

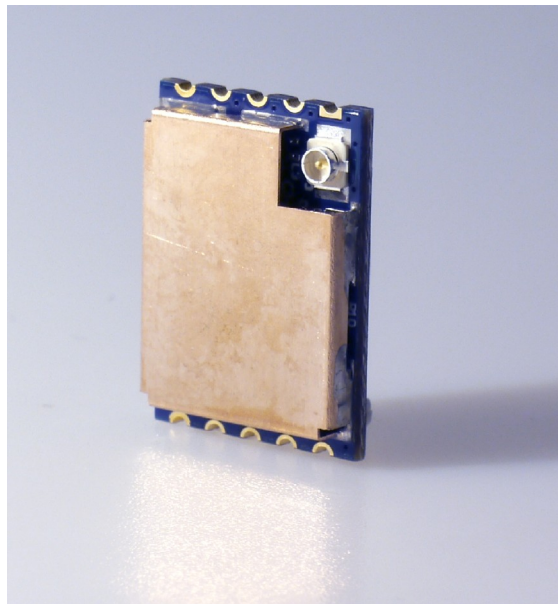


HYPERION TECHNOLOGIES

HT-GPS200.20

HT-GPS200.20 GNSS RECEIVER

DATASHEET REV. 3, August 2018



CONFIDENTIAL

NOTE THAT THE PRODUCT IS EXPORT RESTRICTED, AND REQUIRES AN EXPORT LICENCE ON A CASE-BY CASE BASIS. THIS DOCUMENT IS ALSO PART OF THE EXPORT-SENSITIVE SEGMENT, AND IS THEREFORE HIGHLY CONFIDENTIAL AND IS NOT TO BE SHARED WITH THIRD PARTIES.

DESCRIPTION

The GPS200.20 GNSS receiver is a low mass, low power GNSS receiver for use in (small) satellites. It is designed specifically for use in CubeSat platforms, and they can also be used the iADCS-series of attitude determination and control systems as well as the iACS series of attitude control systems.

It offers a multi-constellation output, and the standard version is delivered with a TTL UART output. It is designed to work either with active or passive antennas (to be defined at the time of ordering) and outputs NMEA compatible data as standard output.

It is possible to qualify and ruggedize the units for use in larger satellites as well, please contact Hyperion in case this is of interest.

HIGHLIGHTS

Multi-constellation receiver

Tracking rate: 20 Hz

Time-to-first-fix: < 90s

TLL UART interface¹

Radiation tolerance: >36 kRad

Low mass: 3 gram

Low power: < 150 mW

Small dimensions: 20 x 15 x 3 mm

¹ Other options available on request

SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

Absolute maximum ratings		
Electrical		
Maximum supply voltage	-0.3 – 3.5	V
Bus voltage level	-0.3 – 3.5	V
Environmental		
Operating temperature range	-40°C - +85°C	
Maximum acceleration load	14 (TBC)	X-axis, g _{RMS}
	14 (TBC)	Y-axis, g _{RMS}
	14 (TBC)	Z-axis, g _{RMS}

KEY SPECIFICATIONS

Key specifications		
GNSS constellations tracked	GPS, BAIDU	
Update rate	20	Hz
Accuracy, position	< 8	m
Accuracy, speed	<TBD>	m/s
Mass	3	g
Power consumption	<150	mW

ELECTRICAL SPECIFICATIONS

Electrical specifications				
Supply voltage				
	Min.	Typ.	Max.	
Supply voltage	3.25	3.3	3.5	V
Power and current consumption ²				
	Min.	Typ.	Max.	
Acquisition		40	160	mA
Tracking	<TBD>	<TBD>	<TBD>	mA
Backup power	-	-	165	µW
TTL UART specifications				
Nominal baudrate	9600	Bps		

² Measurements taken at $V_{supply} = 3.3V$, under atmospheric conditions.

NMEA PROTOCOL DESCRIPTION

The default protocol used by the receiver is NMEA-0183, at a speed of 9600 Baud with 8 databits, no parity bits, and one stop bit.

