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20F.-13, No.79, Sec. 1, Xintai 5th Rd.,
Xizhi Dist., New Taipei City 221, Taiwan
886-2-8698-3698
886-2-8698-3699
www.locosystech.com

BK-1612-XX command Note

Common configuration commands

V 1.2

2025.01.07

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1. NMEA command

The basic format of the PO_NMEA command is: $POLMSGNMEA,data1,data2,data3…\r\n
For example: $POLCFGMSG,1,1\r\n
All commands start with '$POLCFG' (0x24504F434647), followed by the message name, followed by an indefinite number of parameters or data. The message name and data are separated by commas (0x2C). Letters in message names and parameters are all uppercase.
When the receiver receives the command correctly, it will return **'$OK'**, otherwise it will return **'$FAIL'**.
It should be noted that when using the serial port tool to send commands, a carriage return and line feed should be added at the end.**(\r\n ,0x0D0A)**

1.1 Set Baudrate

Data field :
$POLCFGPRT,baud,reserved

Packet Type	NMEA Command
9600	$POLCFGPRT,9600
38400	$POLCFGPRT,38400
115200	$POLCFGPRT,115200
230400	$POLCFGPRT,230400
460800	$POLCFGPRT,460800
1000000	$POLCFGPRT,1000000

Note:

1. The corresponding serial port transmission rate of the host computer has not changed accordingly, no '$OK' or '$FAIL' will be received.
2. Configure the port baud rate, which takes effect immediately. Once in effect, a save command can be sent to save the configuration set.

1.2 Set Warm/Cold Start

Data Field :
$POLCFGRESET,Type

Packet Type	NMEA Command
Cold start	$POLCFGRESET,1
Warm start	$POLCFGRESET,0

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1.3 Set NMEA sentence output

Date Field :
$POLCFGMSG,msgClass(0), msgID,msgCtr

Packet Type	NMEA Command
Enable GGA	$POLCFGMSG,0,0,1
Enable GSA	$POLCFGMSG,0,1,1
Enable GSV	$POLCFGMSG,0,2,1
Enable VTG	$POLCFGMSG,0,3,1
Enable RMC	$POLCFGMSG,0,5,1
Enable ANT	$POLCFGMSG,0,9,1
Enable GST	$POLCFGMSG,0,12,1
Enable GLL	$POLCFGMSG,0,13,1
Enable ZDA	$POLCFGMSG,0,20,1
Enable GNS	$POLCFGMSG,0,27,1
Disable GGA	$POLCFGMSG,0,0,0
Disable GSA	$POLCFGMSG,0,1,0
Disable GSV	$POLCFGMSG,0,2,0
Disable VTG	$POLCFGMSG,0,3,0
Disable RMC	$POLCFGMSG,0,5,0
Disable ANT	$POLCFGMSG,0,9,0
Disable GST	$POLCFGMSG,0,12,0
Disable GLL	$POLCFGMSG,0,13,0
Disable ZDA	$POLCFGMSG,0,20,0
Disable GNS	$POLCFGMSG,0,27,0

Note :
Enable ANT : Output '$POLANT' message to show antenna detection status.

Packet	Status	mark
$POLANT	0/1/2	0:Open/ 1: Work(OK)/ 2: Short

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1.4 Set Output rate

Date Field :
$POLCFGNAV,navRate

Packet Type	NMEA Command
1Hz	**$POLCFGNAV,1**
5Hz	**$POLCFGNAV,5**
10Hz	**$POLCFGNAV,10**
20Hz	**$POLCFGNAV,20**

Note: It is recommended to refer to the following baud rate settings and NMEA sentences only GGA/RMC.

