

# ACURIX

NETWORKS



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## INTELLIGENT 3 X 300 MBPS MULTI-RADIO NODE (X3-N-XX)



### 2.4 & 5 GHZ MULTI-RADIO INTELLIGENT WIRELESS NODE WITH OPTIONAL ANTENNAS



The Acurix Networks X3-N-XX intelligent wireless node delivers a whopping 900 Mbps of connectivity supporting 3 x 300 Mbps links for backhaul and access in any mix of point-to-point, point-to-multipoint, mesh and infrastructure-mesh configurations. Each of the three radios is capable of supporting links up to 300 Mbps and can do 20 or 40 MHz channels.

The X3-N-XX supports up to three external dual polarized or MIMO antennas to provide the ultimate flexibility for network dependent configurations.

The high sensitivity of the integrated radio enables low latency, carrier-class wireless networking in the 2.4 and 5 GHz bands.

Each X3-N-XX contains three 802.11n radios embedded on a high performance motherboard with GB Ethernet for local network connectivity.

The X3-N-XX is ideal as a complement to at-capacity legacy 3G networks. It allows operators to cost-effectively provide bandwidth hungry end users with a high capacity Wi-Fi layer that works seamlessly with the 3G networks but provides serious bandwidth for the growing number of wireless devices requiring a high level of throughput in a mobile environment.

The X3-N-XX is also used for integrated metro Wi-Fi and CCTV / video surveillance networks, campus networking, fixed wireless, and smart grid/smart metering connectivity.



**Acurix Networks – delivering 4G performance to reduce 3G network overload**

## HELPING MEET UNPRECEDENTED DEMAND FOR WIRELESS BANDWIDTH

Wireless operators around the world are struggling to meet the insatiable consumer demand for wireless bandwidth.

The rise of social media, people's desire for instant communication, and the recent availability of easy-to-use devices and video applications, mean that never before has there been such a requirement for near ubiquitous, cost-effective wireless broadband access.



Operators are rushing to upgrade networks to include next-generation wireless technologies in an effort to meet this demand. Fixed line and wireless operators are using a mix of technologies to deliver a seamless and converged experience for the end user.

The fact that Wi-Fi enabled devices (smart phones, netbooks, tablets and laptops) are ever-present in the consumer line-up means that Wi-Fi is more often and easily used and desired for bandwidth intensive applications such as video calling and uploading photos or video to social networking sites in the cloud.

Fixed line, 2G and 3G operators are using a Wi-Fi network layer to take the strain off their legacy networks - prolonging their life and improving the customer experience from a price and

utility perspective. 4G operators are using Wi-Fi to reach more consumers as 4G device penetration grows from a low base. Smart operators are allowing demanding, high-bandwidth and cost-conscious users to seamlessly access their Wi-Fi network, often in a way that is transparent to the end user. The Acurix Networks' X3-N-XX, packing three high-power 802.11n MIMO radios, allows operators to deliver serious 4G capacity today (3 x 300 Mbps links per node) for the most demanding of mobile wireless broadband users.



## REAL-TIME REMOTE MANAGEMENT AND CONTROL

### SECURE & CENTRALIZED

The easy-to-use, web-based network management platform provides an operator with remote, real-time, web-based management and control of the X3-N-XX intelligent wireless node. This enables the operator to undertake real-time diagnostics and monitor network events such as channel use, coverage level, bandwidth and data use.

The Acurix Networks NMS empowers the operator with accurate, real-time, knowledge to give accurate, relevant and efficient support when the need arises. Use of encryption on all network management information that is delivered between the X3-N-XX node and the operator's network ensures network integrity during software upgrades, security patch installation, and general network management.

The X3-N-XX also provides a range of network service packages including DHCP, DNS, NTP, web servers, firewall rules, intrusion detection, and routing policy rule-sets.

## Key features of the X3-N-XX

### RADIO

- ✗ Three radios per node supporting the 2.4 and 5 GHz bands
- ✗ Support for any combination of backhaul and end user access across supported frequencies
- ✗ RF ESD and surge protection up to 14kV to ensure the highest levels of performance and reliability in the harshest outdoor deployments
- ✗ Accurate high (25 dBm) and lower (2.5 dBm) power controls in -20 ~ +70 deg C temperature range
- ✗ Peak power up to 250mW (24dBm) with superior sensitivity to provide better than average transmission coverage.



802.11n 2T2R

ESD 12kV

integrate RF ESD and  
Surge protection up to 12kV.



20°C 70°C

operate reliably in -20 to 70°C  
temperature range

### SOFTWARE & SECURITY

- ✗ Full radio control and management
- ✗ Multiple security profiles per Virtual AP (Open, WEP, WPA, WPA2, 802.1x)
- ✗ AES-CCM & TKIP encryption
- ✗ Nodes boot off flash
- ✗ Routing, event processing, and inter-node communication daemon software
- ✗ Adaptive interference handling (TPC and DFS)
- ✗ Redundancy support
- ✗ Complete integration with the Acurix Networks NMS when used
- ✗ Multiple SSID support
- ✗ Full multicast support (multicast, multicast forwarding and multicast 802.11 optimizations).

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### HARDWARE & ACCESSORIES

- ✗ Rugged outdoor enclosure
- ✗ Support for multiple antenna options
- ✗ High temperature rated to a maximum of +70 deg C
- ✗ Carrier grade single 48v POE with grounding supplied as standard
- ✗ Pole mounting supplied as standard
- ✗ Optional adjustable voltage POE switch with web based remote boot capabilities, heartbeat monitor, Ethernet surge protection and high power output per port
- ✗ Optional UPS and solar power solutions available
- ✗ Dual power supply plus heat sink design makes critical components temperature cooler by up to 10 deg C
- ✗ Less than 50mV output ripple design ensures high performance.

