reaches the TCPTO, the tcp channel will be break and reconnect the TCP server instantly.

2.4.2.22. AT+NETPIDEN

- Function: Set/query whether display from which communication channel the data comes from, and the setting will take effect after reset.
- Format:

• Query Operation:

AT+NETPIDEN=<id><CR>

+ok=<id,status><CR><LF><CR><LF>

Set Operation:

AT+NETPIDEN=<id,status><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - status: Status values, including the following parameters.
 - on: Enable.
 - off: Close, default [off].

Under enabled status, increase the communication channel number tag value in the received data header, such as receiving data [abc], and the actual serial port output [#SOCKA#abc].

Under serial port transmission mode, user must increase the communication channel number tag value in the header, so that the data will only be sent to the specified channel. For example, you need to send data

【abc】 to the SOCKA channel, and the actual serial port needs to send 【#SOCKA#abc】.

Under disabling mode, the data output by the serial port does not distinguish the communication channel number, and the data received by the serial port is sent to all communication channels pointing to the serial port number.

2.4.2.23. AT+NETPID

- Function: Set/query the communication channel number tag value.
- Format:
 - Query Operation:
 - AT+NETPID=<id><CR>

+ok=<id,value><CR><LF><CR><LF>

• Set Operation:

AT+NETPID=<id,value><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - value: Communication channel number mark, SOCKA default 【#SOCKA#】, SOCKB default 【#SOCKB#】, and so on, up to 10 characters.

2.4.2.24. AT+DATA

■ Function: Set/Query Channel Send/Receive the Number of Bytes

- Format:
 - Query Operation:

AT+DATA=<id><CR>

+ok=<id,send_num,recv_num><CR><LF><CR><LF>

- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - 1: Port 1
 - 2: Port 2 (G10, G11, G12 support)
 - send_num: Total number of bytes sent
 - recv_num: Total number of bytes received

This command is used to query the total number of bytes sent/received after the channel is established. The value is cleared after the product is restarted.

2.4.2.25. AT+NREGEN

- Function: Set/Query Communication Channel Number Registration Package Function
- Format:

Query Operation:

AT+NREGEN=<id><CR>

+ok=<id,status><CR><LF><CR><LF>

• Set Operation:

AT+NREGEN=<id,status><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - status: Status value, including the following parameter.
 - on: Enable.
 - off: Close, default 【off】.

2.4.2.26. AT+NREGDT

- Function: Set/query communication channel number registration package function
- Format:

Query Operation:

AT+NREGDT=<id><CR>

+ok=<id,value><CR><LF><CR><LF>

Set Operation:

AT+NREGDT=<id,value><CR>

+ok<CR><LF><CR><LF>

- Parameter :
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - data: Custom data, up to 40bytes, % wildcard has special function, as an escape character, Use % to send data in HEX format(Ex. %25), it also support special strings as following.
 - ♦ %ICCID: ICCID, AXCII format, Ex: 89860115831007091458
 - ♦ %IMEI: IMEI, ASCII format, Ex: 862285030465284
 - ☆ %GPS: location information upload, See AT+ LOCATE for detail, ASCII format, Ex: 21.623046,31.221429。
 - ♦ %IMSI: IMSI, ASCII format, Ex: 460011352509105

- ♦ %VER: Software version, 3 bytes, HEX format, Ex: 01 00 03 (stands for 1.0.03)
- %GSLQ: GPRS status, 2 bytes, the first for GPRS status, the second for GPRS signal strength, HEX format, Ex: 01 16
- ♦ %DATE: year, month, day time, YYYYMMDD, ASCII format, Ex: 20190211
- %TIME: Hour, minute, and second time. HHMMSS, range: 000000~235959, ASCII format, Ex: 165036
- ♦ %HOST: Hostname, set by AT+HOST, ASCII format, Ex: Eport-HF2411

There are several ways to match custom data, such as:

