



weSense

The weSense is the combination in a same box of several high-end sensors in order to extend capabilities of weControl's autopilots. It embeds the weControl's weIMU-3, a 3-axis Inertial Measurement Unit built with MEMS gyroscopes and accelerometers. Data of 6 sensors are sampled and filtered by the embedded 32-bits microcontroller. The unit is providing data compensated in temperature over the whole operating range. The output sample rate is configurable to 60Hz or 120Hz when periodic output is chosen. Other mode to get output data is upon request through

one of the serial ports. The unit outputs its data on one RS-232 interface with 115.2kbit/s or 460.8kbit/s. The weSense also embeds a dual RF input OEM617D receiver configured to output data on a binary format corresponding to position, velocity, heading and associated accuracy values. The receiver outputs its data on one RS-232 interface with 115.2kbit/s. A synchronization signal rated to 1Hz is also outputted.

The unit is powered by a single +12V supply and drives automatic built-in tests at power up.



Specification

Electrical & environment

Operating temperature range	-20/+60°C
Input voltage	10-20VDC
Supply current (@12VDC)	300mA
Serial interface to autopilot	2 x RS232
GNSS Baud rate	115200bit/s
IMU Baud rate	115200 or 460800bit/s
GNSS sampling rate	5Hz
IMU sampling rate	On request or 60/120Hz
1PPS signal voltage	0/+3.3V

IMU - Angular rate

Range	±300°/s
Bias variation*	<0.12°/s
Scale factor variation*	2%
Non-linearity*	0.1% Full Scale
Resolution	0.0075°/s
Noise (0..25Hz band)	<0.06°/s rms

Bandwidth digital Butterworth filter20Hz

IMU - Acceleration

Range	±10g
Bias variation*	<1mg
Scale factor variation*	300ppm
Non-linearity*	0.9% Full Scale
Resolution	0.1mg
Noise (0..25Hz band)	<0.4mg rms
Bandwidth digital Butterworth filter	20Hz

GNSS

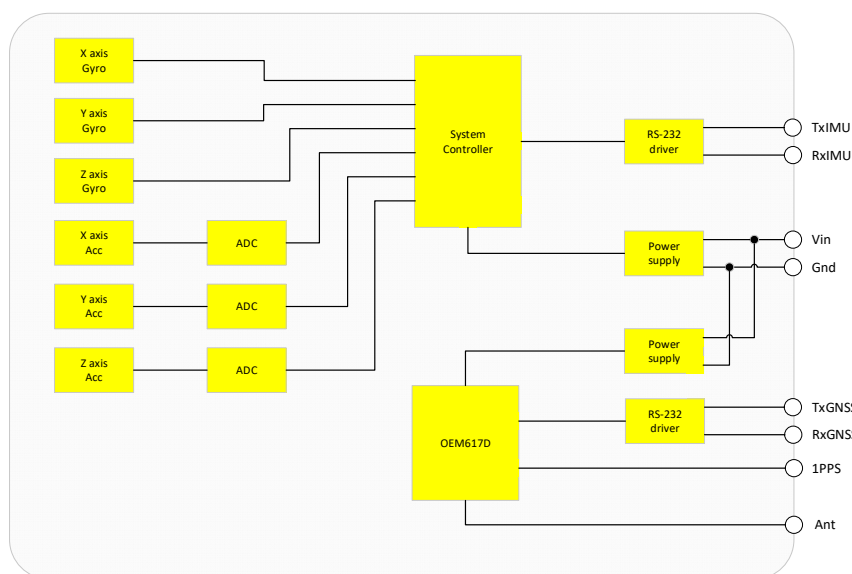
GPS / GLONASS / BeiDou / Galileo / SBAS	
Position accuracy (SP L1/L2)	1.2m rms
Heading accuracy	0.05 to 0.08° rms
Time to first fix	<50s

Physical

Size (L x W x H)	78x76x60mm
Weight	400g

*Over full operating temperature range

Block Diagram



Signal connectors

weSense: Nicomatic male DF221SP10D51
Mate: Nicomatic female DF222SP10D53

Pin	Signal
1	Gnd
2	Gnd
3	TxIMU
4	RxIMU
5	TxGNSS
6	RxGNSS
7	Gnd
8	1PPS
9	Vin
10	Vin

GNSS Antenna connectors

weSense: SMA female
Mate: SMA male