

M600 GNSS Receiver Quick Tour



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Chapter 1 M600 package list

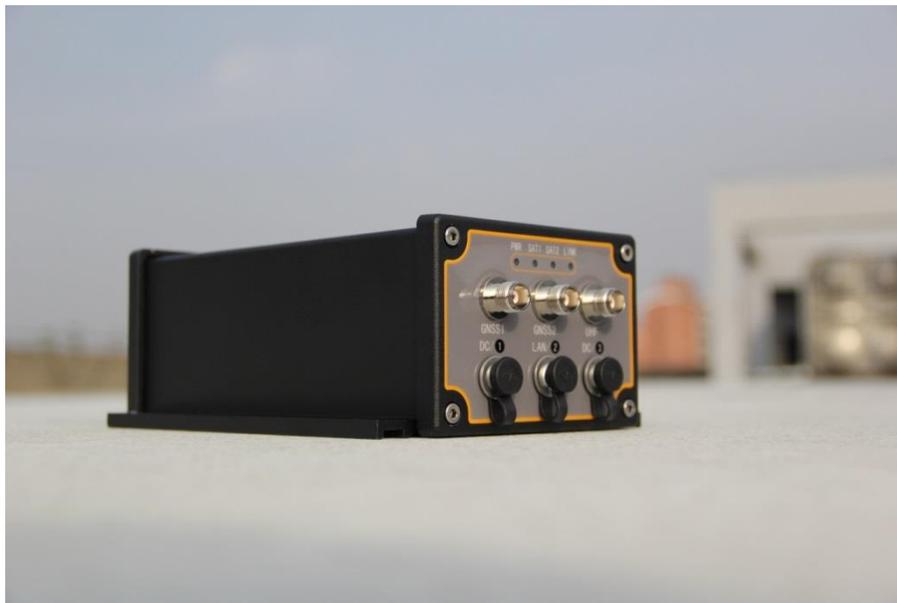
1.1 package list

Thanks for choosing ComNav M600, after you receive the goods, please check the package list as follows.

Raw.	Name	No.	Index
1	Enclosure receive	1	
2	A/C adapter	1	
3	Data cable	1	From PC to receiver, RS232 to 7 pin cable
4	GNSS antenna	2	
5	GNSS antenna cable	2	
6	Radio antenna	1	Some special application cases, special antenna supplied

1.2 M600 enclosure receiver introduction

M600 receiver; with 2 GNSS cards inside (Moving baseline function), integrates with radio data link, which is mainly used in unmanned auto driving system, vehicle monitor to measure the attitude and heading,



M600 GNSS receiver

2.1 front panel introduction

M600 receiver



Ref. # Description

① 4LED, indicates the work status of Receiver.

a; Power indicator; after power on, this LED will light in red colour

b; satellites indicator(GNSS 1), it will flash several times every 5 seconds, which means how many satellites locked by receiver.

c; satellites indicator(GNSS 2), as same meaning as GNSS1.

d; correction message, As base station, if flash 1/s means sending correction message; as Rover means receiving correction 1/s message; in the raw data recording mode(data recorded in the memory of receiver), this led also will flash according to Sampling interval.

② TNC GNSS antenna connector.

③ TNC UHF antenna connector.

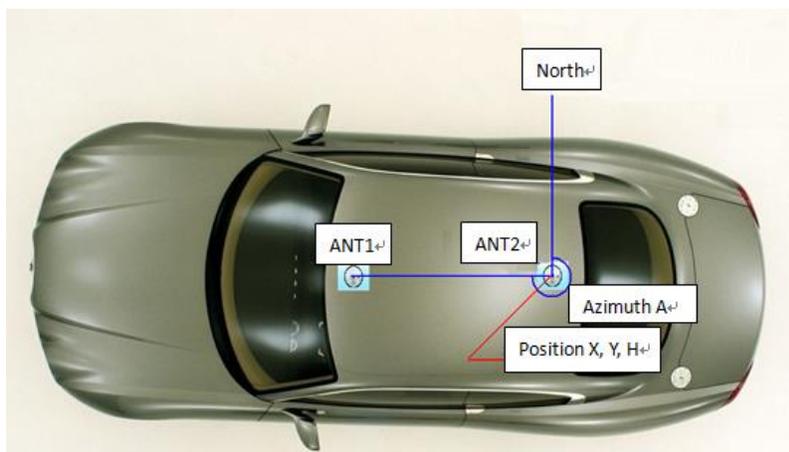
④ DC 1, serial port communication with OEM card. Appendix A the Pin definition of this port

⑤ DC3, serial port communication with internal UHF and OEM card.

