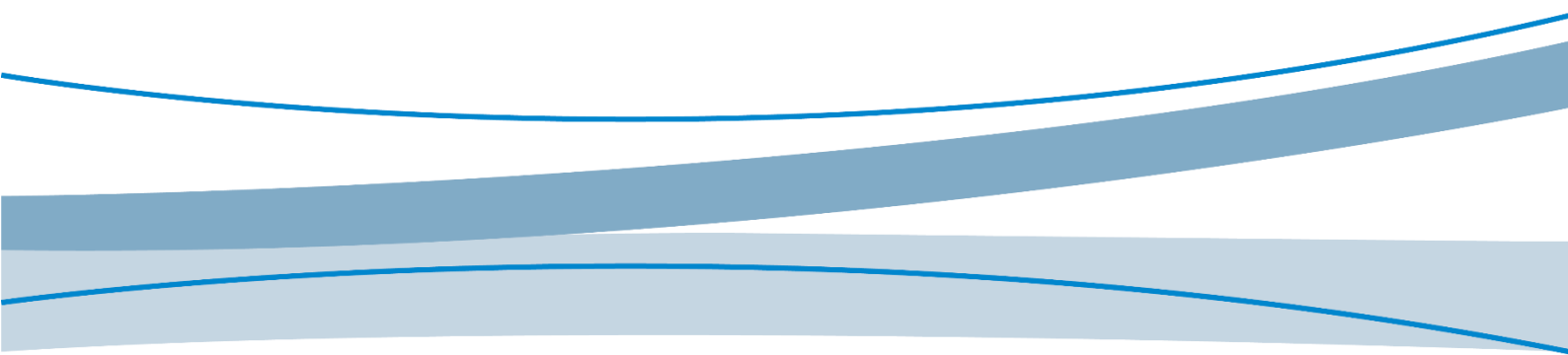




FG132

AT Commands User Manual_GNSS

V1.2



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Change History

V1.2 (2024-12-10)	Add descriptions of GTGPSEPO/GTAGPSSERV/GTGPSCFG/GTGPSCERT/GTGPSDELAID usage scenarios limitation.
V1.1 (2024-01-22)	Modify NMEA descriptions and Characteristic descriptions
V1.0 (2023-12-22)	Initial version

1 GNSS

1.1 +GTGPSPOWER, control GNSS switch

Description

This command is used to control the GNSS module switch.

Format

Type	Command	Response
Setting command	AT+GTGPSPOWER=<mode>	Response 1: OK Response 2: ERROR
Read current settings	AT+GTGPSPOWER?	Response 1: +GTGPSPOWER: <mode> OK Response 2: ERROR
Query command parameter range	AT+GTGPSPOWER=?	+GTGPSPOWER: (list of supported <mode>s) OK

Parameter

Name	Description	Value
mode	GPS switch status value	Type: integer <ul style="list-style-type: none"> • 0: power off the GNSS module (default) • 1: power on the GNSS module

Characteristic

Require SIM Card Normal	No	Require Network Registration	No
Require Data Connection	No	Async or Sync Command	Sync command
Require Restart to Take Effect	No	Require Data Store at Power Down	No
Max Response Duration (ms)	1000	Max Result Returning Duration (ms)	1000

Example

AT+GTGPSPOWER=?

①

+GTGPSPower: (0,1)

OK

AT+GTGPSPower?

2

+GTGPSPower: 0

OK

AT+GTGPSPower=1

3

OK

AT+GTGPSPower=0

4

OK

1 Query available parameters and ranges.

2 Confirm current GNSS status.

3 Power on GNSS.

4 Power off GNSS.

1.2 +GTGPS, read GNSS GPS information

Description

This command is used to read GNSS navigation information.

Format

Type	Command	Response
Setting command	AT+GTGPS[=<item>]	Response 1: +GTGPS: GNSS navigation information in <item> OK
		Response 2: +GTGPS: All navigation information OK
		Response 3: ERROR
Read current settings	AT+GTGPS?	Response 1: +GTGPS: All navigation information OK
		Response 2:

Type	Command	Response
		ERROR
Query command parameter range	AT+GTGPS=?	+GTGPS: <item>list OK

Parameter

Name	Description	Value
item	GNSS information item	Type: string <ul style="list-style-type: none"> • "RMC": get RMC statement information • "GGA": get GGA statement information • "GSA": get GSA statement information • "GSV": get GSV statement information

