#12023

Nano Ublox M8 5883

PRODUCT SPECIFICATION & Data Sheet

V1.0

Contents

1 Functional description

1.1 Overview

Featuring a single die solution, low power consumption and low costs, the Nano Ublox M8 5883_L are multi-GNSS (GPS BDS , GLONASS ,SBAS and QZSS) positioning Module developed to meet the requirements of an extensive range of applications and end-products. Based on the high performance UBX-M8030 position engine ,these receivers provide exceptional sensitivity and acquisition times and interference suppression measures enable reliable positioning even in difficult signal conditions.

1.2 Product Features

- UBX-M8030 high performance GPS/GNSS Chips:

- Over 2 million effective correlators

- 72 channels in Search mode

- Cold start acquisition sensitivity of -148 dBm and -167 dBm tracking sensitivity

- Up to 10 Hz navigation update rate

- Supports GPS, QZSS, GLONASS , BDS and is ready for Galileo

- Supports AGPS

- Integrated TCXO,LNA,SAW,RTC

- Compact size (φ23.88mm x19.98mmx8.80mm±0.5mm) suitable for space-sensitive application

- Weight 7.8 grams without TPU Protective Case Shell

- Support standard NMEA 0183,UBX

- This module is equipped with QMC5883 compass

1.3 Performance

Parameter	Specification		
Receiver type	■GPS L1 C/A	■SBAS L1 C/A	■QZSS L1 C/A
	■GLONASS L1OF	■BDS B1	■Galileo E1B/C[2]
Sensitivity	Tracking & Navigation:	-167dBm	
	Reacquisition:	-163dBm	
	Cold Start:	-148dBm	
Time-To-First-Fix[1]	Cold Start	29 s	
	Warm Start	28 s	
	Hot Start	1 s	
Horizontal Position accuracy[2]	Autonomous	2.5 m	
	SBAS	2.0 m	
Accuracy of time pulse signal	RMS	30 ns	
Velocity accuracy	0.1 m/s		
Operational limits[3]	Dynamics	$\leq$ 4 g	
	Altitude	50000 m	
	Velocity	500 m/s	
Frequency of time pulse signal	1Hz		
Baud Rate	9,600 bps (Default)		
Max navigation update rate	10Hz (Default 1Hz)		

☛[1] All satellites at -130 dBm

☛[2] CEP, 50%, 24 hours static, -130 dBm, > 6 SVs

☛[3] Assuming Airborne < 4g platform

1.4 Protocols

Protocol	Type
NMEA 0183	Input/output, ASCII
UBX	Input/output, binary, u-blox proprietary

1.5 Antenna

The Nano Ublox M8 5883 module was designed for use with passive and active antennas. According to the actual need to choose any one antenna.
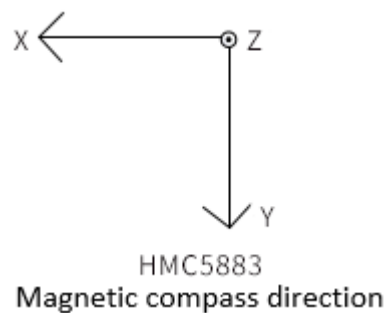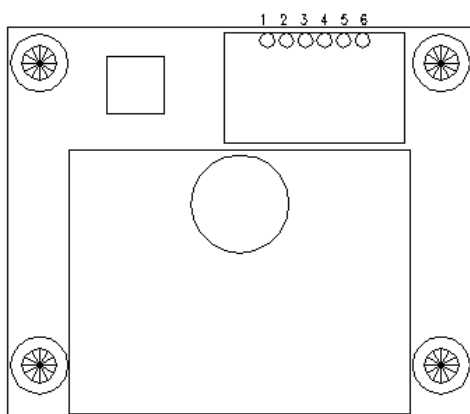
Parameter	Specification
Passive Antenna Type	φ=18 *4mm (Default)

1.6 Product Application

- UAV
- Automotive application
- Precision agriculture
- AVL and Location-Based services
- Marine navigation, fleet management
- Handheld GPS receiver application
- Intelligent logistics scheduling

- Measurement of surveying and mapping
- Personnel protective
- Driving test
- Ideal for PDA, pocket PC
- Car navigation and tracking
- Geographic surveying
- Intelligent robot

2 Pin definition

2.1 Pin Assignment

HMC5883
Magnetic compass direction

No.	Name	I/O	Description
1	SCL	I/O	I2C Clock (keep open if not used)
2	VCC	P	Main Supply
3	RXD	I	Serial Port (keep open if not used)
4	TXD	O	Serial Port (keep open if not used)
5	GND	G	Ground
6	SDA	I/O	I2C Data (keep open if not used)

