Aviat NETWORKS

# WTM 4000

## ALL-OUTDOOR, IP/SDN RADIO

DATASHEET [ANSI]

The WTM 4000 platform delivers ultra-high capacity in single or dual-transceiver architecture, optimized for all-outdoor applications. With up to 2.5 Gbit/s of throughput in a single unit, WTM 4000 supports all microwave bands with cutting edge networking features to set the benchmark for next generation backhaul and transport requirements.

The WTM 4000 platform includes the very latest innovations, including highspeed Ethernet switch, 4096 QAM, 112 MHz channels, Adaptive Dual-Carrier and Multi-Layer Header Compression, with single or dual-transceiver configurations.

With an integrated all-outdoor architecture covering frequency bands from 5 to 80 GHz, WTM 4000 can also be deployed in split-mount applications with Aviat's CTR 8000 Transport Switch/Router.

WTM 4000 supports best-in-class system gain for longer reach, smaller antennas and lower TCO, with advanced radio features such as XPIC, radio link bonding, LOS MIMO and Multi-Band.

Advanced networking options include Carrier Ethernet, Ethernet OAM, packet based synchronization and SDN, and is upgradeable to support L3 IP/MPLS.

Maximum capacities up to 2.5 Gbit/s per link in microwave bands from 5 to 42 GHz, up to 20 Gbit/s in 80 GHz E-Band, or up to 10 Gbit/s in Multi-Band applications.

WTM 4000 is the only microwave platform to support Aviat's unique Adaptive Dual-Carrier (A2C+) capability, enabling double capacity using a single microwave transceiver.

WTM 4000 provides a powerful microwave networking solution allowing "transparent" connections, or comprehensive Carrier Ethernet (CE), or IP/MPLS operation.

PROUDLY MANUFACTURED IN THE USA

## General Specifications

| General | | |
|---|---|---|
| Frequency bands | | 5, L6/U6, 7, 8, 10, 11, 13, 15, 18, 23, 26, 28, 31, 32, 39, 42 GHz |
| Modulation and coding options | Fixed and Adaptive | QPSK, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096 QAM |
| Channel sizes supported | | 3.75, 5, 10, 20, 25, 30, 40, 50, 60, 80, 100 MHz<br>14, 28, 56, 112 MHz (SRSP 312.7, SRSP 331.8 only) |
| Capacity range | Airlink Capacity | Up to 920 Mbit/s (single channel WTM 4100) or 1.8 Gbit/s (dual channel operation WTM 4100 with A2C+, or WTM 4200) |
| | Ethernet / IP Throughput (with IFG/PA Suppression) | Up to 2.5 Gbit/s, single or dual channel, with Multi-Layer Header Compression (actual throughput dependent upon traffic/frame size mix) |
| Configuration options | | 1+0 with optional Space Diversity<br>2+0 Co-Channel Operation with/without XPIC<br>2+0 Radio Channel Aggregation with Layer 1 Link Aggregation (L1LA)<br>1+1 or 2+2 Hardware Protection with optional SD<br>4+0 LAG with/without LOS MIMO (up to 5 Gbit/s) |

| Transmitter | | |
|---|---|---|
| High power | | Up to +30.5 dBm |
| Frequency stability | | ± 5 ppm |
| Manual transmitter power control range | | 25 dB |
| Automatic Transmitter Power Control (ATPC) | | Configurable over the full manual attenuation range |
| Transmitter mute | | > 50 dB |

| Receiver | | |
|---|---|---|
| Frequency stability | | ± 5 ppm |
| Receiver overload | BER=$1x10^{-6}$ | 20 dBm |
| Max receiver input level | BER=$1x10^{-3}$ | 0 dBm |
| Residual (Background) Bit Error Rate | | $1x10^{-13}$ |

| User Interfaces | |
|---|---|
| Traffic | 2x 10/100/1000Base-T (RJ-45) fixed electrical ports (one port supports PoE)<br>2x optional SFP+ ports – 1, 2.5 or 10 Gbit/s SFP+ (optical/electrical) |
| DC power supply input | ±24/±48 Vdc (SELV) wide-mouth |
| Console maintenance ports | USB |
| Receive signal indicator | Dual voltmeter pins |

| Synchronization | |
|---|---|
| Synchronous Ethernet (SyncE) | ITU-T G.8262 |
| ESMC/SSM | ITU-T G.8264 |
| Precision Time Protocol | IEEE 1588v2 – TC/BC<br>ITU-T G.8271.1 |

