

# ABB Tropos1410-DIN mesh router datasheet

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Tropos 1410-DIN wireless mesh routers and bridges are used to build field area networks for automation applications. They enable cost-effective and highly secure IP communications 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 1410-DIN extends the functionality of Tropos mesh networks to devices where installation of standalone Tropos routers is impractical.

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# Tropos 1410-DIN

## Wireless mesh router & wireless bridge for DIN mounting



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### Economical solution for field area networks

Utility, oil and gas, mining, and other industries are increasingly using wireless communications networks to monitor and control thousands of automation devices in the field. These field area networks support a diverse set of applications including automated metering infrastructure and distribution automation for utilities; wellhead monitoring and logging for oil and gas; fleet and mining management systems for mining; traffic signal management and video monitoring for transportation; process control for refining and chemicals; and SCADA for a variety of vertical markets. In the past, utilities and other industrial companies have often used proprietary low-speed wireless communications systems with little security to implement their field area networks.

### Features and benefits

- 802.11b/g/n wireless mesh router and bridge
- Mounts on Top Hat EN 50022 DIN rail
- IPsec VPN and firewall in every device
- Ethernet or serial device connectivity
- DNP3, Modbus and IEC 61850, including GOOSE messaging, support
- Tropos Control network management

The Tropos 1410-DIN provides an economical vehicle for utilities and other industrial companies to securely implement field automation communications. It delivers the most advanced set of standards-based security features available for field area networks including a built-in firewall and a built-in IPsec VPN in every unit. Each Tropos 1410-DIN implements a multi-layer, multi-application security model that provides defense-in-depth and enables traffic from different applications and user groups to be segregated on separate virtual local area networks (VLANs). Each VLAN has its own address space, quality of service policies and security policies including the ability to create one or more IPsec VPNs per VLAN. The Tropos 1410-DIN employs RADIUS, 802.1x, and 802.11i authentication, AES encryption and HTTPS-based remote access to secure field area networks from unauthorized devices, users and snooping.

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In addition, the product family's operating software complies with NIST FIPS 140-2 Level 2 for U.S. government cybersecurity and provides all features required for a utility to support NERC CIP v5.

**Fully flexible product options**

The Tropos 1410-DIN is suitable for installation in a wide variety of process control, energy and industrial automation systems. It can be installed in enclosures using standard DIN rail mounting and extends the functionality of Tropos mesh networks to devices where installation of standalone Tropos routers is impractical. The product uses a removable DIN rail clip that can be positioned on the side or back of its enclosure offering multiple installation options.

The Tropos 1410-DIN can be configured via software load to be either a bridge that connects to any standard 802.11b/g/n wireless network, including Tropos mesh networks, or a fully functional Tropos mesh router.

- Wireless connectivity: When configured as a wireless bridge, the Tropos 1410-DIN can connect to any standard 802.11b/g/n network including a Tropos mesh network. When configured as a wireless mesh router, the Tropos 1410-DIN can form a Tropos mesh network, fully integrate with other Tropos mesh router products in a mesh network and offer connectivity to any standard 802.11b/g/n client.
- Wired connectivity: The Tropos 1410-DIN's wired connection supports 10/100BASE-T Ethernet, RS-232 serial or RS-485 serial.
- Automation protocol support: The Tropos 1410-DIN's wired interface supports utility and industrial control protocols, including DNP3, Modbus and IEC 61850 including GOOSE messaging, to facilitate integration of new and legacy smart grid and process control devices.
- Secure end-to-end communications: The Tropos 1410-DIN supports multiple IPsec VPN tunnels with AES encryption for secure data communications from the wired ports where automation endpoints connect to the utility operations centers.

**Tropos Control network management**

The Tropos 1410-DIN can be centrally managed by Tropos Control, an industry-leading wireless network management, monitoring and control application. Tropos Control allows the network administrator to monitor network performance in real-time and to perform complex tasks such as network configuration and over-the-air software upgrades.

**Wireless**

- IEEE 802.11b/g/n radio
- Frequency band: 2.4-2.483 GHz
- Modulation: 802.11g/n - OFDM (64-QAM, 16-QAM, QPSK, BPSK); 802.11b - DSSS (DBPSK, DQPSK, CCK)
- TX Power:
  - FCC/IC 20-36 dBm set in 1 dB units
  - ETSI/EU 5-20 dBm (EIRP) set in 1 dB units
- Two-antenna system: 2x2 MIMO
- 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

**Networking**

- Full 802.11b/g/n
- IEEE 802.3u autosensing 10/100BASE-T Ethernet port
- IPv4; IPv6-ready
- 802.1q VLAN support (ESSID and IP based tagging)
- Support for static and dynamic addressing for wireless and wired clients
- Session-persistent mobility across subnets
- IP multicast forwarding, IGMPv3; IGMP proxy
- Automatic rate, power and channel control
- PowerCurve
- SmartChannel

**Quality of service**

- 802.11e WMM
- 802.1p/q with 4 queues per VLAN and ESSID
- 802.1p and DSCP
- VoIP and VoWiFi support
- Rate limiting (airtime and throughput based)
- ACC - Airtime Congestion Control

**Management**

- Local and remote management tools via HTTPS
- Identity-based authentication (4 levels)
- Configuration save and restore
- Over the air software updates
- SNMPv3
- Wireless network and client monitoring and statistics
- Tropos Control 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
- FIPS 140-2 Level 2 compliant
- NERC CIP 002-009 compliant
- 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: ETSI 300-19-2-4 spec T41.E class 4M3
- Transportation: ISTA 2A

## Wired interfaces

- Serial: Two RS-232 or one RS-485; DNP3, Modbus and raw serial support
- Ethernet: 10/100BASE-T; DNP/IP, Modbus/IP, IEC 61850, including GOOSE messaging, support

## Power

- 11- 55 VDC
- Power consumption: 3 W typical
- Power-on/network status LED

## Wireless approvals

- FCC CFR 47 Part 15
- Industry Canada RSS 210
- EN 300 328
- EN 301 489

## Safety approvals

- UL 60950-1
- CSA 22.2 No. 60950-1
- IEC 60950-1
- EN 60950-1
- UL 1449/IEC 60664-1

## Physical

- Dimensions with connectors (RF connectors and screw terminals) and the DIN rail mount:
  - Side mount: 7.625 in (193.68 mm) height x 1.526 in (38.76 mm) width x 4.008 in (101.80 mm) depth
  - Rear mount: 7.625 in (193.68 mm) height x 3.693 in (93.80 mm) width x 1.841 (46.76 mm) depth
- Weight: 1 lb (.45 kg)

## 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

- One (1) year on parts and labor; return to point of purchase
- Optional standard and premium support packages available

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

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