



## Charles Industries HVDL 3.1 Frequently Asked Questions

### **Q: Who is Charles Industries?**

A: Charles Industries, Ltd. Is a privately held diversified manufacturing and high technology company with annual sales in excess of \$70 million, 400 employees and 5 manufacturing centers. Found by Joseph T. Charles in 1968, Charles sells quality products, services, and innovative solutions to the telecommunications, passive components, and recreational marine industries worldwide and is TL-9000 / ISO 9000 registered.

### **Q: What is an HVDL 3.1 system?**

A: The Charles HVDL (High-Speed Voice and Data Link) 3.1 system enables a single copper pair to deliver three voice channels and one high speed ethernet data channel. Utilizing low-noise, low power TCPAM (G.SHDSL) line coding, the system multiplexes up to three 64Kbps clear channel voice lines and one high speed data line, then demultiplexes at the subscribers Remote Terminal (RT).

### **Q: What is the primary benefit of the HVDL 3.1 system?**

A: The HVDL 3.1 system allows service providers to attain customers that cannot be reached physically or economically with traditional DSL technology. The key attributes of the HVDL 3.1 system that makes this possible are:

- Support for extended loop lengths (up to 56K ft with a repeater)
- Very low startup and incremental costs which allows service providers to match infrastructure investments with subscriber growth one customer at a time
- Simple to install and operate through use of standard Ethernet interfaces

### **Q: What are the components of the HVDL 3.1 system?**

A: The system consists of a Central Office Terminal (COT) line card, shelf, Remote Terminal and an optional repeater.

### **Q: What are the system capacities ?**

A: The HVDL3.1 COT is available in two shelf options, 19" and 23".

The 19" shelf has 16 slots and may be equipped with 1 alarm card and 15 COT line cards to support up to 15 data lines and 45 voice lines.

The 23" shelf has 19 slots and may be equipped with 1 alarm card and 18 COT line cards to support up to 18 data lines and 54 voice lines.

### **Q: What types of DSL are supported?**

The HVDL 3.1 system utilizes a low noise, low power TCPAM (G.SHDSL) line coding scheme. This approach supports extended loop lengths and provides for maximum spectral compatibility with other services such as ADSL and T1.

**Q: What loop distances are supported?**

A: The HVDL 3.1 system supports loop distances up to 56,000 ft (with a repeater). The distance supported is a function of data rate, line gauge, line quality and the presence of repeaters. The following table is provided as a guideline however a free configuration tool is also available to assist with this analysis.

Data Rate	Non-Repeaterd Distance		Repeatered Distance	
	22 AWG	24 AWG	22 AWG	24 AWG
832 kbps	22,000	16,500	44,000	33,000
512 kbps	25,000	17,500	50,000	35,000
256 kbps	27,000	18,000	54,000	36,000
128 kbps	28,000	19,000	56,000	38,000

**Q: Are data rates selective for tiered service offerings?**

A: Yes. Data rates are adjustable in 128Kbps increments allowing carriers the ability to offer tiered service pricing to increase revenues.

**Q: Are modems, splitters or filter required?**

A: No.

**Q: Do the voice lines support lifeline?**

A: Yes. The line-powered RT supports lifeline service on all voice lines.

**Q: Do the voice lines support FAX?**

A: Yes.

**Q: Do the voice lines support modems?**

A: Yes.

**Q: Do the voice lines support CLASS services?**

A: Yes.

**Q: How long has this product been available and where has it been installed?**

A: The HVDL 3.1 has been generally available since March 2001. Since that time, over 2000 HVDL systems have been deployed by over 100 different customers.

**Q: Are there customers of your product who are willing to be references?**

A: Yes. Customer references are available upon customer request. In addition, customer testimonials may be found on the Charles web site at <http://www.charlesindustries.com/hvdl.htm>.

**Q: What is the product warranty?**

A: Charles Industries offers a five (5) year warranty on the HVDL 3.1 system. Product is warranted from date of shipment unless otherwise indicated.

**Q: Please provide contact names for product support questions?**

A: Charles Industries offers Technical Support 24 hours a day, seven days a week and our Technical Support Center can be reached toll-free at (800) 607-8500 or at the main corporate telephone number (847) 806-8500. Our Technical Support Staff can also be reached via fax at (847) 806-8556 or via email at [techserv@charlesindustries.com](mailto:techserv@charlesindustries.com).

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