2.2 Antenna installation

The Installation of GNSS antenna is a very important factor to effect the preference of Receiver, it will have big influence on visible satellite and SNR, be sure to fix antenna in open area and be far from big power electromagnetic radiation device.

Two antennas can be installed to M600, 1 is connected to the master station, and the other is connected to slave master; for attitude survey, please install the two antennas in the right position, see the figure below.

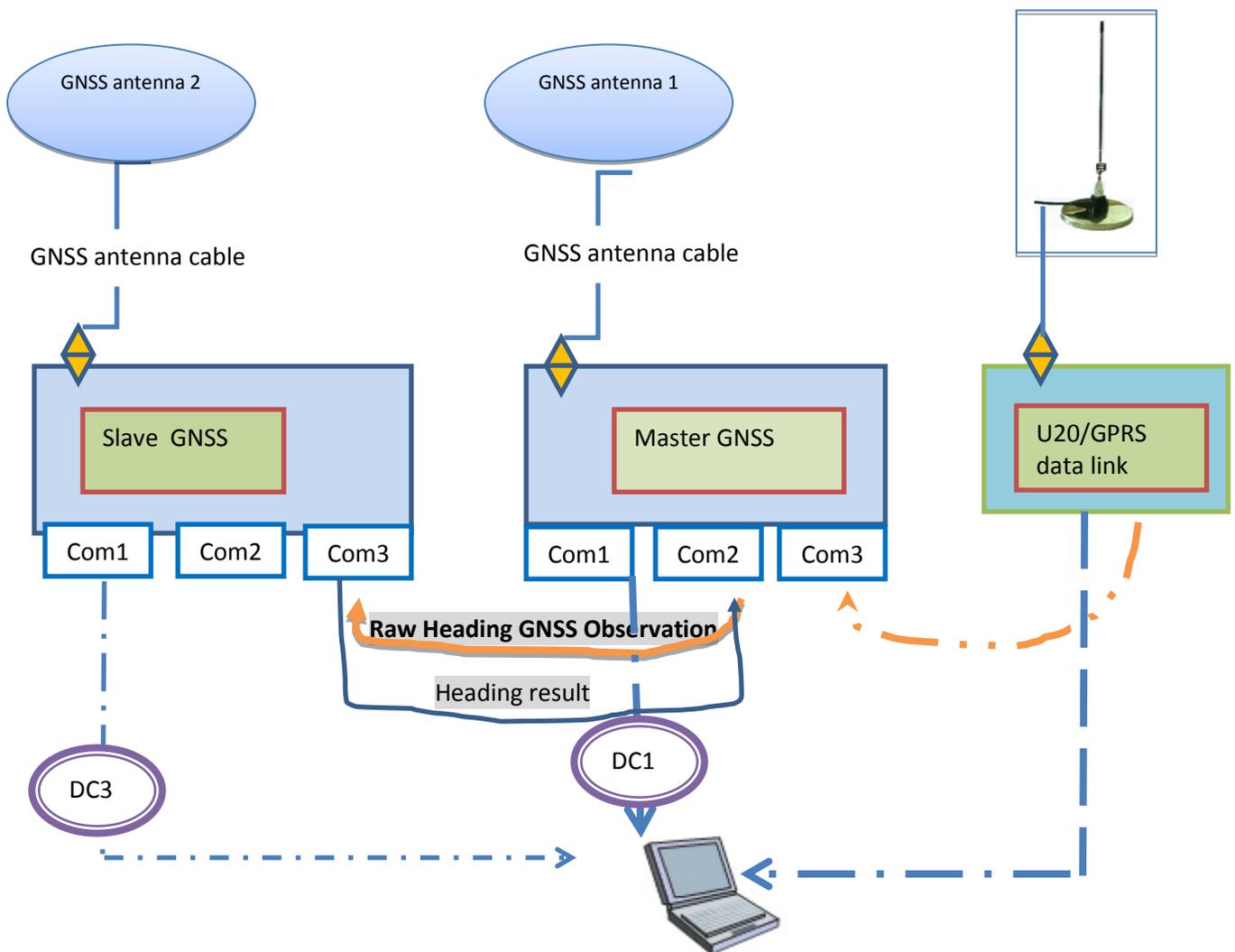


3 Set up data output

This chapter will focus on how to setup the receiver and use ASCII command to set receiver output heading and position message.