NMEA MESSAGE SHAPE

The messages are shaped according to the NMEA-0183 standard, which is structured as follows:

Character	HEX value	Description
\$	0x24	Start of message
aacc		Address field. 'aa' identifies the receiver type (GPS, BAIDU or GLONASS), and 'ccc' the sentence type
,	0x2c	Field delimiter
c-c		Data sentence block
*	0x2a	Checksum delimiter
Hh		Checksum field
\r\n	0x0d0a	End of message

SUPPORTED NMEA MESSAGES

The messages types available are:

Message identifier	Description
\$GPGGA	Time, position, and fix related data of the receiver.
\$GPGLL	Position, time and fix status
\$GPGSA	Used to represent the ID's of satellites which are used for position fix. When GPS satellites are used for the position fix, the \$GPGSA sentence is output, for GLONASS \$GNGSA will be sent.
\$GPGSV	Satellite information about elevation, azimuth and CNR. \$GPGSV is used for GPS satellites.
\$GPRMC	Time, date, position, course and speed data.
\$GPVTG	Course and speed relative to the ground
\$GPZDA	UTC, day, month and year and time zone

INTERFACE AND PIN-OUT

TTL UART

The default connection for the GPS200.20 is a TTL UART compatible interface, at a nominal voltage of 3.3V.

PINOUT

The default version has the following pin-out:

Pin number	Function	Description
1	VCC	3.3V supply input
2	VCC_ANT	3.3V supply for active antennas
3	nRESET	Reset pin (can be left floating, as it is pulled up internally)
4	VBACKUP	3.3V supply, used to keep ephemeris data when powered down. Should always be powered when VCC is present. Consumption on this pin is in the microampere range.
5	GND	
6	GND	
7	1PPS	1 PPS signal output
8	RXD	
9	TXD	
10	N/C	Do not connect.

MECHANICAL CHARACTERISTICS

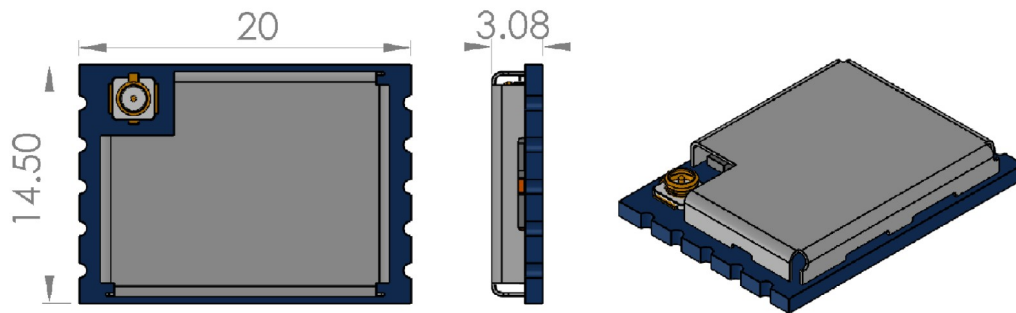


Figure 1. Dimensions of the GNSS200. All dimensions are in mm

ORDERING NUMBERS

The HT-GPS200.20 can be ordered with the following options:

ORDER NUMBER	ANTENNA CONFIGURATION
HT-GPS200.20A	For use with active antennas
HT-GPS200.20P	For use with passive antennas

Note that the product is export restricted, and will require an export licence on a case-by case basis. This document is also part of the export-sensitive segment, and is therefore highly confidential.

DOCUMENT REVISION HISTORY

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
1	08/2016	Initial release	All
2	08/2018	Updated specifications	All
3	08/2018	Implemented mechanical characteristics	7

For pricing, delivery, and ordering information, please contact Hyperion Technologies B.V. at +31-6-53699502, or visit Hyperion Technologies' website at www.hyperiontechnologies.nl.

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The parametric values (min and max limits) shown in the Electrical Characteristics table are guaranteed. Other parametric values quoted in this data sheet are provided for guidance.

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