Horizon Compact is to be installed with proper grounding, Horizon PoE surge arrestor and 48 V power connected through the Horizon PonE according to instructions in the Horizon Compact User Manual.

Installation Requirements (Continued)
Installation kits include the following:

- 2 x PonE power/ surge units
- 2 x Grounding Kits with cable and bolts
- AC option – 2 x AC/DC power converter and cables
- AC/DC Option – 1 x AC power adapter
- In-band option – 2 x weather caps for unused Port 2

Cables
Shielded, outdoor rating. CatSE cables are required. Recommended cable: Belden 7919A. CatSE cables may be supplied by the customer, or ordered from DragonWave.

Power cable: 2 wire 16 AWG

Mounting Masts and Twist & Sway
Minimum 2.38" OD thick walled (SKD-80) mast for 30 cm and 65 cm antennas.
Minimum 3" OD thick walled mast for 90 cm and 120 cm.
Minimum 4" OD thick walled mast for 180 cm.
Maximum twist is ½ of the beamwidth.
+1 degree for 30 and 60 cm antennas.
+0.5 degrees for larger antennas.

For more information on installation and cabling, refer to DragonWave Technical Note: HC-TN-001.0 Horizon PonE

Grounding, Power and Lightning Protection
There are two grounding points available on each of the four sides of the Horizon Compact casing. Use 6 AWG wire (minimum) to connect the casing to ground.

- Redundant Power Terminals (-48 V DC)
- To Horizon Compact (Power-on-Ethernet)
- Ethernet Cable Clamps
- Power Cable Clamps
Antenna Alignment

Loosen the bolts clamping the mounting bracket to the pole sufficiently to allow the mounting bracket assembly to be rotated on the pole, or tower, by hand. Visually align with the far end installation. Use a compass or landmarks to verify the bearing where the opposite end is difficult to identify. When visually aligned, re-clamp the mounting assembly to the pole.

Alignment Adjustment Sensitivity

When performing fine alignment adjustments it is important to rotate the adjustment nuts 1/10 of a turn at a time between taking RSL readings. The beam width of a Horizon Compact system is no greater than 2 degrees. One complete turn of a fine adjustment nut moves the system through more than 1 degree. One complete turn can, therefore, move right through the peak signal position.

Indications of a Properly Operating Link

- No alarms
- Get alarms
- RSL within ±3 dB of link budget figure
- Get modem statistics
- Ebl/No > 19 dB
- Get modem statistics
- Signal to Noise Ratio (SNR) >24 dB
- Get modem statistics
- Equalizer Stress typically 30, but < 150
- Get modem statistics
- Modem Block Error Rate 0.0000 = 0
- Get traffic statistics
- All sections operational
- Get health

Quick Reference Guide

All health and safety procedures and recommendations must be followed as detailed in the Horizon Compact User Manual. This product is to be installed and maintained by experienced telecommunications personnel only. Installations must adhere to specifications listed in the Horizon Compact User Manual. Horizon Compact is to be installed with proper grounding, Horizon PoE surge arrestor and 48 v power connected through the Horizon PoE according to instructions in the Horizon Compact User Manual.

Loggin In

Super User: Default username is energetic Default password is wireless.
Default IP Address: 192.168.10.10/24 subnet mask 255.255.0.0
By default, management is through Horizon Compact Port 1 (on-band).
Configure your PC with the same IP address range and subnet.

Command Line Interface (CLI) Overview

The majority of commands begin with either set or get.
Example 1: set radio? returns a list of all commands that start with set radio
Example 2: ? radio returns all commands that include the word "radio"
Pressing the Tab key after entering a partial command will complete that command. The up and down arrows (\& \& \& \&) will recall previously input command lines (up to 20).
An unrecognized CLI entry will be acknowledged with NAK.
Once configuration changes have been completed, issue save mb command. Some changes require reset system to invoke changes. Resetting the system is traffic affecting.

Web Interface

Enter Horizon Compact IP address as the URL in Web browser to access Horizon Web interface.

Configuration Steps

1. Configure Radio Band (example: toc3_3_50 for 18 GHz Band 3. See Horizon label)
   a. set radio band <radio band> (Web: Frequency and Port Configuration)
   b. Configure System Mode (channel bandwidth, speed, modulation)
      A limited selection of modes is available based on the radio band configured
      a. set system mode <channel bandwidth, <speed > _<modulation>
      b. Example: set system mode nho5_110_16GAM
   3. set system speed to view current speed
   4. View available frequencies - get frequency bank
   5. Licensed installation – Refer to regulatory license and configure assigned frequency
   6. Unlicensed installation – Configure either a “Go” or “R” frequency. One end of the link must be configured as “Go” and the other “R”
      a. set programmed frequency <index>
   7. Unlicensed only – select antenna size (automatically sets the maximum allowed power)
      a. set antenna size to display available sizes and associated index
      b. set antenna size <index>
   8. Set IP address, subnet mask, default gateway (for management of Horizon)
      a. set ip address <nnn.nnn.nnn.nnn> (Web: IP Configuration)
      b. set subnet mask <nnn.nnn.nnn.nnn>
      c. set default gateway <nnn.nnn.nnn.nnn>
   9. save mb (reset system) – traffic affecting

Advanced Configuration Parameters

There are a number of parameters that can be configured to provide advanced features:
- Radius Server User Authentication
- Adaptive Transmit Power Control
- Timing Protocol (SNTP)
- VLAN Tagging
- Modem Authentication
- Adaptive Modulation
- 802.1P Priority Tagging
- Threshold Alarms
- Radio Redundancy
- Horizon Throughput Speed
- Rapid Link Shutdown (RLS)

For more information see the DragonWave Horizon Compact user manuals.

Bandwidth Doubling

The Dual Polarity Radio Mount (DPRM) allows two Horizon Compact units to mount onto a single antenna, providing bandwidth doubling capabilities. One Horizon Compact is horizontally polarized and the second is vertically polarized.

For bandwidth doubling, each Horizon Compact is fed up to 400 Mbps from the network switch, enabling the wireless link to carry up to 800 Mbps, full duplex, of user traffic.

Troubleshooting

Alarms:
- Check alarms. No alarms should be present.
- Modem Receiver Loss of Signal = no signal being received from the far end.
- Modem Mismatch = incorrect radio band configured, T/H or TL reversed, or incorrect radio
- Link Down = no connectivity on Ethernet link
- Modem Hardware Fault = replace Horizon unit
- Radio Power Amp = replace Horizon unit if alarm counts are increasing

Synthesizer Unlock = replace Horizon unit if alarm is consistent

RSL Issues:
- Mismatched RSL between endpoints
   - one endpoint at target RSL, other endpoint low RSL. Use RF loopback feature to determine if Transmitter at one end, or Receiver at other end is at fault.
   - Verify both ends are receiving DC power
   - Low RSL both endpoints
   - Verify clear LOS exists
   - Verify alignment
   - Verify Transmit power at both ends
   - Link fade?
   - Polarization is the same at both ends?

Poor RF Signal Quality:
- See parameters in “Indications of a Properly Operating Link”

Packet Loss, Poor Throughput, Loss of IP Connectivity:
- check RF signal quality
- check for mismatched modulation between endpoints
- check Ethernet switch traffic statistics at both ends of the link
- verify Ethernet speed and duplex settings
- check COS/DOS settings
- check integrity of Ethernet cables

Merlin Utilities – Contact DragonWave Technical Support
- System diagnostics
- Reset to factory default settings (Super User etc.)
- IP address recovery
- Serial number retrieval
- Bulk software upgrades