



ORBIT MCR & ECR CELLULAR GATEWAYS

Converged communications for hybrid networks

INDUSTRIES

- Oil & gas
- Water & wastewater
- Emergency & utility vehicles
- Electric utilities
- Smart cities & municipalities
- Heavy industrial


FEATURES

- 400 ~470 MHz
- 5-year standard manufacturer warranty
- Half duplex
- Auto failover
- Modulation : CPFSK, QPSK, 16QAM, 32QAM, 64QAM
- Adaptive Modulation : Per-packet, per-remote, bi-directional
- Dynamic FEC ; Convolutional, Reed Solomon
- Compression : IP Header & Payload, ≤ +30% efficiency
- Media Access Control : High performance
- Topologies: Point to Multipoint (PTMP), PTP, Daisy Chain
- Collision avoidance over Serial traffic, proprietary MAC - no retransmissions


APPLICATIONS

- Automated meter reading
- Remote field office connectivity
- Level, pressure and flow monitoring
- Pipeline monitoring and control
- Law enforcement in-vehicle connectivity
- Utility vehicle tracking
- Distribution automation
- AMI network gateways
- RTU Serial/IP SCADA and IEC61850
- Traffic signal control
- Video security
- Weather monitoring systems
- Remote field office control

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SPECIFICATIONS

TRANSMITTER

- Frequency stability : +/- 0.5 ppm
- Peak carrier power : +40 dBm 330-470 MHz, +39.5 dBm 896-960 MHz
- Average Power : QPSK: +36 dBm
- (Programmable) : 16QAM: +33 dBm, 64QAM: +33 dbm
- Power range : +20 dBm to +40 dBm
- Carrier power accuracy : (+/- 1.5 dB typical)
- Adjacent channel power : < -60 dB
- Output impedance : 50 Ohms

DATA RATES

Channel	QPSK	16QAM	64QAM
6.25 kHz	9.6 kbps	19.2 kbps	28.8 kbps
12.5 kHz	20 kbps	40 kbps	60 kbps
25 kHz	40 kbps	80 kbps	120 kbps
50 kHz	80 kbps	160 kbps	240 kbps

SECURITY

- IPSec VPN Server (responder) & Client (initiator) with DMVPN
- Authentication public key, EAPTLS, Pre-Shared, Ike 1-2
- Encryption : 3DES, AES 128/192/256, CBC, CTR, CCM, GCM, SHA 256/384/512 HMAC. Wi-Fi: WPA WPA/WPA2 PSK, Enterprise
- Firewalling: stateful layer 3-4 with MAC filtering, NAT, Source NAT (Masquerading), static NAT, port forwarding
- Device security : Secure boot, secure firmware, digitally signed hardware & software, magnetometer tamper detection
- Certificate management: X.509, SCEP, PEM, DER, RSA
- User authentication: Local RBAC, AAA/RADIUS
- FIPS 140-2 (Level 2) certification in progress

CONSUMPTION

- Input Voltage 10 ~ 60 VDC
- ECR / MCR power consumption (with nominal 25°C)

With 3G GSM World	Power	13.8V
Connected (Idle)	2.5W	182mA
Typical Download	3.2W	235mA
With 4 LTE	Power	13.8V
Connected (Idle)	4.0W	292mA
Typical Download	4.3W	310mA
With 4G LTE + WIFI	Power	13.8V
Connected (Idle)	4.8W	350mA
Typical Download	5.5W	400mA

RECEIVER

- Type : Direct Conversion
- Adjacent channel rejection : > -48 dBm
- Sensitivity (Actual) @ 1x10⁻⁶ BER, low FEC (ETSI 80% PSR eqv.)

Channel	QPSK	16QAM	64QAM
12.5 kHz	-115 dBm	-110 dBm	-103 dBm
25 kHz	-114 dBm	-108 dBm	-101 dBm
50 kHz	-111 dBm	-105 dBm	-98 dBm

NETWORKING

- IPv4 Routing OSPF, EBGp, RIPv2 with performance-based route failover
- IPv6 Routing*
- Full managed switch capability, IEEE 802.3, 802.1Q/VLANs, 64 LANs, STP
- Concurrent bridging & routing
- GRE tunneling with Layer 2 (Ethernet) and Layer 3 support
- Route/path failover between any two wireless/Ethernet interfaces based on link loss, latency degradation or packet loss thresholds
- Quality of Service 16 egress queues, Priority Queuing, Fair Queuing, Traffic Shaping, Classification based on DSCP, 802.1p and Layer 2-4 classifiers
- IP Protocols TCP, UDP, ARP, DHCP, ICMP, NTP, FTP, SFTP, TFTP, DNS, configurable HTTP and HTTPS, SSH
- Serial TCP server, Modbus/TCP, Modbus RTU, TCP client, UDP Unicast and Multicast, BSAP, and DNP3

SECONDARY OPTION

- Cellular (dual SIM, 3G fallback)
 - 4GY: 4G LTE-A NAM/EMEA/LATAM
- 2.4 GHz Wi-Fi
 - 1x1 SISO (single antenna/radio chain); 802.11 b/g/n
 - Scalability up to 2 SSIDs, up to 7 clients/stations
 - Max transmit power (adjustable): up to 20 dBm
- Dual-Band 2.4/5 GHz Wi-Fi
 - 2x2 MIMO (dual antenna/radio chain); 802.11 a/b/g/n
 - Scalability up to 2 SSIDs, up to 32+ clients/stations
 - Max transmit power (adjustable): up to 26 dBm

