司南导航

Product Specification / 产品规范

M100 GNSS Receiver

M100 接收机

2020-01-02

REVISION HISTORY / 修订历史

REVISION / 版本	MODIFICATION / 更改	DATE / 日期
1.0	New Release / 新发	2019-03-15
1.1	修改为 K727 板卡参数，调整 20pin 针脚定义	2019-09-27
1.2	板卡参数进行调整	2020-01-02

TABLE OF CONTENTS

FIGURE & TABLE 图表

I. INTRODUCTION / 简介

M100 is a new generation of high-precision GNSS receiver independently developed by ComNav Technology Ltd for UAV and high-precision vehicle-mounted positioning applications. It supports mainstream global satellite navigation systems including Beidou satellite navigation system, and can realize positioning and orientation functions by itself. Compact structure design, can meet the installation requirements of various carriers.

M100 是上海司南卫星导航技术股份有限公司针对无人机及高精度车载定位应用自主研发的新一代高精度 GNSS 接收机，支持包括北斗卫星导航系统在内的主流全球卫星导航系统，可单机实现定位及定向功能。小巧的结构设计，能够满足各种载体的安装要求。

II. SPECIFICATION OF M100 /M100 技术规范

Following table presents the detailed specification of ComNav M100 GNSS Receiver.

下表中为司南 M100 的详细规范。

Table 1. M100 Receiver Specification

M100 RECEIVER SPECIFICATION/ M100 接收机规范		
GNSS Signals **GNSS 信号**	Positioning 定位	GPS L1, L2
		BDS B1, B2
		GLONASS L1, L2
	Orientation 定向	GPS L1, L2
		BDS B1, B2
		GLONASS L1, L2
Time to First Fix **首次定位时间**	Cold Start 冷启动	< 50s
	Hot Start (with RTC) 热启动（使用 RTC）	< 15s
Reacquisition	< 1.5s (Fast mode)（快速）	

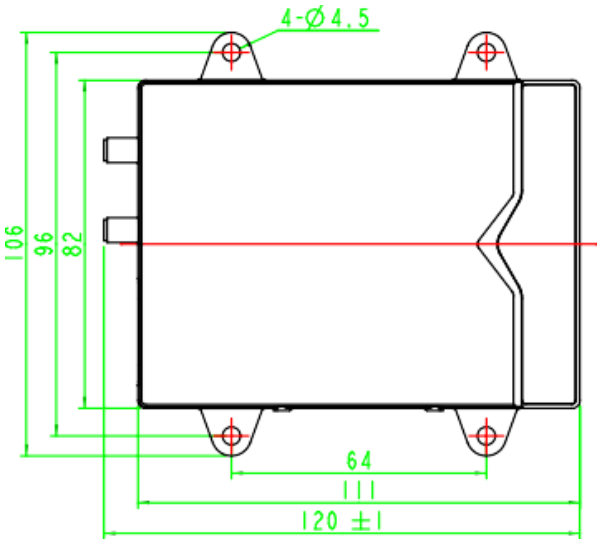
M100 RECEIVER SPECIFICATION/ M100 接收机规范		
信号重捕	<3s (normal mode)（普通）	
Accuracy 精度	Pseudorange Precision 伪距精度	GPS: L1=10cm, L2=10cm BDS: B1=10cm, B2=10cm GLONASS: L1=10cm, L2=10cm
	Carrier Phase Precision 载波相位精度	≤0.005C，(c 为各频点的波长，单位：m)
	Time Accuracy 授时精度	20ns
	SPP Accuracy 标准单点定位精度	single-frequency 单频: H≤3m, V≤5m (1σ, PDOP≤4) dual-frequency 双频: H≤1.5m, V≤3m (1σ, PDOP≤4)
Attitude Accuracy 测姿精度	Azimuth Accuracy (dual-board) 方位角精度	(0.2/R)°, R is baseline length in meter. R 为基线距离，单位为米
	Roll or Pitch Accuracy (dual-board) 横滚或俯仰角	(0.4/R)°, R is baseline length in meter. R 为基线距离，单位为米
RTK	RTK Initiation time RTK 初始化时间	< 10s（baseline<10km，基线长小于 10km）
	Initiation Reliability 初始化置信度	> 99.9%
	Dynamic Differential Accuracy 动态差分精度	H: $\pm(8+10^{-6}\times D)$mm V: $\pm(15+10^{-6}\times D)$mm
Data Rates 数据速率	Measurements & Position & Heading 测量&定位&定向	1Hz, 2Hz, 5Hz, 10Hz, 20Hz（可选配）
Electrical 电气特性	Voltage 供电电压	5V~27VDC
	Power Consumption (no antenna connected) 功耗(未接天线)	＜3W