	1Hz_Daul Band	5Hz_Daul Band	10Hz_Daul Band	20Hz_Daul Band
NMEA	115200	230400	460800	460800

1.5 Set Save config to Flash

Date Field :
$POLCFGSAVE

Packet Type	NMEA Command
Save to Flash	**$POLCFGSAVE**

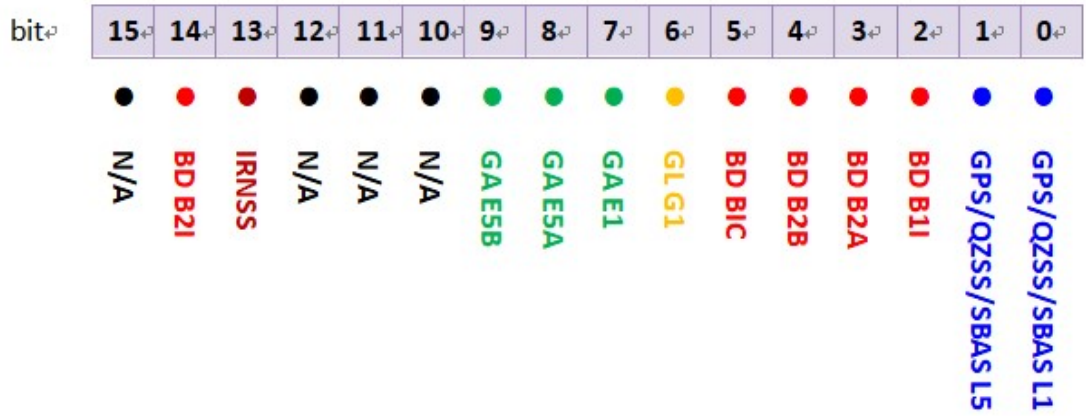
1.6 Set satellites correction

Date Field :
$POLCFGSYS,sysMask

Packet Type	NMEA Command
GPS L1	**$POLCFGSYS,1 or $POLCFGSYS,0001H**
GPS L1+L5	**$POLCFGSYS,3 or $POLCFGSYS,0003H**
BDS B1I	**$POLCFGSYS,4 or $POLCFGSYS,0004H**
BDS B1I+B1C	**$POLCFGSYS,36 or $POLCFGSYS,0024H**
BDS B1I+B2a	**$POLCFGSYS,12 or $POLCFGSYS,000CH**
BDS B1I+B2a+B1c	**$POLCFGSYS,44 or $POLCFGSYS,002CH**
BDS B1I+B2a+B1c+B2I	**$POLCFGSYS,16428 or $POLCFGSYS,402CH**

GLO G1	**$POLCFGSYS,64 or $POLCFGSYS,0040H**
GAL E1	**$POLCFGSYS,128 or $POLCFGSYS,0080H**
GAL E1+E5a	**$POLCFGSYS,384 or $POLCFGSYS,0180H**
GPS L1+L5+IRS_ L5	**$POLCFGSYS,8195 or $POLCFGSYS,2003H**
GPS L1+ BDS B1I+B1C+ GLO G1+ GAL E1	**$POLCFGSYS,229 o r $POLCFGSYS,00E5H**
GPS L1+L5+ BDS B1I+B2a+B1C+ GLO G1+ GAL E1+E5a+ IRS L5	**$POLCFGSYS,8687 或 $POLCFGSYS,21EFH**

Note: Configure the constellation frequency band and wait for 2 seconds to take effect. After it takes effect, it can be permanently valid through the save command.



