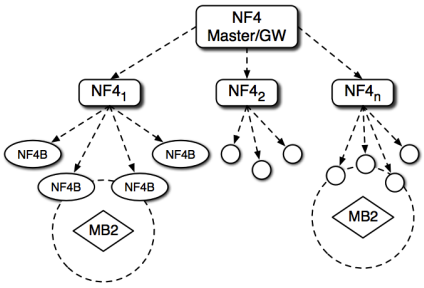
MB2

Portable 3-axis AHRS with high sensitivity pressure sensor
IEEE 802.15.4 wireless node (patent pending)

- High speed, ultra low-power, 32bit RISC CPU
- 128K SRAM, 128K Flash
- Integrated IEEE 802.15.4, high speed, 2.4GHz radio module with onboard antenna

- 3-axis accelerometer
- 3-axis magnetometer
- 3-axis gyroscope
- Heading, Pitch, Roll, Angular rate, Acceleration and Magnetic field
- Digital pressure sensor

- LiPo battery and built-in charger
- Long operational lifetime
- Very small and light weight
- Can be carried with a belt clip



Applications

- Human or objects motion tracking and analysis systems
- Accurate detection of sudden position changes (e.g. falling body)
- Accurate detection of slow height variations
- Advanced “Assisted living” systems

Contexta-CARE

Contexta-CARE is a very advanced Wireless network system based on IEEE 802.15.4. The network is built using a combination of NF4/NF4B modules, wirelessly interconnected in a multi-layer network tree. The mobile node MB2 fully integrates into the network and can be used to accurately track and analyze the movements of a person, with the ability to signal sudden changes of position, as with a person falling on the ground.
A Contexta-CARE network uses situation understanding technology in order to proactively monitor various ambient parameters and the arising of potentially critical situations for people.

Motion sensors

The MB2 module incorporates a fully integrated position and motion tracking system built around a combination of

- 3-axis gyroscope
- 3-axis accelerometer
- 3-axis magnetometer

The simultaneous use of three types of sensors together with a 200Hz Extended Kalman filter ensures very fast response and top quality measurements under all conditions.

Pressure sensor

In order also to be able to accurately track slow changes of height of the node, MB2 incorporates an ultra sensitive sensor with extremely small low altitude noise. The use of piezo-resistive technology ensures robustness, linearity and long-term stability.

The module construction is highly modular and very flexible, and can be customized to include customer specific additional or different sensors. Contact us for further information.

Onboard radio

The MB2 modules include a high performance IEEE 802.15.4 radio which ensures stable connectivity of the node within the whole network coverage. distances.

Power supply

MB2 is powered by a built-in high efficiency, low weight LiPo battery. Battery charger and protection circuitry are integrated and a standard 5V external supply source is provided to recharge the module.

Technical Data	MB2			Notes	
Sensors specifications	min	typ	max	units	
Heading					
Range		±180		deg	
Accuracy (RMS)@25°C		< 0.5		deg	
Resolution		< 0.05		deg	
Attitute					
Range (pitch, roll)		±180, ±90		deg	
Accuracy (RMS)@25°C		< 0.2		deg	
Resolution		< 0.05		deg	
Angular rate					
Range: Yaw, Pitch, Roll		±500		deg/s	
Zero Rate Bias Stability @25°C		< 100		deg/h	
Resolution Heading, Pitch, Roll		< 0.01		deg/s	
Bandwidth		140		Hz	
Acceleration					
Input range: X/Y/Z		±2, ±6		g	
Resolution: X/Y		< 0.4		mg	
Resolution: Z		< 1		mg	
Bandwidth		50		Hz	
Pressure					
Range	300		1100	hPa	-500/+9000m asl
Absolute accuracy	-2.5	±1.0	+2.5	hPa	700..1100 hPa 0..+65°C
	-3	±1.0	+3		300…700 hPa 0..+65°C
	-4	±1.0	+4		300-1100 hPa -20..+0°C
Relative accuracy		±0.2		hPa	700.1100 hPa @25°C
Resolution of output data		0.01		hPa	
Noise in pressure		0.25		m	Ultrahigh res. mode
Processor specifications					
ROM (flash)		128		Kbyte	
RAM		128		Kbyte	
Serial Interface		RS232TTL			(not user accessible)
Radio frequency range	2.400		2.485	GHz	IEEE 802.15.4 compliant
Power supply requirements					
external 5V power supply	Used to recharge internal LiPo battery. Battery recharge time typ. 5h				
Mechanical characteristics					
Material	ABS				
Dimensions	78.14 x 48.24 x 26.2			mm	
	78.14 x 48.24 x 33			mm	Incl. belt clip
Operating temperature	0		70	°C	
Weight		55		g	
Expected battery lifetime					
>20h, 1s reporting cycletime					

Other available products:

NF4/NF4B
Battery powered, high performance, multi sensor, wireless Contexta-CARE node, with infrared motion detection, temperature, humidity, two wavelengths light sensors.

PERS1 (avail. Q4) Contexta-CARE node for position detection and alarm trigger.

NETW1 (avail. Q4) network installation and signal quality monitoring system. RS232 interface.

DEM1 Demokit with 5 NF4/NF4B, 1 MB2 with charger.

Sensors characteristics as specified by the sensors' manufacturers. Additional information available on request.

For any additional information, please contact us at info@contexta.com, or visit our website http://www.contexta.it