S01 LPG

LAN Communication Protocol

Description

It is suitable for S01 liquefied gas level module (module for short) and APP side, in the local area network or AP hotspot direct connection mode, application layer communication based on TCP/IP protocol.
All data packets start with "#" and end with ";" (the end can be added with "carriage return and line feed" or not), and the middle consists of four parts: message length, native type, instruction type, and instruction data The structure is separated by ",", and the field allows multiple spaces to be inserted in between.

Examples of messages

1. First communication synchronization
   APP:
   #0000,UG_App,StLanInfo,ip=192.168.1.142,hostName=URGEGAS_APP,token=abcdefg;
   Module side:
   #0000,UG_Dev,StLanInfo,ID=F7F6CDCD0,ip=192.168.1.143,hostName=URGEGAS-F7F6CDCD0,token=abcdefg;
2. WiFi information settings
   APP:
   #0000,UG_App,SetWifi,ID=F7F6CDCD0,admin=88888888,ssid=DYP,password=12345678;
   Module side:
   #0000,UG_Dev,SetWifi,ID=F7F6CDCD0,ssid=DYP,password=12345678;
3. Request sensor measurement data
   APP:
   #0000,UG_App,GetMeas,last=1;
4. Report sensor measurement data
   Module side:
   #0000,UG_Dev,PutMeas,ID=F7F6CDCD0,level=90,battery=80,ip=192.168.1.143,readTime=1513235194,wifiSta=-61,deviceInfo=S;
5. Parameter setting
   APP:
   #0000,UG_App,SetPara,ID=F7F6CDCD0,admin=88888888,strictMonitor=0,timeFrame=20,threshold=10,regularHour=21;
   Module side:
   #0000,UG_Dev,SetPara,ID=F7F6CDCD0,strictMonitor=0,timeFrame=20,threshold=10,regularHour=21;

6. Parameter query
   APP:
   #0000,UG_App,GetPara,none;
   Module side:
   #0000,UG_Dev,GetPara,ID=F7F6CDCD0,strictMonitor=0,timeFrame=20,threshold=10,regularHour=21;
7. Heartbeat package
   APP side: #0000,UG_App,HeartPack,none;
   Module side: #0000,UG_Dev,HeartPack,none;

Composition of the message structure

The data packet structure is composed as follows:

No	Structure	Description	Example
1	Message length	A four-digit decimal number, representing the current total length from the first byte to the last byte; When it is 0000, this structure is ignored and the length will not be calculated;	0078
2	Native type	“UG_App” means that the message is sent by the APP; “UG_Dev” means that the message is sent by the module;	UG_App
3	Command type	Determine the operation to be done in this message, which can be requested, inquired, set, etc.; for example, “GetMeas” means request measurement data; see the Command Description for details.	StLanInfo
4	Command data	"Identification 1=Value 1, Identifier 2=Numeric 2,...Identity n=Numeric n" It consists of multiple data identifiers and values, separated by "=" and ","; If there is no item, use "none" instead;	ip=192.168.1.142,hostName=URGEGAS_APP,token=abcdefg

Examples of complete messages:
#0075,UG_App,StLanInfo,ip=192.168.1.142,hostName=URGEGAS_APP,token=abcdefg;

Instruction type and instruction data

1. First communication synchronization

StLanInfo

The APP side sends it out first, and the module side answers after receiving it. Used to synchronize ID, IP, token and other information during the first communication. The AP hotspot is directly connected or in the router LAN, APP can use this command UDP broadcast to the module port for synchronization. If you determine the IP address of the module, you can also send this command directly to the TCP port of the module.

(1) The instruction data of APP is as follows:

No	Structure	Description	Example
1	IP	Local ip; (APP terminal/mobile terminal)	ip=192.168.1.142
2	hostName	The host name in the local area network; (APP terminal/mobile terminal)	hostName=URGEGAS_APP
3	Token	APP is generated and synchronized to the module for encryption of other messages. This instruction is not encrypted;	token=abcdefg

		When it is 0, it means no encryption;	

For example:
ip=192.168.1.142,hostName=URGEGAS_APP,token=abcdefg

(2) The response command data of the module is as follows:

No	Structure	Description	Example
1	ID	Module code has a total of 9 bits, which is unique; (use the last 9 bits of the MAC address)	ID=F7F6CDCD0
2	ip	APP local ip;	ip=192.168.1.143
3	hostName	The host name in the LAN;	hostName=URGEGAS-F7F6CDCD0
4	token	APP is generated and synchronized to the module for encryption of other messages. This instruction is not encrypted; When it is 0, it means no encryption;	token=abcdefg

For example:
ID=F7F6CDCD0,ip=192.168.1.143,hostName=URGEGAS-F7F6CDCD0,token=abcdefg

2. Wifi information setting

SetWifi

The APP side sends out first, and the module side responds after receiving it. Used to set the wifi parameters to be connected to the module.

