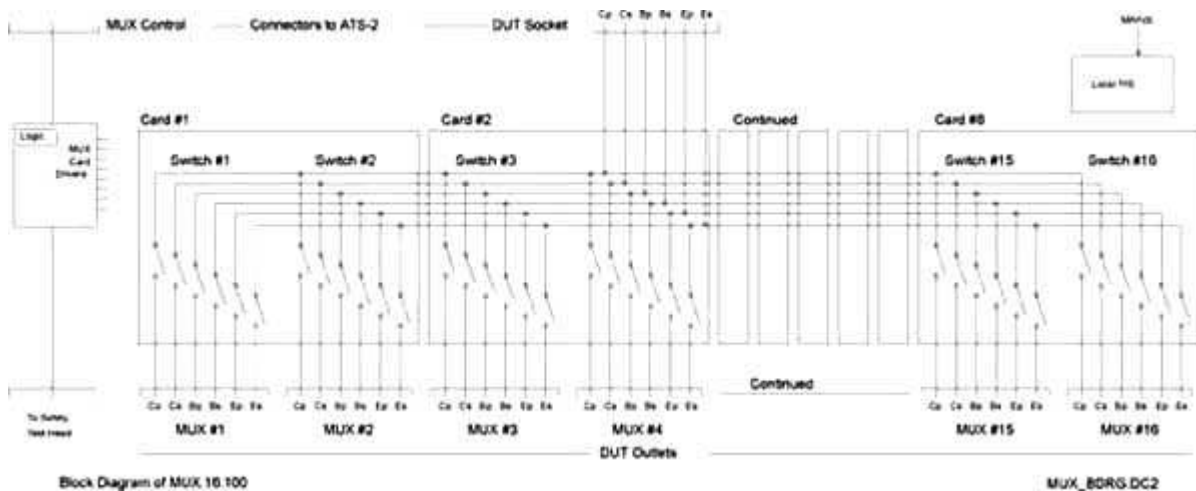


The Multiplexers

An Introduction

The term “**multiplexer**” is used by **Challenge Innovations** to denote a multiple way “switch” which routes a DUT (Device Under Test) connector on the front of an ATS-2 or similar Static Parameter Tester to a number of DUTs. These can be individual devices or multiple devices inside a module.

A typical example is shown below. This routes the DUT socket on an ATS-2 Static Tester to 16 DUT outlets mounted on the multiplexer’s (MUX.16.100) front panel.



Each “**switch**” consists of 6 poles, two for Collector/Drain, two for the gate and two for the emitter/source leads on the DUT. Four of these switches use reed relays capable of 2kV and 1A max. for the sense and gates. The other two are power switches and are made to suit the maximum current that will be carried and how that current is distributed from the Tester. Relay contacts are used with capabilities of 16A DC to 30A DC depending on the application. Lifetimes of > 50 million operations can be expected from each contact as all are switched with no current flowing. The reed relays have a much longer lifetime.

The 16A relays are used to carry up to 100A max. for 400usec. generated by the 100A version of the ATS-2. Three are used to carry the separate 100A max. currents generated by the 300A version of the ATS-2.

The 30A DC relays are used to carry the DC generated by the PDA-4 and TRA-2 Tjc Testers and the SBA-3 FBSOA Testers.

Control of all relays is via the Testers MUX output socket and the operating software. It is completely transparent to the user.

The 16 groups of relays in the MUX.16.100 example above are switched together.

Another design is the “**Scanner**” where each relay contact is activated separately under software control. The above example would be a 6 input - 96 output scanner.

Challenge Innovations make both types of design but recommend the “multiplexer” type. The scanner would save some external wiring to the DUT but the software definitions and the relay driving requirements are far

more complex and prone to errors.

All the multiplexers **include** internal power supplies, decoding circuitry and, when lgbt or Power-fets are to be tested, the gate resistors with their own relays. Normally all the gates are kept referenced to their emitters via 200R resistors until a test is applied which requires an open gate-emitter.

The Standart "Relay Type" Multiplexers include:

Type	No. of outlets	Capability Tester		
MUX.30.100	30	2kV / 100A	ATS-2 / 100A	
MUX.16.100	16	2kV / 100A	ATS-2 / 100A	
MUX.16.300 (Picture shown below)	16	2kV/ 300A	ATS-2 / 300A	
MUX..8.300 300A	8	2kV/ 300A	ATS-2 /	
MUX.8.600 300A Booster	8	2kV / 600A	ATS-2 / 300A +	
MUX.4.1200	4	2kV/ 1200A	ATS-2 / 300A + 900A Booster	
MUX.2.2400 1200A Booster	2	2kV / 2400A	ATS-2 / 30A +	
			+900A Booster	

Special "Relay Type" Multiplexers give the choice of:

- DUT Outlet connector type,
- Number of DUT outlets and their position,
- Parallel multiplexer relays for Tjc/FBSOA test types

Please contact **Challenge Innovations** or their Agents for prices and details of the best multiplexer design for an application.

