Voice and Data Switching Subsystem

Applications

Ideal for Connecting Multiple Modems to one Another

Switch Radio Lines, Voice Lines, and Higher Voltage Control Signals Simultaneously

Eliminate Manual Wiring/Rewiring and Eliminate Costly Mistakes

In use by Federal Aviation Administration

State-of-the-art Interfacing Allows for Easy Expansion

High-density Switch Cards Mean Significantly Smaller Footprints

Overview

VXI Technology's Voice and Data Switching (VDS) System is designed to replace existing routing systems with an automated and modular design that eliminates time consuming and error- prone manual interventions. The VDS systems are capable of supporting large I/O requirements in a small footprint through the use of high- density switching cards. This is extremely useful when multiple devices must be linked together to test out a telecommunications path.

Any device that can be part of the path is hardwired one time to a main panel which, in turn, interfaces to the VDS. The system then makes the necessary connections to establish the desired path. Pictured above is a VDS that was built for the Federal Aviation Administration. The FAA used the VDS to simulate different air - ground, ground - ground scenarios. At their facility, they have a number of different voice switches, radios, recorders, etc.

Any of these devices has a number of associated I/O which may be part of a communications path. Figure 1 is an example of a path that is established when an air traffic controller communicates with a radio. This VDS allowed for, but is not limited to, over 700 input/output points (over 20 devices) that could connect with each other. Software prevents undesirable connections.

Advanced Technology: Switches

The heart of the VDS is VXI Technology's SM400x series of switch cards. These cards offer the highest density of matrix switching available on the market today with over 5000 crosspoints in a single 'C'-size chassis. Robust electromechanical relays, ideal for telecommunication applications, are used. These are capable of switching up to 2A, which allows higher voltage control as well as voice signals to be transmitted and switched in the same system. The relays are rated for millions of operations, insuring signal path integrity. The modular design allows the user to 'custom configure' the system to meet all combinations of voice, control and data (RS232/ RS422) requirements. The most critical phase in configuring a VDS is identifying the number of inputs and outputs that will be interfaced to it. This determines the amount of switching needed to meet the minimum requirements.

The VDS is configured in 'building blocks' and can easily accommodate future expansion needs through its state of the art cabling and interfacing. A printed circuit and cable design bridges the individual switch cards

Application Note

together to form larger matrices. RJ21 connectors are the standard interface between the VDS and the I/O, although custom needs can also be satisfied.

Operator Interface: The Software

A powerful software package is used to allow the technician to create the signal path. The software GUI has been written to give the familiar look and feel of Windows Explorer™. Devices are grouped within their associated types (voice/data/control), and as paths are established, the devices involved are tracked by the GUI. Paths can be printed out and saved for testing purposes. Additionally, multiple users can simultaneously use the system without the fear of interfering with others as there is built-in device conflict checking

Self Test

An extensive self-test has been developed to further ensure that the VDS is fully functional. VXI Technology's VMIP™ series of instruments, including the VM2716A high density scanning voltmeter, are used to verify that all relays are opening and closing properly. The self-test is part of the software package and requires little manual intervention. All limit checking and verification is performed by the software, and a failure analysis report can be printed out in the event that there are any failures.