Characteristic

Require SIM Card Normal	No	Require Network Registration	No
Require Data Connection	No	Async or Sync Command	Sync command
Require Restart to Take Effect	No	Require Data Store at Power Down	No
Max Response Duration (ms)	1000	Max Result Returning Duration (ms)	1000

NMEA Sentence Description:**Support NMEA 0183 4.11 sentences,**

Satellites	TalkerID(NMEA 4.11)
GPS	GP
GLONASS	GL
GALILEO	GA
BEIDOU	GB
QZSS	GQ
Multi-satellites	GN

NMEA 0183 4.11 GSA systemid,

System id	GNSS System(NMEA 4.11)
1	GPS

2	GLONASS
3	GALILEO
4	BEIDOU
5	QZSS



Different systems could be derived by <systemid> in GNGSA sentence.

GSV sentences contain <signalid>, so different signals of the same system would display separately.

Example

AT+GTGPS=? ①

+GTGPS: "RMC","GGA","GSA","GSV"

OK

AT+GTGPS? ②

+GTGPS:

\$GNGGA,165026.00,3412.489668,N,10849.778478,E,1,12,1.0,472.8,M,-34.0,M,,*5B

\$GNRMC,165026.00,A,3412.489668,N,10849.778478,E,0.0,,241223,4.2,W,A,V*67

\$GNGSA,A,3,05,17,19,20,,,,,,,,,1.2,1.0,0.7,1*3D

\$GNGSA,A,3,66,,,,,,,,,1.2,1.0,0.7,2*37

\$GNGSA,A,3,07,21,,,,,,,,,1.2,1.0,0.7,3*32

\$GNGSA,A,3,01,03,07,10,28,32,40,41,46,,,,,1.2,1.0,0.7,4*3D

\$GNGSA,A,3,02,04,,,,,,,,,1.2,1.0,0.7,5*36

\$GPGSV,3,1,09,05,31,227,30,11,62,341,28,17,17,130,46,19,40,124,47,1*6C

\$GPGSV,3,2,09,20,69,248,26,04,05,037,,06,50,044,,09,26,065,,1*63

\$GPGSV,3,3,09,12,41,270,,1*5E

\$GPGSV,1,1,03,06,50,044,22,11,62,341,24,09,26,065,,8*57

\$GLGSV,3,1,09,14,14,235,21,02,37,170,50,16,04,335,14,15,20,287,19,1*71

\$GLGSV,3,2,09,01,61,085,26,24,53,031,20,23,20,088,23,17,29,320,22,1*71

\$GLGSV,3,3,09,08,19,031,15,1*47

\$GAGSV,2,1,08,07,34,086,22,21,07,177,41,24,04,327,16,12,05,276,,7*70

\$GAGSV,2,2,08,13,11,078,,19,02,184,,31,34,287,,33,49,310,,7*76

\$GAGSV,1,1,02,07,34,086,20,21,07,177,34,1*79


```

$GQGSV,1,1,02,02,17,162,41,04,57,116,31,8*68
$GBGSV,5,1,20,46,08,230,37,40,57,156,50,32,51,178,48,28,28,103,45,1*7A
$GBGSV,5,2,20,27,68,054,25,20,03,204,40,10,70,208,38,07,62,180,46,1*72
$GBGSV,5,3,20,04,24,113,37,03,51,177,43,01,36,127,44,02,42,219,,1*78
$GBGSV,5,4,20,05,24,244,,08,68,278,,13,61,263,,30,42,316,,1*7C
$GBGSV,5,5,20,33,11,038,,36,10,276,,38,76,319,,41,56,068,,1*71
$GBGSV,2,1,07,28,28,103,46,32,51,178,51,33,11,038,20,40,57,156,53,3*74
$GBGSV,2,2,07,41,56,068,26,46,08,230,43,27,68,054,,3*49
$GBGSV,2,1,06,27,68,054,24,28,28,103,32,32,51,178,40,40,57,156,34,5*74
$GBGSV,2,2,06,41,56,068,24,46,08,230,27,5*74

```

OK

- ❶ Query available parameters and ranges.
- ❷ Read GNSS navigation information NMEA data.

1.3 +GTGPSEPO, enable or disable AGPS function

Description

This command is used to enable or disable the AGPS function.

