



VersaNode 220

2.4 GHz Wireless Radio Datasheet

The Nivis VersaNode 220 is a versatile WirelessHART radio in a small footprint. The VN220 allows customers to minimize the cost of design, field deployment, and testing. The VN220, in conjunction with a standards based router such as the VersaRouter 910, enables users to wirelessly monitor industrial devices.

Designed for ATEX Zone 2 and C1D2 nonincendive environments, the VN220 offers a full API for easy integration into your organization's devices. From temperature sensors to gas monitors, the VN220 helps organizations unlock vital information about their operating environment. Leveraging AES-128 bit security, the VN220 is a low power, 10dBm, 2.4 GHz radio frequency transceiver with a 32-bit ARM7 core based MCU. The VN220 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:

- 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).
- 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 | | 2.475 | 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 | | 0-QPSK | | | |
| Raw data rate | | 250 | | kbps | |
| Receiver sensitivity | | -98 | | dBm | Using Non-coherent Differential Chip Detection (DCD), 50% PER |
| Output power | | 9 | 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 VN220 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) |

*For more information please contact your sales representative