(1) The instruction data of APP is as follows:

No	Structure	Description	Example
1	ID	Module code has 9 bits in total, which is unique; (use the last 9 bits of the MAC address)	ID=F7F6CDCD0
2	admin	Admin password of module, can be changed only if it is entered correctly;	admin=88888888
3	ssid	Wireless router SSID name;	ssid=DYP
4	password	Wireless router password;	password=12345678

For example:
ID=F7F6CDCD0,admin=88888888,ssid=DYP,password=12345678

(2) The module-side response command data has reduced the "admin" mark compared to the APP-side.

For example:
ID=F7F6CDCD0,ssid=DYP,password=12345678

3. Request sensor measurement data

GetMeas

The APP sends this command to the TCP port of the module, the data format is as follows:

No	Structure	Description	Example
1	last	The most recent measurement data record; Among them, 0 means measuring once immediately, but the returned data is empty;	last=1

Example: last=1

4. Report sensor measurement data

PutMeas

The module end sends to the APP end, which can actively report, and is also used to respond to the request for sensor measurement data instructions. The data format is as follows:

No	Structure	Description	Example
1	ID	Module code has 9 bits in total, which is unique; (use the last 9 bits of the MAC address)	ID=F7F6CDCD0
2	level	Measure the height of the liquid level, in mm;	level=90
3	battery	Battery power, unit %, range 0~100;	battery=80
4	ip	APP local IP;	ip=192.168.1.143
5	readTime	UNIX timestamp of sensor measurement;	readTime=1521701146
6	wifiSta	WiFi signal quality; Less than or equal to 0, the larger the signal better.	wifiSta=-61
7	deviceInfo	Module information. The first character indicates the status of connecting to the router wifi, “S” indicates success, “I” indicates idle or connecting or other reasons, and “F” indicates failure.	deviceInfo=S

For example:
ID=F7F6CDCD0, level=90, battery=80, ip=192.168.1.143, readTime=1513235194, wifiSta=-61, deviceInfo=S

5. Parameter setting

SetPara

The APP side sends out first, and the module side responds after receiving it. Used to set module parameters.

(1) The instruction data of APP is as follows:

No	Structure	Description	Example
1	ID	Module code has 9 bits in total, which is unique; (use the last 9 bits of the MAC address)	ID=F7F6CDCD0
2	admin	Admin password of module, must be entered correctly	admin=88888888
3	strictMonitor	Real-time monitoring mode, set to 0 means off, other values mean on, and continue to measure and report data at this interval(unit/sec), ranging from 0 to 255; It will be closed automatically after 15 minutes by default;	strictMonitor=0
4	timeFrame	Measurement interval, unit/min; range 5~120; This parameter is invalid when the real-time monitoring mode is turned on;	timeframe=20
5	threshold	The reporting threshold, unit/mm, will be reported when the liquid level change exceeds this value; range 5~20;	threshold=10
6	regularHour	The time is reported regularly every day, unit/hour; if the report is not overdue on the day, the data will be automatically reported once at 21:00 by default; range 0~23;	regularHour=21

For example:
ID=F7F6CDCD0,admin=88888888,strictMonitor=0, timeFrame=20, threshold=10, regularHour=21

(2) The module-side response command data has reduced the "admin" mark compared to the APP-side.

For example:
ID=F7F6CDCD0,strictMonitor=0, timeFrame=20, threshold=10, regularHour=21

6. Parameter query

GetPara

The APP side sends out first, and the module side responds after receiving it. Used to query module parameters.

(1) The instruction data of APP is as follows:

No	Structure	Description	Example
1	none	none	none

Example: none

(2) The response of the module is the same as the parameter setting.

For example:

ID=F7F6CDCD0,strictMonitor=0, timeFrame=20, threshold=10, regularHour=21

7. Heartbeat package

HeartPack

Used to maintain network connections. Both the APP side and the module side can be issued, the command data is consistent, no response is required, as follows:

No	Structure	Description	Example
1	none	none	none

For example:

none