The contents of the registration package are ASCII code 【ABCDEFG】, AT+NREGDT=A, ABCDEFG The contents of the registration package are hexadecimal 【0x01 0x02 0x03 0x04 0x05】, AT+NREGDT=A,%01%02%03%04%05

The content of the registration package is version number + signal strength + data 【0x00 0x01 0x02 0x00 0x10 ABCD】, AT+NREGDT=A, %VER%GSLQABCD

The content of the registration package is IMEI+ data 【355837089512343 0x00 0x01 0x02 0x03】 AT+NREGDT=A,%IMEI%00%01%02%03

- 2.4.2.27. AT+NREGSND
 - Function: Set/Query the Transmission Method of the Communication Channel Number Registration Package
 - Format:
 - Query Operation:

AT+NREGSND=<id><CR>

+ok=<id,type><CR><LF><CR><LF>

Set Operation:

AT+NREGSND=<id,type><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Communication channel number, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - type: Sending method, including
 - link: Send when the connection is established, default [link]
 - data: The registration packet as the header of each packet of data
 - both: Support both methods at the same time

2.4.2.28. AT+HEART

- Function: Set/query communication channel number heartbeat packet data
- Format:
 - Query Operation:

AT+HEART=<id><CR>

+ok=<id,time,mode,type,value><CR><LF><CR><LF>

Set Operation:

AT+HEART=<id,time,mode,type,value><CR>

- +ok<CR><LF><CR><LF>
- Parameter:
 - id: channel number, send heartbeat packets to a specific channel, including the following parameters.
 - A: Socket A channel.
 - B: Socket B channel.
 - C: Socket C channel.
 - D: Socket D channel.
 - E: Socket E channel.
 - 1: Serial port 1 channel.

- 2: Serial port 2 channel. (G10, G11, G12 support)
- time: Heartbeat interval, default [0] seconds, disable heartbeat function, range 1~65535.
- data: Custom data, up to 38 bytes, support escape characters, please refer to AT+NREGDT command for details.

2.4.2.29. AT+HTPTP

- Function: Set/query HTTP request type. Only valid for Socket A for HTTP mode, setting will take effect after reset.
- Format:

Query Operation:

AT+HTPTP<CR>

+ok=<type><CR><LF><CR><LF>

- Set Operation:
- AT+HTPTP=<type><CR>
- +ok<CR><LF><CR><LF>
- Parameter:
 - type: HTTP request type
 - ♦ GET: GET request
 - ♦ POST: POST request

2.4.2.30. AT+HTPURL

- Function: Set/query HTTP url resources and version. Only valid for Socket A for HTTP mode, setting will take effect after reset.
- Format:

Query Operation:

AT+HTPURL<CR>

+ok=<path,version><CR><LF><CR><LF>

Set Operation:

AT+HTPURL=<path,version><CR>

+ok<CR><LF><CR><LF>

Parameter:

- path: url resource, 50 characters length maximum, default: /abcd
- version: HTTP protocol version, 1.0 or 1.1 default: 1.1

2.4.2.31. AT+HTPHEAD

- Function: Set/query HTTP header. Only valid for Socket A for HTTP mode, setting will take effect after reset.
- Format:

Query Operation:

AT+HTPHEAD<CR>

+ok=<header><CR><LF><CR><LF>

- Set Operation:
- AT+HTPURL=<header><CR>
- +ok<CR><LF><CR><LF>
- Parameter:
 - header: HTTP header, for new line in header use "<CRLF><CRLF>". 180 characters maximum. Default: "Content-type:text/html;charset=utf-8<CRLF><CRLF>"

AT+HTPHEAD=Host:1.1.1.1 <crlf><crlf></crlf></crlf>	
+ok	

2.4.2.32. AT+WEBSOCKET

Function: Set/query WebSocket content. Only valid for Socket A for WebSocket mode, setting will take effect after reset.