# Common Applications

 Metro Wi-Fi supporting 2G, 3G and 4G networks

 CCTV / video surveillance

 Campus Wi-Fi / education

 Enterprise backhaul and connectivity between locations

 Virtual wireless networks

 Private networks (municipal, state or local government, WAN)

 Network operator or service provider backhaul

 Backhaul to remote locations

## Technical Specifications

CHIPSET	Atheros AR9220			
STANDARD CONFORMANCE	IEEE 802.11a/b/g, 802.11n			
FREQUENCY RANGE	2.400 ~ 2.484 GHz, 5.15 ~ 5.85GHz, 5.725 ~ 5.875GHz, 5.47 ~ 5.725GHz			
CHANNEL BANDWIDTH	40MHz and 20MHz			
MODULATION TECHNIQUE	OFDM with BPSK, QPSK, 16QAM and 64QAM / DSSS with CCK, DQPSK, DBPSK			
DATA RATE	802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps  802.11n 20MHz channel: - 1Nss: 65Mbps @ 800Gi, 72.2Mbps @ 400Gi (Max.) - 2Nss: 130Mbps @ 800Gi, 144.4Mbps @ 400Gi (Max.)  802.11n 40MHz channel: - 1Nss: 135Mbps @ 800Gi, 150Mbps @ 400Gi (Max.) - 2Nss: 270Mbps @ 800Gi, 300Mbps @ 400Gi (Max.)			
OPERATING RANGE	Up to 50 km, LOS			
TRANSMIT/OUTPUT POWER	802.11a: * +24dBm @ 6, 9, 12, 18, 24Mbps / * +23dBm @ 36Mbps / * +22dBm @ 48Mbps / * +21dBm @ 54Mbps  802.11n 5GHz/HT20: * +24dBm @ MCS 0/8 * +23dBm @ MCS 1/9 * +22dBm @ MCS 2/10 * +21dBm @ MCS 3/11 * +20dBm @ MCS 4/12 * +19dBm @ MCS 5/13 * +18dBm @ MCS 6/14 * +18dBm @ MCS 7/15  802.11n 5GHz/HT40: * +22dBm @ MCS 0/8 * +22dBm @ MCS 1/9 * +21dBm @ MCS 2/10 * +20dBm @ MCS 3/11 * +19dBm @ MCS 4/12 * +18dBm @ MCS 5/13 * +17dBm @ MCS 6/14 * +17dBm @ MCS 7/15			
SENSITIVITY	802.11a  HT20 802.11a/n  HT40 802.11a/n	Data Rate	IEEE Spec(1 Rx dBm)	Typical/Maximum(2Rx dBm)
802.11a		6M	-82	
9M		-81	-95/-91	
12M		-79	-94/-90	
18M		-77	-91/-87	
24M		-74	-88/-84	
36M		-70	-85/-81	
48M		-66	-81/-77	
54M		-65	-79/-75	
MCS0		-82	-95/-91	
MCS1		-79	-93/-89	
MCS2		-77	-90/-86	
MCS3		-74	-87/-83	
MCS4		-70	-84/-80	
MCS5		-66	-80/-76	
MCS6		-65	-79/-75	
MCS7		-64	-77/-73	
MCS0		-79	-91/-87	
MCS1		-76	-90/-86	
MCS2		-74	-87/-83	
MCS3		-71	-83/-79	
MCS4		-67	-81/-77	
MCS5		-63	-77/-73	
MCS6		-62	-75/-71	
MCS7		-61	-73/-69	

# SERIOUS BACKHAUL FOR SERIOUS USER ACCESS

The Acurix Networks wireless backhaul system comes either standalone with the X1-N, or integrated into the X3-N-XX where any mix of backhaul and access can be configured with dedicated radios for each. The X3-N-XX is easy-to-use and designed to deliver cost-effective, yet carrier-grade, low-latency backhaul links that are optimized to transmit latency sensitive, high-capacity information such as video and voice backhaul and real-time CCTV streams.

Traffic prioritization and high antenna sensitivity allow the CCTV and/or voice data to get through in the toughest of urban environments.

Set-up and installation time is reduced due to the built-in spectrum analyzer allowing for rapid link creation.

Hardware accessory options include the Acurix Networks POE 5 port switch supporting remote reboot, high temperature range and variable voltage per port. The additional ports allow for simplified per site installation of CCTV, UPS, Wi-Fi nodes and backhaul.



## Mechanical Specifications

PHYSICAL INTERFACES	GbE x 1 (RJ-45) MiniPCI x 3
NETWORK ARCHITECTURE	Supports infrastructure / mesh 802.11n wireless networking, depending on application
CERTIFICATION	FCC, C-tick
COOLING SYSTEM	External enclosure (IP65)
OPERATING TEMPERATURE	-20°C ~ + 70°C
OPERATING HUMIDITY	10-95% (Non-condensing)
CONSTRUCTION	Aluminum enclosure protected through chemical passivation Internal connector MMCX with RD316 Coaxial Cable/UFL (other connector types available on request). Radome UV Protected Polycarbonate
DIMENSION	280 x 190 x 130 mm (approx. and may vary between enclosures)
NET WEIGHT	1.2KG (approx. with enclosure)
OPERATING SYSTEM	Linux kernel 2.6.x.
SCRIPTS	Various custom-built code modules for radio and NMS management.
ENVIRONMENT-FRIENDLY COMPLIANCE	RoHS
WEB BROWSER LOGIN SUPPORT	Web based management



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