3 Electrical Specification

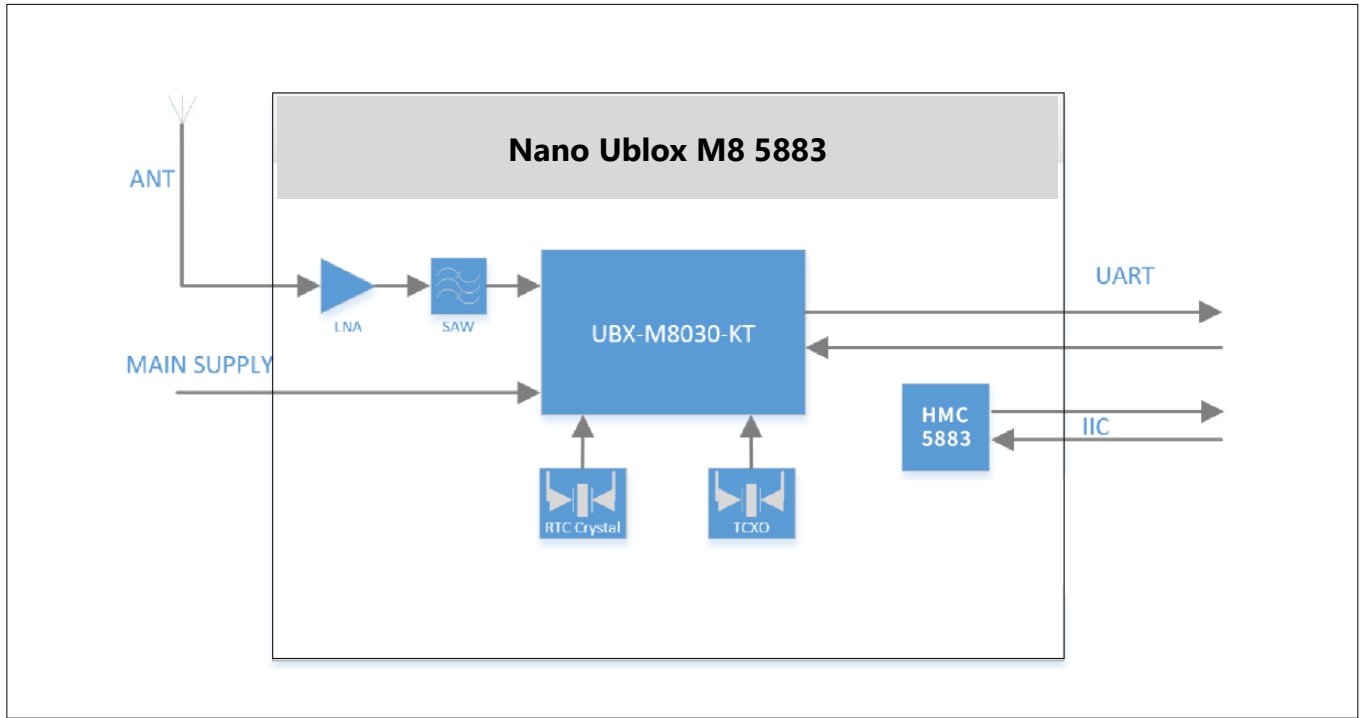| Parameter	Symbol	Min	Typ	Max	Units
Power supply voltage routine	VCC	3.3	5	5	V
Average supply current routine	Acquisition	66@5.0V	69@5.0V	72@5.0V	mA
	Tracking	62@5.0V	66@5.0V	68@5.0V	mA
Backup battery			0.07		F
Digital IO voltage	Div	2.26		3.18	V
Storage temperature	Tstg	-40		85	°C
Operating temperature	Topr	-40		85	°C
Humidity				95	%

4 Mechanical Specification
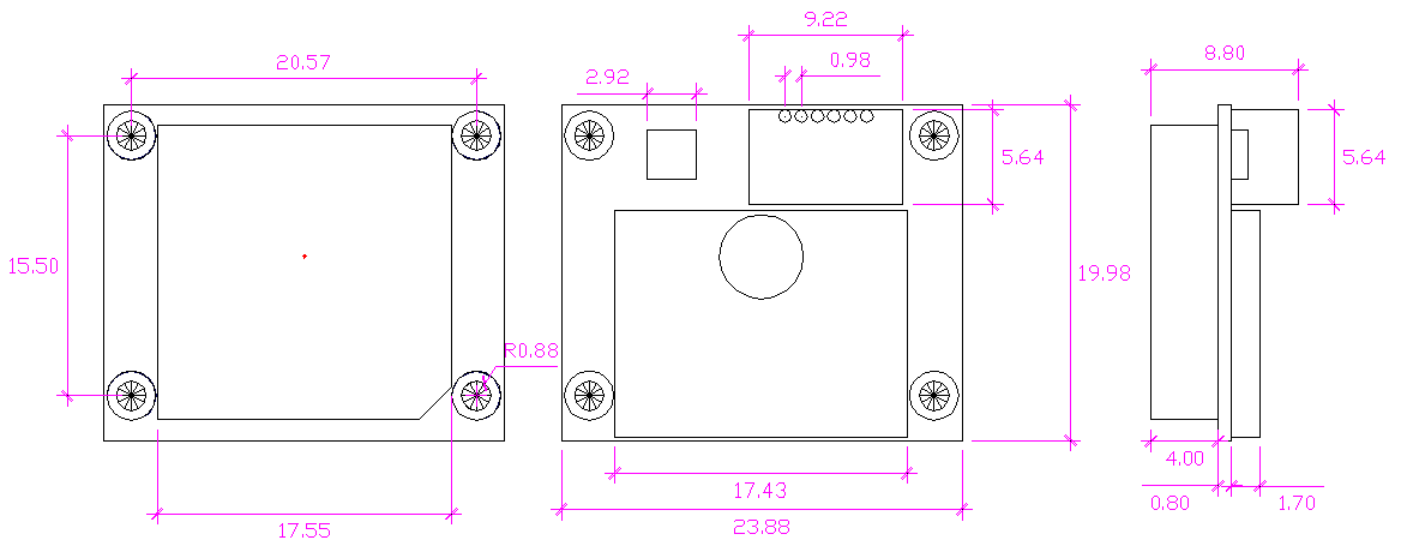
5 Interface configuration selection

5.1.1 Nano Ublox M8 5883

Block Diagram

Application Circuit