For	mat:					
•	Query Operation:					
AT+W	EBSOCKET <cr></cr>					
+ok=<	ping,path,protocol> <cr><lf><cr><lf></lf></cr></lf></cr>					
•	Set Operation:					
AT+W	EBSOCKET= <ping,path,protocol><cr></cr></ping,path,protocol>					
+ok <c< th=""><th>R><lf><cr><lf></lf></cr></lf></th></c<>	R> <lf><cr><lf></lf></cr></lf>					
Par	ameter:					
•	ping: WebSocket ping time, unit: seconds, 0: Disable, depends on Server side to set or					
	disable.					
•	path: WebSocket Path header					
•	protocol: WebSocket protocol, depends on the server requirement.					
🗟 Websocket Edit	X RECV:+ok SEND:AT+HTPHEAD=Host:1111 <crle><crle></crle></crle>					
	RECV:+ok					
Ping Time:	60 SEND:AT+NETP=A,1,WEBSOCKET,1.1.1.1,80					
D. d	RECV:+ok					
Path:	/abcd SEIND:A1 + WEBSOCKE1 = 00,/abcd,websocket					
Protocol:	websocket					
	Send					
	Confirm Cancel Clear Close					

2.4.2.33. AT+MQTOPIC

- Function: Set/query MQTT topic content. Only valid for Socket A for MQTT mode, setting will take effect after reset.
- Format:
 - Query Operation:
 - AT+MQTOPIC<CR>
 - +ok=<publish,subscribe><CR><LF><CR><LF>
 - Set Operation:
 - AT+MQTOPIC=<publish,subscribe><CR>
 - +ok<CR><LF><CR><LF>
 - Parameter:
 - publish: publish topic
 - subscribe: subscribe topic

2.4.2.34. AT+MQLOGIN

- Function: Set/query MQTT login content. Only valid for Socket A for MQTT mode, setting will take effect after reset.
- Format:
 - Query Operation:
 - AT+MQLOGIN<CR>
 - +ok=<user,password><CR><LF><CR><LF>
 - Set Operation:
 - AT+MQLOGIN=<user,password><CR>
 - +ok<CR><LF><CR><LF>
- Parameter:
 - ♦ user: login user
 - Iogin: login password

2.4.2.35. AT+MQID

- Function: Set/query MQTT login content. Only valid for Socket A for MQTT mode, setting will take effect after reset.
- Format:

Query Operation:
 AT+MQID<CR>
 +ok=<id><CR><LF><CR><LF>
 Set Operation:
 AT+MQID=<id><CR>
 +ok<CR><LF>
 Parameter:

• id: Client ID, must be different for each device, recommend to use IMEI, MAC for this Client ID.

2.4.2.36. AT+LOCATE

- Function: Query/set latitude and longitude.
- Format:

Query Operation:
 AT+LOCATE=<type><CR>
 +ok=<type,longitude,latitude><CR><LF><CR><LF>
 Set Operation:
 AT+LOCATE<CR>
 +ok=<type,longitude,latitude><CR><LF><CR><LF>

Parameter:

- type: Latitude and longitude type.
 - 0: Set the latitude and longitude manually.
 - 1: GPRS base station location information.
 - 2: GPS positioning information (G12 only).
- longitude: East longitude.
- latitude: North latitude.

The heartbeat packet or registration package supports the %GPS wild card, and reports to the network channel. The positioning information reporting priority is prioritized by GPS positioning. When the GPS is not located, the manual input is subject to the standard. If there is no manual input, the base station is positioned as the last.

2.4.2.37. AT+UPGRADE

- Function: Application firmware upgrade via serial port or network.
- Format:

Set Operation:
 AT+UPGRADE<CR>
 +ok=<state><CR><LF><CR><LF>

```
AT+UPGRADE=[url]<CR>
```

+ok=<state><CR><LF><CR><LF>

- Parameter:
 - state: The result of the upgrade, the download success prompt 【Upgrade OK!】, the download failure prompt 【Upgrade Fail!】
 - url: URL download path for upgrade files. For example: <u>http://node-cn.iotworkshop.com/a.bin</u>

The command supports serial port or network upgrade. When using the serial port mode, after using the AT+UPGRADE command, switch the tool to 115200 baud rate. After receiving the "Ready CCCCCC......", select the UPGRDE.bin file. transmission.

```
2.4.2.38. AT+GOTA
```

- Function: 4G core module firmware upgrade. (Only 4G product support)
- Format:

```
    Set Operation:
    AT+GOTA=<url><CR>
    +ok
```

Parameter:

• url: Upgrade url address.