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1.7 Set RTCM Config

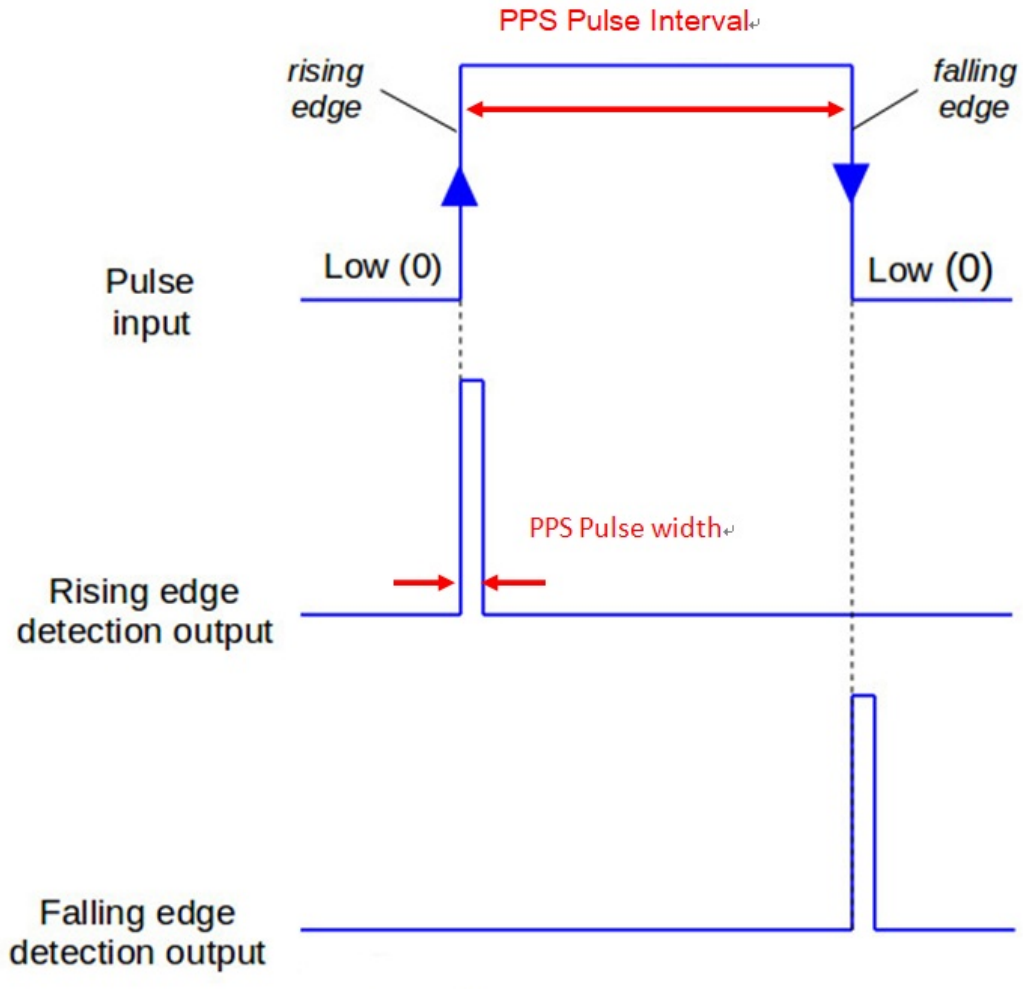
Date Field :
$POLCFGRTCM,msmType,msmRate,ephFlag

Packet Type	NMEA Command
RTCM_MSM7_1HZ_ No Ephemeris	**$POLCFGRTCM,0,1,0**
RTCM_MSM4_1HZ_ No Ephemeris	**$POLCFGRTCM,1,1,0**
RTCM_MSM7_1HZ_ Ephemeris	**$POLCFGRTCM,0,1,1**
RTCM_MSM4_1HZ_ Ephemeris	**$POLCFGRTCM,1,1,1**
Disable RTCM_MSMx_Output	**$POLCFGRTCM,0,0,1 or $POLCFGRTCM,1,0,1**

1.8 Set PPS Config

Date field	$POLCFGSTS,stsMode,pulesMode,outputType,pulesInterval,pulesWidth,cableDelay	
Example	**$POLCFGSTS,1,0,0,1000,10000,0**	
Description	**Effective immediately. After taking effect, you can use the save configuration command to make it permanently valid.** **Save config command " $POLCFGSAVE "**	
Parameter name	**Type**	**Decsription**
StsMde	**uint8**	**sts mode, options:** **0 : Disable** **1 : Normal static mode**
PulseMode	**uint8**	**PPS pulse edge mode, options:** **0 : rising edge** **1 : Falling edge**
outputType	**uint8**	**PPS output mode, options:** **0 : accurate time (3D Fix)** **1 : Always output** **2 : Disabled**

pulesInterval	**uint32**	**PPS pulse interval (unit: ms), configurable range (0 ~100000)**
pulesWidth	**uint32**	**PPS pulse width (unit: us), Configurable range (0~100000000)**
cableDelay	**int16**	**PPS cable delay (unit: ns), General Module set "0" Only Timing Module support**