## Carrier Ethernet / L2 Services

| | |
|---|---|
| Non-blocking switch | |
| QoS | 8 COS<br>Scheduling, Policing, Storm control, Shaping |
| QOS mapping | PCP (802.1p), DSCP, H-QoS |
| VLANs | IEEE 802.1Q<br>IEEE 802.1ad (Q-in-Q) |
| Spanning tree protocols | STP, RSTP, MSTP |
| L2 link aggregation | 802.1AX |
| Ethernet ring protection | ITU-T G.8032v2 |
| Ethernet OAM | IEEE 802.1ag, ITU-T Y.1731[1] |
| Congestion avoidance | RED & WRED |
| Jumbo frames | to 10 KB |

## IP / MPLS Services

| | |
|---|---|
| IP addressing | IPv4 & IPv6 |
| Routing type | Unicast routing with IP Static routing<br>Equal Cost Multipath IP Routing and MPLS load sharing<br>Segment Routing with OSPF[1]<br>IPv6 for management (OSPFv3[1]) |
| Gateway protocols | IS-IS, OSPF (interior)<br>BGP with Route Reflector, iBGP, eBGP (exterior) |
| Signaling | Label Distribution Protocol (LDP) and T-LDP<br>LSP protection with BFD<br>Micro-BFD over LAG |
| Services supported | Layer 2 VPN services over LDP signaled tunnels (VPLS and VPWS)<br>Layer 3 VPN services are supported using BGP |
| Diagnostics | TWAMP, VRF & LSP Ping and Traceroute |
| Traffic engineering | Supports RSVP-TE extensions [1] |

## Element and Network Management

| | |
|---|---|
| Local configuration via USB | Configuration save & load, backup to memory stick<br>Wireless dongle to support Bluetooth/Wi-Fi (optional)<br>Aviat OS software upgrade |
| Event and alarm capture | Time stamp and logging |
| Statistics | RMON 1 Ethernet and radio performance statistics |
| Network management | ProVision, ProVision Plus<br>NETCONF/Yang<br>SNMPv2c MIB interface support, SNMPv3 option |
| IPv4/6 addressing with an in-band management VLAN | SSH access |
| Simple Network Time Protocol (SNTP V4) | Embedded real time clock |
| Authentication, Authorisation and Accounting (AAA) | TACACS+, RADIUS (with RadSec) [1] |

| Mechanical and Environmental | | |
|---|---|---|
| Operating temperature | Guaranteed<br>Extended | -27° to +131°F (-33° to +55°C)<br>-49° to +149°F (-45° to +65°C) |
| Humidity | Guaranteed | 0 to 100%, non-condensing |
| Altitude | Guaranteed | 14,763 ft (4500 m) |
| Input voltage | | ±24/±48 Vdc, wide-mouth (±20 to ±57Vdc) |
| Power over Ethernet | | IEEE 802.3at, 802.3bt |
| Power consumption | WTM 4100<br>WTM 4200<br>WTM 4500 | 50 W nominal, 65 W maximum<br>75-90 W nominal, 108 W maximum<br>58-90 W nominal, 108 W maximum |
| Size (h-w-d), including built-in coupler/OMT | | 11.6 in x 10.6 in x 3.75 in<br>(295 mm x 270 mm x 95 mm) |
| Weight, including coupler/OMT | WTM 4100<br>WTM 4200<br>WTM 4500 | 12 lb (5.5 kg)<br>17.5 lb (8 kg)<br>20 lb (9 kg) |

| Standards Compliance | |
|---|---|
| Security | FIPS 140-3 Validated, Certificate #5107<br>FIPS 197, Certificate #A980 AES Payload Encryption |
| EMC | FCC CFR47 Part 15<br>ICES-003 |
| Operation | EN 300 019 Class 4.1 |
| Safety | UL 62368-1<br>CSA C22.2 No. 62368-1:19 |
| RF performance | FCC CFR47 Part 101<br>FCC CFR47 Part 30 (28GHz, 39GHz)<br>NTIA Red Book |
| Water ingress | IEC 60529, IP66 |
| Lightning protection (internal) | IEC 61000-4-5 |

Notes:

[1] To be confirmed in a later release

## Disclaimer

This material is for informational purposes only and does not constitute a legal obligation to deliver any product, feature or functionality and should not be relied upon in making purchasing decisions. All specifications are nominal across the rated operating temperature range, referenced to the antenna port unless otherwise stated, and are subject to change without notice. The development, release and timing of any features or functionality described for our products is at Aviat Networks' sole discretion.

For details of availability, Please contact your Aviat Networks Sales Representative.