3.1 internal data communication of M600 receivers

See the below graphical representation;



Ref description;

- 1 Slave com1 is connected to DC/3 , all the commands sent to slave must use DC/3 port

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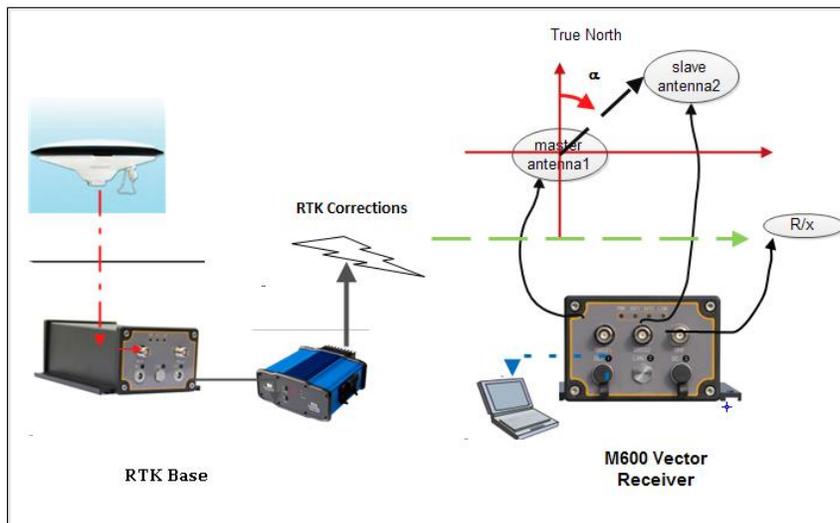
- ② Slave com3 is used for internal communication to master board, Slave COM3 is used to receive the raw rtm compass binary data and make the calculation, then transmit the calculation report to master board.
- ③ Master com1 is connected to DC/1, all the commands sent to master must use DC/1 port, also the most important function of this port---output the information to PC by using this port, such as GPGGA, Heading information.
- ④ Master com2 is for internal communication to slave board, master COM2 is used to send the raw rtm compass binary data to slave board and receive the result.
- ⑤ Master Com3 is used to receive the correction message for U20/GPRS data link.
- ⑥ U20 com1 is connected to DC/3, any setup such as Frequency and Protocol need to use DC/3.

3.2 M600 Frequently Used ASCII Command

Tips;

1. All the commands should be sent to receiver, do not distinguish between letter case; Such as; Log version=LOG VERSION.
2. After inputting every command, press Enter button to change line and input another command.
3. For detailed command information, please read [ComNav OEM CARD REFERENCE MANUAL](#).
4. The default band rate of serial port of OEM is 115200bps, so when sending command to DC/1 or DC3 please set the band rate to 115200.
5. U20 radio modular, the air link band rate is 9600bps (fixed and cannot changeable) and the serial port band rate is 115200bps(data output to Master board).

System schematic diagram



3.2.1 RTK base configuration

For Base station, we can call static Base station, which is fixed on the ground, the function of RTK base function is sending RTK correction message to M600.

Here use M300 as Base station, the following is ASCII command to configure the M300; M300 is fixed on unknown point,

```
Log bestposaontime 1          \ask for the current coordinates\
```

Reply;

```
#BESTPOSA,COM1,0,60.0,FINESTEERING,1728,439514.900,00000000,0000,1114;SOL_COM  
PUTED,SINGLE,31.17424185363,119.38763111459,50.2311,0.0000,WGS84,0.2436,0.7712,1.06  
11,"0000",99.000,1.000,19,19,19,19,0,0,0,0*55c94c5c
```

The Green, yellow and blue colour are the WGS84 coordinates of Base station, use this value as the Base station coordinate and start base station; use PC link with DC/1, Send the following command

Unlogall

```
Com com3 38400\serial interface bandrate as 38400 bps\  
Fix position 31.17424185363 119.38763111459 50.2311  
Log com3 rtm1004b ontime 1  
Log com3 rtm1005b ontime 5  
Log com3 rtm1104b ontime 1  
Saveconfig
```

After station Base station, using external Radio (PDL) to connect with DC/3 port of M300

3.2.2 M600 configuration

- ❖ Use PC link with DC/1 to configure the Master OEM board

```
unlogall  
fix none  
log com2 rtmcompassbontime 0.2          \log rtmcompassb 5HZ\  
interfacemode com2 auto auto on  
interfacemode com3 auto auto on  
log com1 gpgaontime 0.2 \GPGGA 5HZ\  
log com1 gptraontime 0.2  
log com1 gpvtgontime 0.2  
saveconfig
```

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There are 3 kinds of heading information, GPHTD(a), heading a and GPTRA, all those information output frequency is dictated by the output frequency of the master receiver sending out RTCMCOMPASSB messages. For the M600 supports 20 Hz output rate.