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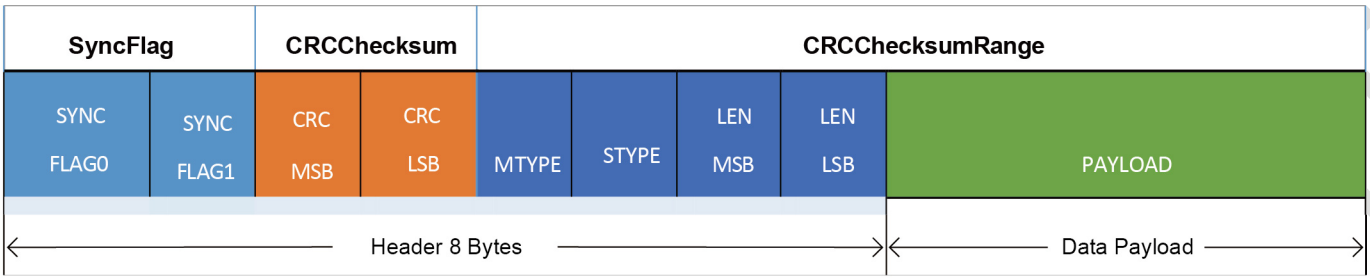
2. Hexadecimal command



Each frame starts with an 8-byte structure header (Header), followed by payload data. The alignment of the frame structure is little endian.

2.1 Query FW Ver

Packet Type	Hex Command
Query FW Ver	**42 4b 68 f8 02 07 00 00**

Ex : Return -- $POLARIS,4166024314D,4*27

2.2 Set Single/Dual Band

Packet Type	Hex Command
Single (L1)	**42 4b e8 85 26 02 00 0c 55 55 00 01 00 00 00 01 00 00 00 01**
Daul (L1+L5)	**42 4b e8 85 26 02 00 0c 55 55 00 01 00 00 00 01 00 00 00 01**

Note :

- After changing the working frequency band configuration, you need to save the configuration to Flash, then power off and restart the chip to take effect.
- Dual frequency to single frequency, the L5 signal will be restricted after restarting. Currently, the single frequency can only work in the L1 frequency band.
- To convert single frequency to dual frequency, you need to configure and add L5 signal yourself.

2.3 Reset command

Packet Type	HEX Command
Cold start	**42 4b 4a 3b 02 0c 00 04 00 00 00 ff**
Warm start	**42 4b 54 cb 02 0c 00 04 00 00 00 00**
Factory Reset	**42 4b 49 c4 02 0c 00 04 00 00 ff ff**

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2.4 Set Fix rate

Packet Type	HEX Command
1Hz	42 4b ac 06 26 02 00 0c 55 55 00 01 00 00 00 03 00 00 00 01
2Hz	42 4b 9c 65 26 02 00 0c 55 55 00 01 00 00 00 03 00 00 00 02
5Hz	42 4b ec 82 26 02 00 0c 55 55 00 01 00 00 00 03 00 00 00 05
10Hz	42 4b 1d 6d 26 02 00 0c 55 55 00 01 00 00 00 03 00 00 00 0a

Note：When setting a high output rate, in order to ensure data stability, it is best to use a higher serial transmission rate.