Ex: AT+GOTA=http://download.iotworkshop.com/iotbridge/firmwares/4GLTE/4G_V1.575_7ed2afca1cf4919f40346f3f23403594.bin There is upgrade status information.

AT+GOTA=http://download.iotworkshop.com/iotbridge/firmwares/4GLTE/4G_V1.575_7ed2afca1cf4919f40346f3f23403594.bin GOTA:5 GOTA:10

GOTA:10 GOTA:15 GOTA:20 GOTA:25 GOTA:30 GOTA:35 GOTA:40 GOTA:45 GOTA:45 GOTA:55 GOTA:65 GOTA:65 GOTA:70 GOTA:75 GOTA:80 GOTA:85 GOTA:90 GOTA:95 GOTA:100 +ok AT+GVER +ok=4G_V1.575

2.4.2.39. AT+GETIP

- Function: Query the IP address of the specified domain name.
- Format:
 - Query Operation
 - AT+GETIP<CR>

+ok=<"domain_name" ><CR><LF><CR><LF>

- Parameter:
 - "domain_name": The domain name that needs to be queried for the IP address.

2.4.2.40. AT+PING

- Function: Query Whether the Address is Reachable.
- Format:
 - Query Operation:
 - AT+PING=<IP><CR>

+ok=<value><CR><LF><CR><LF>

- Parameter:
 - iP: IP address or domain name.
 - value: Success or failure
 - success: Success.
 - fail: Failure.

2.4.2.41. AT+GSLQ

- Function: Query GPRS Signal Strength.
- Format:
 - Query Operation:
- AT+GSLQ<CR>

+ok=<status,ret><CR><LF><CR><LF>

- Parameter:
 - state: Signal strength description, including:
 - 0: Disconnect.
 - 1: Connect.
 - ret: Signal strength value, the range is 0-31.

2.4.2.42. AT+GSMST

- Function: Query GSM status.
- Format:

Query Operation:

AT+GSMST<CR>

+ok=<status,strength><CR><LF><CR><LF>

- Parameter:
 - status: Module network status. :
 - disconnect: Not connect GPRS network.
 - connect: Registered to the GPRS network.
 - sIM Not Exist: SIM card does not exist.
 - Strength: Signal strength, range from 0-31.

2.4.2.43. AT+ICCID

- Function: Query module ICCID code.
- Format:

Query:

AT+ICCID<CR>

+ok=<code><CR><LF><CR><LF>

- Parameter:
 - code: ICCID code, length is 20 bytes.

2.4.2.44. AT+IMEI

- Function: Query module IMEI code.
- Format:
 - Query Operation:
 - AT+IMEI<CR>

+ok=<code><CR><LF><CR><LF>

- Parameter:
 - code: IME code, length is 15 bytes.

2.4.2.45. AT+IMSI

- Function: Query SIM card's MSI number.
- Format:
 - Query Operation:
 - AT+IMSI<CR>

+ok=<code><CR><LF><CR><LF>

- Parameter:
 - code: IMSI code, length is 15 bytes.

2.4.2.46. AT+APN

- Function: Set/Query APN information.
- Format:
 - Query Operation:

AT+APN<CR>

- +ok=<apn,user,password]><CR><LF><CR><LF>
 - Set Operation:

AT+APN=<apn,user,password><CR>

- +ok<CR><LF><CR><LF>
- Parameter:
 - apn: apn information, max 27length, SET "NA" to clear setting.
 - user: apn user, max 21 length.
 - password: apn password, max 21 length

AT+APN=NA +ok

2.4.2.47. AT+NTIME

- Function: Query NTP real time function.
- Format:
 - Query Operation:
 - AT+NTP<CR>

+ok=<second,run_time,time><CR><LF><CR><LF>

- Parameter:
 - second: 0 time zone UTC time stamp, for example: 【1516884584】.
 - run_time: The current running time, in seconds.
 - time: Beijing time, for example: 【2018-01-25 20:45:09】.