Format

Type	Command	Response
Setting command	AT+GTGPSEPO=<mode>	Response 1: OK
		Response 2: ERROR
Read current settings	AT+GTGPSEPO?	Response 1: +GTGPSEPO: <mode> OK
		Response 2: ERROR
Query command parameter range	AT+GTGPSEPO=?	+GTGPSEPO: (list of supported <mode>s) OK

Parameter

Name	Description	Value
------	-------------	-------

mode	AGPS enable or disable mode value	Type: integer <ul style="list-style-type: none"> • 0: disable the AGPS function (default) • 1: enable AGPS MSB mode • 2: enable AGPS MSA mode
------	-----------------------------------	--

Characteristic

Require SIM Card Normal	Yes	Require Network Registration	Yes
Require Data Connection	Yes	Async or Sync Command	Sync command
Require Restart to Take Effect	No	Require Data Store at Power Down	No
Max Response Duration (ms)	1000	Max Result Returning Duration (ms)	1000



This command should be used in GNSS OFF state.

Example

AT+GTGPSEPO=? ①

+GTGPSEPO: (0-2)

OK

AT+GTGPSEPO? ②

+GTGPSEPO: 0

OK

AT+GTGPSEPO=1 ③

OK

AT+GTGPSEPO=2 ④

OK

① Query available parameters and ranges.

② Confirm current AGPS status.

③ Enable MSB mode AGPS.

④ Enable MSA mode AGPS.

1.4 +GTAGPSSERV, set AGPS server

Description

This command is used to set AGPS server.

Format

Type	Command	Response
Setting command	AT+GTAGPSSERV="<IP/URL>",<port>	Response 1: OK Response 2: ERROR
Read current settings	AT+GTAGPSSERV?	Response 1: +GTAGPSSERV: <IP/URL>,<PORT> OK Response 2: ERROR
Query command parameter range	AT+GTAGPSSERV=?	+GTAGPSSERV: (<IP/URL>),(list of supported <port>s) OK

Parameter

Name	Description	Value
IP/URL	AGPS server IP	Type: string AGPS server IP or URL address
port	AGPS server port	Type: integer Range: 1 to 65535

Characteristic

Require SIM Card Normal	Yes	Require Network Registration	Yes
Require Data Connection	Yes	Async or Sync Command	Sync command
Require Restart to Take Effect	Yes	Require Data Store at Power Down	Yes
Max Response Duration (ms)	1000	Max Result Returning Duration (ms)	1000



This command should be used in GNSS OFF state.

Example

```
AT+GTAGPSSERV=? 1  
+GTAGPSSERV: (<IP/URL>),(1-65535)  
  
OK  
  
AT+GTAGPSSERV? 2  
+GTAGPSSERV: "sup1.qxwz.com",7276  
  
OK  
  
AT+GTAGPSSERV="sup1.qxwz.com",7276 3  
OK
```

- 1 Query available parameters and ranges.
- 2 Confirm current settings.
- 3 Set AGPS server address and port.

1.5 +GTGPSCFG, configure the GNSS/A-GNSS parameter

Description

This command is used to configure the GNSS or A-GNSS parameter.

Format

Type	Command	Response
Setting command	AT+GTGPSCFG=<x>,<value>	Response 1: OK
		Response 2: ERROR
Read current settings	AT+GTGPSCFG?	Response 1: +GTGPSCFG: 0,<value> 2,<value> 3,<value>

Type	Command	Response
		OK
		Response 2: ERROR
Query command parameter range	AT+GTGPSCFG=?	+GTGPSCFG: (<x>),(list of supported <value>s) OK

Parameter

Name	Description	Value
x	GPS configurations	Type: integer <ul style="list-style-type: none"> • 0: supl version • 2: satellite switching • 3: enable/disable supl certificate
value	Configuration parameters	Type: integer Range: 0 to 15 <ul style="list-style-type: none"> • supl version <ul style="list-style-type: none"> 0: SUPL1.0 1: SUPL2.0 2: SUPL2.0.4 (default)
value	Configuration parameter values	Satellite switching <ul style="list-style-type: none"> • 0: The position satellite combination is GPS+GLONASS • 1: The position satellite combination is GPS+BeiDou • 2: The position satellite combination is GPS+GALILEO • 3: The position satellite combination is GPS+QZSS
value	Configuration parameter values	Satellite switching <ul style="list-style-type: none"> • 4: The position satellite combination is GPS+BeiDou+GALILEO • 5: The position satellite combination is GPS+BeiDou+GLONASS • 6: The position satellite combination is GPS+BeiDou+QZSS
value	Configuration parameter values	Satellite switching <ul style="list-style-type: none"> • 7: The position satellite combination is GPS+GLONASS+GALILEO