2.5 Set subsys enable/disable output

Packet Type	HEX Command
Stop output	42 4b da 58 02 01 00 00
Enable output	42 4b ed 68 02 00 00 00

2.6 Set Baudrate

Packet Type	HEX Command
9600	42 4b b3 68 26 02 00 0c 55 55 00 01 00 00 00 04 00 00 25 80
38400	42 4b 69 be 26 02 00 0c 55 55 00 01 00 00 00 04 00 00 96 00
115200	42 4b 9c f5 26 02 00 0c 55 55 00 01 00 00 00 04 00 01 c2 00
230400	42 4b 55 ff 26 02 00 0c 55 55 00 01 00 00 00 04 00 03 84 00
460800	42 4b d7 ca 26 02 00 0c 55 55 00 01 00 00 00 04 00 07 08 00
1000000	42 4b d4 a8 26 02 00 0c 55 55 00 01 00 00 00 04 00 0f 42 40

2.7 Set satellite constellation frequency band

The following commands can turn the satellite signal on or off. For example, sending the first command GPSL1 will turn on the GPSL1 signal based on the existing signal of the system. If GPSL1 is already turned on, it will be ignored.

If you need to configure multiple signal hybrid positioning, you can send the corresponding signal enable command to turn on the signal.

Note: QZSS systems currently use GPS

Packet Type	HEX Command
Enable GPSL1	42 4b 61 83 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 01
Enable GPSL5	42 4b 51 e0 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 02
Enable BDSB1I	42 4b 31 26 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 04
Enable BDSB2A	42 4b f0 aa 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 08
Enable BDSB2B	42 4b 63 93 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 10
Enable BDSB1C	42 4b 55 c0 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 20
Enable GLOG1	42 4b 39 66 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 40
Enable GALE1	42 4b e0 2a 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 00 80
Enable GALE5A	42 4b 42 93 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 01 00
Enable GALE5B	42 4b 17 c0 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 02 00
Enable IRSL5	42 4b 77 44 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 20 00
Enable BD2B2I	42 4b 7c 6e 26 02 00 0c 55 55 00 01 00 00 00 05 00 00 40 00
Disable GPSL1	42 4b 19 14 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 01
Disable GPSL5	42 4b 29 77 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 02
Disable BDSB1I	42 4b 49 b1 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 04
Disable BDSB2A	42 4b 88 3d 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 08
Disable BDSB2B	42 4b 1b 04 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 10
Disable BDSB1C	42 4b 2d 57 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 20
Disable GLOG1	42 4b 41 f1 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 40
Disable GALE1	42 4b 98 bd 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 00 80
Disable GALE5A	42 4b 3a 04 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 01 00
Disable GALE5B	42 4b 6f 57 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 02 00
Disable IRSL5	42 4b 0f d3 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 20 00
Disable BDSB2I	42 4b 04 f9 26 05 00 0c 55 55 00 01 00 00 00 05 00 00 40 00

2.8 Set NMEA sentence Enable /Disable output

The following commands take effect immediately after configuration. After restarting or shutting down, the NMEA sentence output set inside Flash will be returned.

Packet Type	HEX Command
Enable NMEA sentence output HEX command	
Enable GGA	42 4b 85 2c 02 08 00 04 00 00 00 01
Enable GSA	42 4b b5 4f 02 08 00 04 00 00 00 02
Enable GSV	42 4b d5 89 02 08 00 04 00 00 00 04
Enable VTG	42 4b 14 05 02 08 00 04 00 00 00 08
Enable RMC	42 4b b1 6f 02 08 00 04 00 00 00 20
Enable GST	42 4b 96 7e 02 08 00 04 00 00 10 00
Enable GLL	42 4b 93 eb 02 08 00 04 00 00 20 00
Enable ZDA	42 4b d6 6e 02 08 00 04 00 10 00 00
Disable NMEA sentence output HEX command	
Diasble GGA	42 4b e5 cf 02 0a 00 04 00 00 00 01
Diasble GSA	42 4b d5 ac 02 0a 00 04 00 00 00 02
Diasble GSV	42 4b b5 6a 02 0a 00 04 00 00 00 04
Diasble VTG	42 4b 74 e6 02 0a 00 04 00 00 00 08
Diasble RMC	42 4b d1 8c 02 0a 00 04 00 00 00 20
Diasble GST	42 4b f6 9d 02 0a 00 04 00 00 10 00
Diasble GLL	42 4b f3 08 02 0a 00 04 00 00 20 00
Disable ZDA	42 4b b6 8d 02 0a 00 04 00 10 00 00

2.9 Save config

Packet Type	HEX Command
Save to Flash	42 4b cc 17 26 04 00 00

2.10 Set NMEA Postion Decimal Precision

This command is for setting the digits shown in the NMEA position.

