

# HaulPass V10g™

## 10 Gigabit Wireless Link

### PRODUCT BRIEF



### Blazing Speed in a Ruggedized, Compact Footprint

The HaulPass V10g is an advanced V-Band millimeter wave radio link that delivers high-speed, low-latency, full-duplex wireless data communications. The flexible V10g operates in two modes:

- 2 x 1.25 Gbps Ethernet connectivity incorporating a fully integrated Ethernet switch (2.5 Gbps aggregate throughput)
- 10 Gbps direct fiber-to-radio connectivity for maximum throughput and minimum latency

Housed in a small, lightweight enclosure that's easy to deploy, our V10g radio link utilizes the license-free V-Band spectrum to cost-effectively meet the ever-expanding needs of today's bandwidth-hungry networks.

#### Advanced, Ultra High-Speed Wireless Technology

The V10g provides 100 MHz to 2 GHz channel bandwidth, advanced intelligence, and comprehensive Ethernet switching functionality. Integrated low-latency forward error correction (< 50  $\mu$ s) assures data transmission reliability. Line-of-sight wireless connections can span up to 1.8 kilometers (over one mile).

Weighing only 3 kg (6.6 lbs) and designed for extreme weather operation, the HaulPass V10g features a ruggedized outdoor enclosure with a compact diameter of only 24.6 cm (9.7"). The V10g can be powered via PoE++ or via a separate auxiliary 48 VDC input, drawing less than 35 watts.

#### Bandwidth for Today and into the Future

Incorporating our patented Modular Integrated Waveguide technology, the HaulPass V10g is a future-proof solution that meets the ultra high-speed wireless needs of today and the future. Immediate ROI is achieved thanks to an economic price point and rapid, pain-free deployment.



With our Adaptive Code Modulation and Baud (ACMB), the code rate, modulation and baud are instantly set in real time, resulting in hitless adjustment to link conditions. This advanced feature maintains critical traffic transport even in the most adverse weather conditions.

#### Efficient, Cost-Effective Connectivity Solution

Like Wi-Fi or Bluetooth, V-Band equipment can be deployed virtually anywhere without licensing by regulatory agencies. This allows deployment of V10g wireless radios as needed in enterprise, campus, ISP, private and carrier networks. V-Band provides many inherent benefits, including interference immunity, deployment flexibility, and easy network reconfiguration.

#### HaulPass V10g Features at a Glance

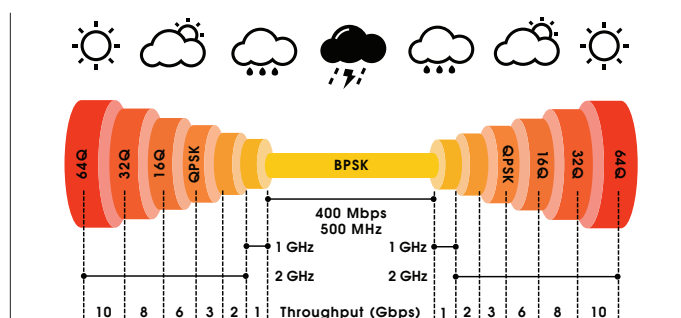
- 2 x 1.25 Gbps Ethernet and 10 Gbps fiber wireless link
- V-Band license-free operation
- Up to 1.8 km (over one mile) point-to-point range
- Small, lightweight footprint
- Low power requirements via PoE++ or standard 48 VDC
- Hitless adaptive coding, modulation and baud rate
- Intelligent AGC for maximum network throughput
- SNMP v 2.0 with private MIB and radio MIB

<b>Carrier Frequencies</b>	<ul style="list-style-type: none"> <li>• License-free V-Band (TX Low 58.25 GHz, High 62.50 GHz) with programmable 250 MHz channel step size</li> </ul>
<b>Channel Bandwidth</b>	<ul style="list-style-type: none"> <li>• 100 MHz to 2 GHz (baud rate, coding, and modulation programmable)</li> </ul>
<b>Modulation</b>	<ul style="list-style-type: none"> <li>• BPSK, QPSK, 16QAM, 32QAM, 64QAM</li> </ul>
<b>Throughput</b>	<ul style="list-style-type: none"> <li>• 400 Mbps to 10 Gbps, adaptive (hitless)</li> </ul>
<b>Transmit Power</b>	<ul style="list-style-type: none"> <li>• +15 dBm maximum</li> </ul>
<b>Receive Noise Figure</b>	<ul style="list-style-type: none"> <li>• 8 dB</li> </ul>
<b>Antenna Gain</b>	<ul style="list-style-type: none"> <li>• 38.5 dBi</li> </ul>
<b>Antenna Beamwidth</b>	<ul style="list-style-type: none"> <li>• 1.8° at -3 dB</li> </ul>
<b>FEC</b>	<ul style="list-style-type: none"> <li>• Reed-Solomon, programmable code rate</li> </ul>
<b>Overall Latency</b>	<ul style="list-style-type: none"> <li>• &lt;50 μs</li> </ul>
<b>Status LEDs</b>	<ul style="list-style-type: none"> <li>• 7 RGB bar-graph layout, programmable functions</li> </ul>
<b>Network Interfaces</b>	<ul style="list-style-type: none"> <li>• Full Duplex: 1000BASE-T RJ45 (2) (2.5 Gbps aggregate), 1000BASE-X SFP, 10000BASE-X SFP+ (10 Gbps)</li> <li>• Auto-negotiation, MDI/MDI-X</li> <li>• Address learning, aging and lookup</li> <li>• Jumbo frame support to 10K</li> </ul>
<b>Carrier Ethernet Options*</b>	<ul style="list-style-type: none"> <li>• Feature-rich CE networking with quality of service (QoS), VLAN, MPLS-TP, Policers, MEF CE 2.0 compliant</li> <li>• TCAM-based QoS classification</li> <li>• L2 switching/L2 multicast</li> </ul>
<b>Network Topologies*</b>	<ul style="list-style-type: none"> <li>• Ring, daisy chain, mesh</li> </ul>
<b>Network Management*</b>	<ul style="list-style-type: none"> <li>• HTTP web server with GUI client</li> <li>• Command line interface (CLI)</li> <li>• Simple Network Management Protocol (SNMP) v 2.0 with private MIB and radio MIB</li> </ul>
<b>Software Features</b>	<ul style="list-style-type: none"> <li>• Enhanced Intelligent Automatic Gain Control (AGC)</li> <li>• Digital Signal Strength Indicator (DSSI)</li> <li>• Adaptive coding, modulation, baud rate (ACMB hitless)</li> </ul>
<b>Link Range</b>	<ul style="list-style-type: none"> <li>• Up to 1.8 km (over one mile), throughput dependent</li> </ul>
<b>Power Requirements</b>	<ul style="list-style-type: none"> <li>• Low power consumption: 35 watts, PoE++ on RJ45 Port 1, or auxiliary power input at 48 VDC</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>• Light weight: 3 kg (6.6 lbs), not including mounting bracket</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>• Small footprint: 24.6 cm (9.7") upper diameter, 27.4 cm (10.8") height, 6.4 cm (2.5") depth</li> </ul>
<b>Water/Dust Ingress</b>	<ul style="list-style-type: none"> <li>• IP67</li> </ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>• -40°C to 55°C (-40°F to 130°F)</li> </ul>

\*Available via gigabit ports only



HaulPass V10g Rear View



V10g Adaptive Code Modulation and Baud (ACMB)



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