M100 RECEIVER SPECIFICATION/ M100 接收机规范		
Environmental **环境要求**	Operating Temperature 工作温度	-40℃ — +70℃
	Storage Temperature 储存温度	-50℃ — +80℃
Data Formats **输出数据格式**	NMEA-0183	GPGGA, GPGGARTK, GPGSV, GPGLL, GPGSA, GPGST, GPHDT, GPRMC, GPVTG, GPZDA etc.
	BINEX	0x00, 0x01-01, 0x01-02, 0x01-05, 0x7d-00, 0x7e-00, 0x7f-05
	ComNav Binary 司南二进制格式	ComNav Self-Defined 司南自定义
	CMR (GPS)	CMROBS, CMRREF
	RTCM2.X	RTCM1, RTCM3, RTCM9, RTCM1819, RTCM31
	RTCM3.0	1004, 1005, 1006, 1007, 1008, 1012, 1104, 1033
	RTCM3.2	MSM4&MSM5 1074,1084,1124,1075,1085,1125
Antenna Interface **天线接口**	SMA	2 GNSS antenna RF interface 2 个 GNSS 天线射频接口
Communication Mode & Interface **通讯模式及接口**	20pin 数据接口 20 pin data interface	
Physical **物理参数**	Size 尺寸	120mm×106mm×24.9mm with connectors（含接头）
	Weight 重量	About 173g 约 173g

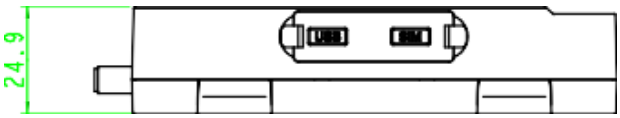
III. DIMENSION / 尺寸

In this section, three-side views and the dimension of M100 are provided for customers' further hardware design and installation.

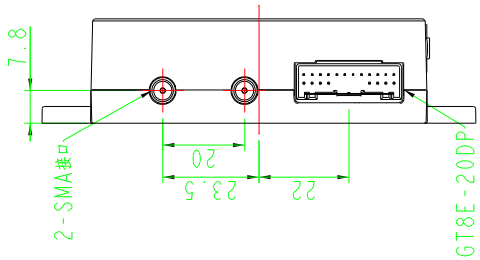
本节提供了 M100 的前面板、后面板及整机的视图和对应的物理尺寸，便于用户的进一步系统硬件设计和安装。



Top View/顶视图



SideView/侧视图



Front View/主视图

Figure 1. M100 Dimension View

图 1. M100 三视图

IV. PHYSICAL INTERFACE DEFINITION / 硬件接口定义

Physical Interface definitions of M100 are listed infollowing tables and figures.

本部分的各图表详细定义了 M100 的硬件接口。

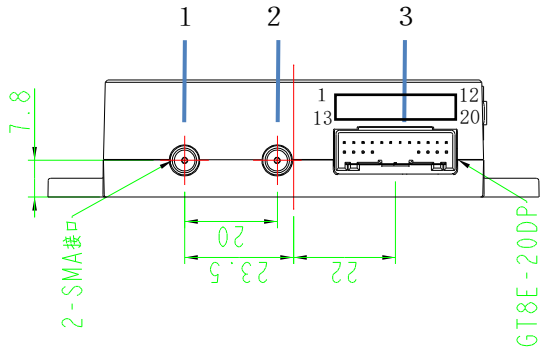


Figure 2. M100 Front Panel

图 2. M100 前面板

Table 2. Physical interface Definition of M100 Front Panel

NO	NAME	TYPE	DESCRIPTION	
1	GNSS 1	Input	Antenna connector 1	天线接口 1
2	GNSS 2	Input	Antenna connector 2	天线接口 2
3	20pin	I/O	20 pin data interface	20pin 数据接口

Table 3. Physical interface Definition of 20 pin data interface

NO	NAME	TYPE	DESCRIPTION	
1	VCC(12V+)	PWR	Power Input	电源输入
2	预留	NA		预留
3	GND	PWR	Power GND	电源 GND
4	预留	NA		预留
5	预留	NA		预留
6	COM1_TX	O	RS232 Output	RS232 输出

