

Robust Switch Matrix Eases Multichannel Testing

This rack-mountable, 20 × 6 nonblocking switch matrix provides the performance and flexibility to speed and simplify connections to multiple test systems.

Modern components and subsystems—whether in commercial or military applications—must often be tested for a multitude of different characteristics, often requiring disparate test systems to make the required measurements. This can be done by loading a device under test (DUT) into a test fixture and physically moving it from test system to test system.

However, there is an easier way: Use a switch matrix with the capacity and performance to make the connections between the DUT and the different test systems electronically, such as the model ZT-20X6NB 20 × 6 nonblocking switch matrix from Mini-Circuits (www.minicircuits.com). With a bandwidth of 600 to 6,000 MHz and enough ports to connect a slew of test instruments/systems at one time, it even includes a front-panel touchscreen for easy on-the-spot control.

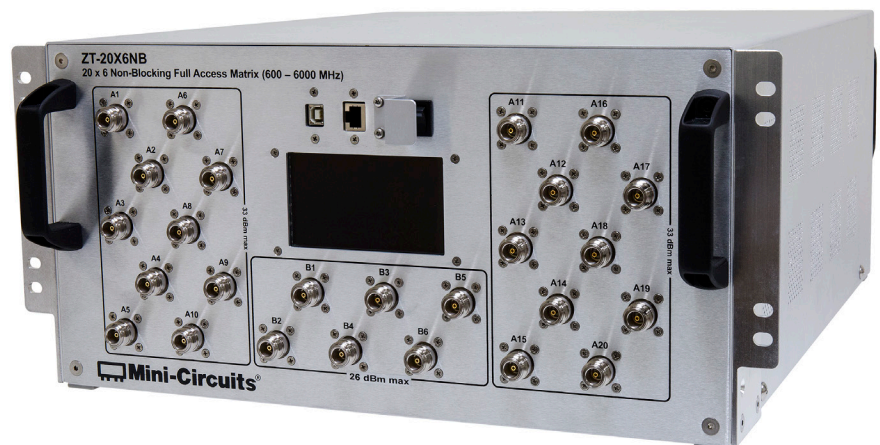
Better still, the ZT-20X6NB boasts enough digital interfaces for connection to almost any PC. This switch matrix has been built to last, with excellent long-term reliability and minimal degradation in electrical performance, even after millions of switching cycles.

For those who may have considered Mini-Circuits “only” a supplier of cost-effective RF/microwave components, the ZT-20X6NB (see figure) shows another side of the firm’s engineering capabilities. Housed in a solid aluminum 5U-high, 19-in.-wide rack-mount chassis, this subsystem is designed to take on the everyday

punishment of high-volume measurements in a test laboratory or production line.

Removing the cover reveals a true high-frequency subsystem design and layout, containing many of the company’s components. Peering into the heart of the unit shows great attention to detail regarding component placement, coaxial interconnections, and thermal management. The fan-cooled switch matrix can handle input signal power levels to several watts (+36 dBm) to accommodate a wide range of communications components and systems testing through 6 GHz.

The ZT-20X6NB creates bidirectional signal paths, with an almost unlimited number of port-to-port combinations. These can be set from the front panel—via Mini-Circuits’ user-friendly graphical-user-interface (GUI) program—or else programmed using the ActiveX and .NET APIs provided



The rack-mountable ZT-20X6NB 20 × 6 switch matrix, with a frequency range of 600 to 6,000 MHz, covers the bulk of the world’s telecommunications bands for programmable signal routing in automated test applications.

with the switch.

The front panel is well organized, with RF/microwave interconnections made by means of Type-N female connectors that are all accessible from the front panel. The connectors are organized into “A” and “B” ports. The six B ports can be connected to any combination of the 20 A ports without compromising the expected switch-matrix performance characteristics, such as isolation and insertion loss.

In fact, all six A ports can be combined to the same B port simultaneously, as might be done for multiple-input, multiple-output (MIMO) system testing. The switch matrix has both USB and Ethernet control interfaces for remote control and programmability via an external PC with internet access, using CloudShell software.

In terms of performance, the ZT-20X6NB switch matrix is rated for +36 dBm maximum average power into any A port and +26 dBm maximum average power into any B port. The typical return loss is 12 dB across the full frequency range. The typical isolation is 80 dB between any two A ports; 30 dB between any pair of B ports connected to the same A port; and 80 dB for any pair of B ports when connected to different A ports.

The ZT-20X6NB 20 × 6 switch matrix is a well-built signal-routing solution for automated testing of multiple communications channels with a number of test systems. When one ZT-20X6NB is not enough, multiple matrices can be combined for truly high-volume signal interconnections. The unit measures 19.00 × 8.73 × 20.18 in. It is designed for 90- to 260-V ac, 47- to 63-Hz supplies.

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