

# TropOS 2410

## Wireless mesh edge node for DIN-rail mounting



TropOS 2410 wireless mesh edge nodes are used to build field area networks for automation applications. Incorporating a managed four-port Ethernet switch, voltage monitoring and contact closure monitoring, they enable cost-effective and highly secure IP communications.

The TropOS 2410 is built for utility, oil and gas, mining, and industrial applications that monitor and control field automation endpoints such as intelligent electrical devices, industrial process controllers and SCADA devices. Ethernet and serial interfaces supporting DNP3 and Modbus provide future-proof operation to new and legacy devices. An integrated firewall and VPN provide enterprise-class security. These enterprise security features extend to the wired Ethernet and serial ports as well as to the wireless interface. The TropOS 2410 extends the functionality of TropOS mesh networks to devices where installation of standalone TropOS routers is impractical. An integrated GPS receiver greatly simplifies installation, commissioning and asset tracking.

### Wireless

- IEEE 802.11b/g/n radio
  - Modulation: 802.11g/n - OFDM (64-QAM, 16-QAM, QPSK, BPSK); 802.11b - DSSS (DBPSK, DQPSK, CCK)
  - TX Power (dBm EIRP):

Band (MHz)	FCC	ETSI	Brazil
2400-2473	20-36	N/A	N/A
2400-2483	N/A	5-20	11-26

assumes use of 7.4 dBi antennas

- 2x2 MIMO-antenna system: 2-TX x 2-RX
- Media access protocol: CSMA/CA with ACK
- RX sensitivity:
  - 99 dBm @ 1 Mbps
  - 95 dBm @ 6 Mbps
  - 80 dBm @ 54 Mbps
- Support for 802.11n MIMO
- Integrated GPS receiver

### Interfaces

- Full 802.11b/g/n wireless, 802.11n client compatibility
- Serial: RS-232 and RS-485
- Four IEEE 802.3u autosensing 10/100BASE-T Ethernet ports
- Protocols: DNP3, Modbus (RTU), Modbus (ASCII), raw serial
- Two DC voltage monitoring ports (0-50 VDC)
- Two dry contact monitoring port
- IPv4, IPv6-ready
- 802.1q VLAN support (ESSID and IP based tagging)
- Support for static and dynamic addressing for wireless and wired clients
- IP multicast forwarding, IGMPv3; IGMP proxy
- Automatic rate, power and channel control
- IEC 61850 GOOSE messaging
- Reliable broadcast

### Quality of service

- 802.11e WMM
- 802.1p/q with 4 queues per VLAN and ESSID
- 802.1p and DSCP

### Management

- Local and remote management tools via HTTPS
- Role-based authentication (4 levels)
- Configuration save and restore
- Over the air software updates
- SNMPv3
- Wireless network and client monitoring and statistics
- SuprOS carrier class NMS support

### Security

- IPsec VPNs with tunnels to wired client interfaces using AES
- Authentication: WPA, WPA2, 802.11i, RADIUS, 802.1x (includes EAP-TLS, EAP-TTLS, EAP-SIM, PEAP)
- Encryption: open, WEP, TKIP, AES-CCM
- AES encryption of mesh and control traffic
- Technical controls required to achieve NERC CIP v5 compliance
- Multiple BSSIDs & ESSIDs (ESSID suppression)
- Integrated firewall
  - Packet filtering based on TCP/UDP port, protocol, SA, DA
  - Peer-to-peer blocking
  - Client access control lists
- Evil twin detection and reporting
- Denial of service (DoS) attack detection and reporting

### Environmental specifications

- Operating temperature range: -40°C to 75°C
- Storage temperature range: -40°C to 85°C
- IP10
- Shock & vibration: MIL-STD-810G; 514.7
- Transportation: ISTA 2A

### Power

- 7-32 VDC
- Power consumption: 2 W typical
- Power-on/network status LED

### Physical

- Dimensions with connectors (RF connectors and screw terminals)
  - Height: 2.48" (63 mm)
  - Width: 4.11" (104.5 mm)
  - Depth: 6.28" (159.5 mm)
  - Weight: 1 lb (.45kg)
- DIN clip adds .31" (8mm) of thickness to mounting side
- DIN clip and terminal block plug included with each unit

### Wireless approvals (pending)

- FCC CFR 47 Part 15
- Industry Canada RSS 247
- EN 300 328 (pending)
- EN 301 489 (pending)

### Safety approvals

- UL 60950-1
- CSA 22.2 No. 60950-1
- IEC 60950-1
- EN 60950-1

### Protection

- Antenna protection:  $\leq 0.5 \mu\text{J}$  for 6kV/3kA @ 8/20  $\mu\text{s}$  waveform
- Electrical protection:
  - EN 61000-4-4 level 2 electrical fast transient burst immunity
  - EN 61000-4-3 level 2 EMC field immunity
  - EN 61000-4-2 level 2 (contact), level 3 (air) ESD immunity

### Warranty

- Five (5) year on parts and labor; return to point of purchase
- Software and hardware maintenance plans available

### Hazardous environment certification

- Class I Division 2 Groups A, B, C and D

Click the link to find out more information about our [wireless mesh routers](#).