NO	NAME	TYPE	DESCRIPTION	
7	COM1_RX	I	RS232 Input	RS232 输入
8	CAN_P	IO	CAN P	CAN P 信号
9	CAN_N	IO	CAN N	CAN N 信号
10	GND	PWR	Signal GND	信号 GND
11	预留	NA		预留
12	预留	NA		预留
13	预留	NA		预留
14	EVENT1	I	EVENT1	
15	预留	NA		预留
16	PPS	O	Second Pulse Output	秒脉冲输出
17	COM3_TX	O	RS232 Output	RS232 输出
18	COM3_RX	I	RS232 Input	RS232 输入
19	预留	NA		预留
20	USB_BOOT		Usb_Boot	

V. APPLICATION CONNECTION EXAMPLE / 应用连接示例

In this section, two application connection examples of M100 Receiver are presented in following diagrams. Per the instruction of these diagrams, you could easily build communication connections between receivers and other terminals such as PC, GNSS antenna or radio antenna, and so on.

本部分提供了 M100 接收机的应用连接示例。参照下面的图示，您可以很快速建立接收机和其他终端（如 PC, GNSS 天线和服务器等）之间的通讯连接。

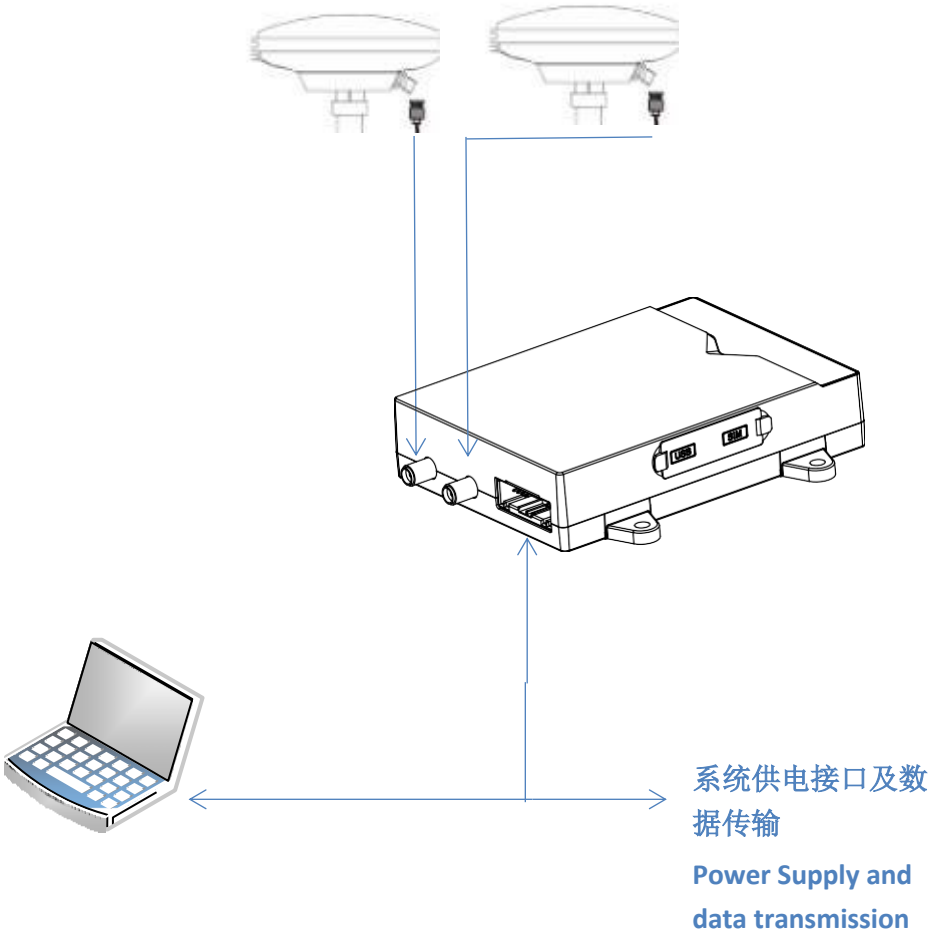


Figure 3. M100 Application Connecter

图 3. M100 应用连接