Packet Type	HEX Command
Lat / Long in 4 digits	42 4b 7c fa 26 02 00 0c 55 00 24 44 00 00 00 3a 00 00 00 04
Lat / Long in 5 digits	42 4b 6c db 26 02 00 0c 55 00 24 44 00 00 00 3a 00 00 00 05

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Lat / Long in 6 digits	42 4b 5c b8 26 02 00 0c 55 00 24 44 00 00 00 3a 00 00 00 06
Lat / Long in 7 digits	42 4b 4c 99 26 02 00 0c 55 00 24 44 00 00 00 3a 00 00 00 07
Altitude in 1 digits	42 4b d9 7c 26 02 00 0c 55 00 24 44 00 00 00 51 00 00 00 01
Altitude in 2 digits	42 4b e9 1f 26 02 00 0c 55 00 24 44 00 00 00 51 00 00 00 02
Altitude in 3 digits	42 4b f9 3e 26 02 00 0c 55 00 24 44 00 00 00 51 00 00 00 03
Altitude in 4 digits	42 4b 89 d9 26 02 00 0c 55 00 24 44 00 00 00 51 00 00 00 04

2.11 Set NMEA UTC/DOP/Speed Decimal Precision

This command is for setting the digits shown in the NMEA

Packet Type	HEX Command
UTC in 2 digits	42 4b 07 cd 26 02 00 0c 55 00 24 44 00 00 00 52 00 00 00 02
UTC in 3 digits	42 4b 17 ec 26 02 00 0c 55 00 24 44 00 00 00 52 00 00 00 03
DOP in 1 digits	42 4b 9d ff 26 02 00 0c 55 00 24 44 00 00 00 53 00 00 00 01
DOP in 2digits	42 4b ad 9c 26 02 00 0c 55 00 24 44 00 00 00 53 00 00 00 02
Speed in 1 digits	42 4b fa 2b 26 02 00 0c 55 00 24 44 00 00 00 54 00 00 00 01
Speed in 2 digits	42 4b ca 48 26 02 00 0c 55 00 24 44 00 00 00 54 00 00 00 02
Speed in 3 digits	42 4b da 69 26 02 00 0c 55 00 24 44 00 00 00 54 00 00 00 03

2.12 Set RTCM MSM type

Packet Type	Hex Command
MSM7	42 4b 56 af 26 02 00 0c 55 55 00 01 00 00 00 10 00 00 00 00
MSM4	42 4b 46 8e 26 02 00 0c 55 55 00 01 00 00 00 10 00 00 00 01

2.13 Set RTCM Message output

Packet Type	Hex Command
All Disable	42 4b 4f b5 26 02 00 0c 55 00 23 71 00 00 00 31 00 00 00 00
MEAS	42 4b 5f 94 26 02 00 0c 55 00 23 71 00 00 00 31 00 00 00 01
EPH	42 4b 6f f7 26 02 00 0c 55 00 23 71 00 00 00 31 00 00 00 02
MEAS + EPH	42 4b 7f d6 26 02 00 0c 55 00 23 71 00 00 00 31 00 00 00 03

Note: Default MSM7 message

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2.14 Enable other SBAS search mode

Packet Type	HEX Command
Enable other SBAS	**42 4b f9 1e 26 02 00 0c 55 00 24 71 00 00 00 30 00 00 00 00**

Note: BK-1612-1N default only support GAGAN , can use this command to enable other SBAS

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886-2-8698-3699
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3. Document change list

Revision 1.0

- Release on May 17,2024

Revision 1.1 (August 8, 2024)

- Add : PPS config set command
- Modify : Set NMEA sentence All Enable /All Disable command

Revision 1.2 (January 7, 2025)

- Add : RTCM output command
- Modify : 2.11 DOP decimal command
- Add : Enable all SBAS (only BK-1612-1N)
- Add : POLANT status