VersaNode™ 210

2.4 GHz Wireless Radio Datasheet

The Nivis VersaNode 210 is the first commercially available radio to offer the industrial ISA100.11a standard. Architected to support 'dual boot' capabilities with both the ISA10011a and WirelessHART stacks on the same hardware, the VN210 allows customers to minimize the cost of design, field deployment, and testing. The VN210, in conjunction with a standards based router such as the VersaRouter 900, enables users to wirelessly monitor industrial devices.

Designed for ATEX Zone 2 and C1D2 nonincendive environments, the VN210 offers a full API for easy integration into your organization's devices. From temperature sensors to gas monitors, the VN210 helps organizations unlock vital information about their operating environment. Leveraging AES-128 bit security, the VN210 is a low power, 10dBm, 2.4 GHz radio frequency transceiver with a 32-bit ARM7 core based MCU. The VN210 is also FCC, IC, R&TTE and VCCI approved.

Maximum Ratings

Parameter	Min	Typ	Max	Units	Comment
Supply Voltage	-0.3	3.0	3.3	V	
Voltage on any digital I/O	-0.3	Vcc	Vcc + 0.2 V	V	
Input RF Level			10	dBm	Input power at antenna connector
Storage Temp Range	-40		+85	°C	
Operating Temp Range	-40		+85	°C	

Normal Operating Conditions

Parameter	Min	Typ	Max	Units	Comments
Supply voltage	2.7		3.3	V	
Voltage on analog pins	0		Vcc	V	
Voltage supply noise			200	mVpp	50Hz – 15MHz
Peak current			60	mA	TX mode, maximum output power
Storage and operating temperature	-40		+85	°C	
Operating relative humidity	10		90	%RH	Non condensing
Transmit current			60	mA	
Receive current [1)]		21	27	mA	
Hibernate current [2)]		15		µA	

Notes:

1) All RAM active, Reference oscillator on (24MHZ) at 1.2 VDC, Radio RX on (receiving data), Reference clock available to all peripherals, ADC1 available but inactive, CPU on at 2 MHz (DCD).
2) External 32 kHz crystal oscillator on, CPU off (stop mode), wake-up from RTI timer or external request, Radio off, ADCs not available.

Electrical Specifications

Parameter	Min	Max	Units
Output High-level Voltage (IOH = 5 mA) (All digital outputs)	80% Vcc	Vcc	V
Output Low Voltage (IOL = -5 mA) (All digital outputs)	0	20% Vcc	V
Input Low Voltage (All digital inputs)	0	30% Vcc	
Input High-level Voltage (all digital inputs)	70% Vcc	Vcc	
Input hysteresis (all digital inputs)	0.06 x Vcc		

Radio Characteristics

Parameter	Min	Typ	Max	Units	Comments
Operating frequency	2.4000		2.4750	GHz	
Number of channels		15			
Channel separation		5		MHz	
Occupied channel BW		2.65		MHz	
Frequency accuracy	-40		+40	ppm	Determined by the 24MHz crystal
Modulation		O-QPSK			
Raw data rate		250		kbps	
Receiver sensitivity		-98		dBm	Using Non-coherent Differential Chip Detection (DCD), 50% PER
Output power	9	10	12	dBm	Conducted, at antenna port

Antenna Specifications

Parameter	Min	Typ	Max	Units	Comments
Operating frequency	2.4000		2.4835	GHz	
Impedance		50		Ω	
Gain		+2		dBi	
Pattern					Omni-directional
Maximum VSWR			2:1		
Connector					*MMCX or RF pads on the module edge
* The VN210 can accommodate both MMCX straight connectors and MMCX right angle connectors.					

Certification

Type	*Detail
EMC	FCC-US, IC-Canada, R&TTE/ETSI EN- EU, VCCI/MPHPT- Japan
Hazloc	ETL/cETL, IEC, ATEX, CENLEC
Non-Hazloc	IEC (US & Canada), CENLEC EN (EU)

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