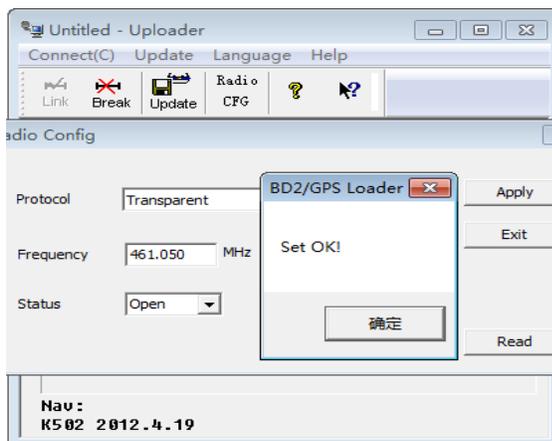
The definition of GPHTD and Headinga is compatible with other main brands(Trimble and Novatel), the GPTRA is the unique message defined by ComNav, for detailed explanation of GPTRA please see Appendix B.

- ❖ Use PC link with DC/3 to configure the slave OEM board

```
unlogall
interfacemode com3 auto auto on
rtkrefmode 1
setdiffmatchmode synch
log com3 rtkcompass3bontime 0.2
saveconfig
```

- ❖ Using PC link with DC/3 to configure the U20

Open V1.06d_radio.exe, go to Radi CFG, set the frequency and Protocol, status on(same as PDL radio) . After setting up successfully, please check the link LED flash.



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Appendix A

7 Pin definition of M600.

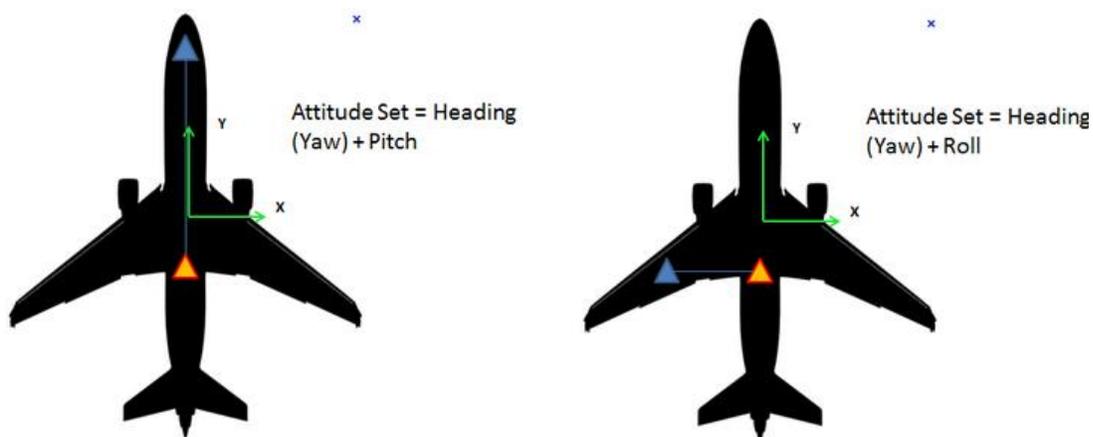


7 pin Lemo	Description
1	Signal GND
2	GND
3	TX data out (TXD)
4	NONE
5	NONE
6	Power In (+)
7	Serial data in (RXD)

Appendix B

GPTRA is the unique format of heading information defined by ComNav

To define the attitude of vehicle, three angles are needed, heading, Pitch and Roll; see the picture below.



Recommended Input:



LOG GPTRA ONTIME 1

ASCII Example:

\$GPTRA,hhmmss.ss,hhh.hh,ppp.pp,rrr.rr,q,n,dd.dd,xxxx*CC<CR><LF>

Field#	Field Type	Data Description	Symbol	example
1	\$GPTRA	GPTRA header		\$GPTRA
2	UTC	UTC time	hhmmss.ss	104252.00
3	Heading	Heading in degrees (0 to 360.0 degrees)	hhh.hh	044.56
4	pitch	Pitch (90 degrees)	ppp.pp	-09.74
5	roll	Roll (90 degrees)	rrr.rr	0
6	QF	Solution status, 1; autonomous mode 4; RTK FIX 5; RTK float	q	4
7	Sat NO.	Number of satellites in solution	n	20
8	Age		dd.dd	
9	STN ID	Station ID string	xxxx	4
10	*XX	Checksum	*hh	
11	[CR][LF]	End		[CR][LF]

Last review by Simon 2014.01.14

Any feedback please send email to Support@comnavtech.com