The NTP real time can only be queried if the IOTBridge function is enabled. If it is off, the module runs the local time. Enable the IOTBridge function for at least some time each day to ensure time synchronization.

2.4.2.48. AT+IOTEN

- Function: Set/Query IOTBridge function.
- Format:
 - Query Operation:

AT+IOTEN<CR>

+ok=<status[,start,end]><CR><LF><CR><LF>

Set Operation:

AT+IOTEN=<status[,start,end]><CR>

AT+IOTEN=<active,time><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - status: Enable to disable IOTBridge function.
 - on: Enable, default 【on】.
 - off: Disable.
 - active: Temporarily turn on the IOTBridge function and do not save it to Flash.
 - start: Starting time, default 10:00.
 - end: Ending time, default 10:30.
 - time: Enable duration, in minutes.

When the IOTBridge remote configuration function is disabled to save traffic, but sometimes the module parameters need to be configured remotely. The AT command can be sent by SMS to temporarily enable the IOTBridge function so that the parameters can be modified. After the set time, the module automatically closes the connection with the IOTBridge.

2.4.2.49. AT+IOTUID

- Function: Set/query IOTBrdige's UserID
- Format:
 - Query Operation:

AT+IOTUID<CR>

+ok=<userid><CR><LF><CR><LF>

Set Operation:

AT+IOTUID=<userid><CR>

- +ok<CR><LF><CR><LF>
- Parameter:
 - userid: IOTBridge ID.
- 2.4.2.50. AT+PID
 - Function: Query Module Model for Configuring Tool to Identify Device.
 - Format:
 - Query Operation:
 - AT+PID<CR>

+ok=<id><CR><LF><CR><LF>

- Parameter:
 - id: Product name, default 【G10】.

2.4.2.51. AT+PCID

- Function: Set/Query the Module Users' Defined Name for Display in the Configuration Tool.
- Format:
 - Query Operation:
 - AT+PCID<CR>

+ok=<id><CR><LF><CR><LF>

- Set Operation:
- AT+PCID=<id><CR>

+ok<CR><LF><CR><LF>

- Parameter:
 - id: Products' customer custom name, default 【G10】, max to 10 bytes.

2.4.2.52. AT+NDBGL

- Function: Open/close debug information output.
- Format:
 - Query Operation:

AT+ NDBGL<CR>

+ok=<debug_level,uart_num><CR>< LF><CR>< LF>

• Set Operation:

AT+ NDBGL =<debug_level,uart_num><CR>

+ok<CR>< LF><CR>< LF>

- Parameter:
 - debug_level: Debug information output level.
 - ♦ 0: Close debug information output.
 - \Rightarrow 1 \sim XX: Outputs the setting value and above debugging information.
 - uart_num: Debug information output serial channel.
 - ♦ 1: UART 1
 - ♦ 2: UART 2

When the work is abnormal, please open the debug log information and send it to us for checking the phenomenon. HF2411 input AT+NDBGL=1,0 to enable log output, AT+NDBLG=0,0 disable log.

```
nReload pin is High!

Start to run...

_init_itfs is running

sdk version(HSF-V1.51-201601151711-LPB100-128-16B),the app_main start time is Nov 29

2018 14:52:45

reset_reasion:00000004

Eport start...

guart thread start...

HF2411Read_clean::

GUART::send:AT

GUART::readline:
```

2.4.2.53. AT+SCRIPT

- Function: HIS script operation.
- Format:
 - Set Operation:
 - AT+SCRIPT=del<CR>

+ok<CR>< LF><CR>< LF>

- Parameter:
 - del: Delete HIS script.