Name	Description	Value
		<ul style="list-style-type: none"> • 8: The position satellite combination is GPS+GALILEO+QZSS • 9: The position satellite combination is GPS+GLONASS+QZSS
value	Configuration parameter values	Satellite switching <ul style="list-style-type: none"> • 10: The position satellite combination is GPS+BeiDou+GALILEO+GLONASS • 11: The position satellite combination is GPS+BeiDou+GLONASS+QZSS • 12: The position satellite combination is GPS+BeiDou+GALILEO+QZSS
value	Configuration parameter values	Satellite switching <ul style="list-style-type: none"> • 13: The position satellite combination is GPS+GALILEO+GLONASS+QZSS • 14: The position satellite combination is GPS+BeiDou+GALILEO+GLONASS+QZSS • 15: The position satellite combination is GPS
value	Configuration parameter values	Enable/disable supl certificate <ul style="list-style-type: none"> • 0: disable supl certificate(default) • 1: enable supl certificate

Characteristic

Require SIM Card Normal	Yes	Require Network Registration	Yes
Require Data Connection	Yes	Async or Sync Command	Sync command
Require Restart to Take Effect	Yes	Require Data Store at Power Down	Yes
Max Response Duration (ms)	1000	Max Result Returning Duration (ms)	1000



Even if QZSS is disabled, QZSS will still be tracked for cross correlation detection purpose.
This command should be used in GNSS OFF state.

Example

AT+GTGPSCFG=0,1

1

OK

AT+GTGPSCFG=2,0

②

OK

AT+GTGPSCFG=3,1

③

OK

① Set supl version number to SUPL 2.0.

② Set position satellite combination.

③ Enable supl certificate.

1.6 +GTGPSCERT, input/delete SUPL certificate

Description

This command is used to input or delete SUPL certificate. The certificate must be in .der format.

Format

Type	Command	Response
Setting command	AT+GTGPSCERT=<operation>,<num>,[<length>]	Response 1: > <input certificate> OK Response 2: +CME ERROR: <err>
Read current settings	AT+GTGPSCERT?	+GTGPSCERT: <num> ... OK
Query command parameter range	AT+GTGPSCERT=?	+GTGPSCERT: (list of supported <operation>s),(list of supported <num>s)[,<length>] OK

Parameter

Name	Description	Value
operation	Identity of addition or deletion	Type: integer 0: delete SUPL certificate 1: input SUPL certificate
num	Required certificates	Type: integer Range: 1 to 9
length	Certificate length	Range: 1 to 2000 The actual length of the certificate in bytes. This parameter is empty when deleting.

Characteristic

Require SIM Card Normal	Yes	Require Network Registration	Yes
Require Data Connection	Yes	Async or Sync Command	Sync command
Require Restart to Take Effect	Yes	Require Data Store at Power Down	Yes
Max Response Duration (ms)	1000	Max Result Returning Duration (ms)	1000



This command should be used in GNSS OFF state.

Example

```
AT+GTGPSCERT? ❶
+GTGPSCERT: 1
+GTGPSCERT: 2
OK

AT+GTGPSCERT=0,2 ❷
OK

AT+GTGPSCERT=1,2,576 ❸
>
157143143218743219gdsafdsafda.....
OK
```

❶ Query certificate.

❷ Delete No.2 certificate.

❸ Input No.2 certificate.

1.7 +GTGPSDELAID, set start mode

Description

Delete aiding data to achieve cold start mode, warm start mode, hot start mode.

Format

Type	Command	Response
Setting command	AT+GTGPSDELAID=<mode>	Response 1: OK Response 2: ERROR
Query command parameter range	AT+GTGPSDELAID=?	+GTGPSDELAID: (list of supported <mode>s) OK

Parameter

Name	Description	Value
mode	Start mode	Type: integer • 0: cold start • 1: warm start

Characteristic

Require SIM Card Normal	No	Require Network Registration	No
Require Data Connection	No	Async or Sync Command	Sync command
Require Restart to Take Effect	No	Require Data Store at Power Down	No
Max Response Duration (ms)	1000	Max Result Returning Duration (ms)	1000



This command is only used in test scenarios.

This command should be used in GNSS OFF state.

Setting it to 0 will delete all aiding data of positioning, and setting it to 1 will only delete ephemeris. This command is not required during hot start testing.

To achieve the purpose of testing warm start and hot start, the device needs to have this aiding data already present before testing.

Example

AT+GTGPSDELAID=?

①

+GTGPSDELAID: (0,1)

OK

AT+GTGPSDELAID=0 ②

OK

AT+GTGPSDELAID=1 ③

OK

- ① Query available parameters and ranges.
- ② Delete all aiding data.
- ③ Delete Ephemeris.