NEW

S600 Series
Multi Channel Power Supply Tester

Configurable for Parallel Testing of 1 to 16 Devices

NH Research

Key Features

- Maximum test throughput through parallel testing of multiple devices & outputs
- Ease of reconfiguration or expansion through front-loading, card-based instruments
- Built-in waveform digitizers on all instruments
- Space-saving design

Applications

Model S600 Multi-Channel Testers combine a wide range of configuration options with extremely fast test speeds to deliver the lowest unit-cost-of-test for high-volume power conversion devices such as AC-DC power supplies, adapters, chargers, LED power drivers, DC converters, and voltage regulator modules. S600s may be configured to efficiently test anything between a single supply with as many as 16 outputs, 16 separate single-output supplies or any combination of supplies and outputs between those two limits.

Model S670

Distributed Measurements the Key to Test Speed

The S600 Series exceeds traditional test system design that has a single measurement instrument shared by sequencing through each load channel. Now, a powerful measurement capability is built-in to each load so that all measurements are made much faster and at the same time as all other loads. Likewise, multiple unit input measurements can be made in the same manner through individual measurement cards with similar capability. In short, a dedicated measurement device is available for each and every source and load channel.

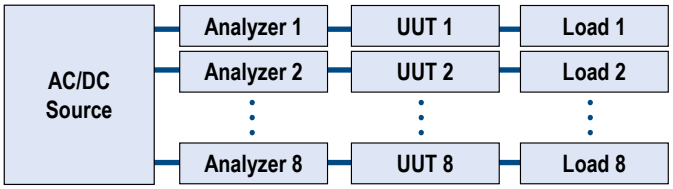


***Figure 1(a)** - Distributed Measurements: Diagrammatically illustrating how 8 single-output UUTs & a single AC/DC source would be connected with one 4300 chassis containing all loads & power analyzers. A second 4300 chassis would allow testing 16 UUTs in parallel.*

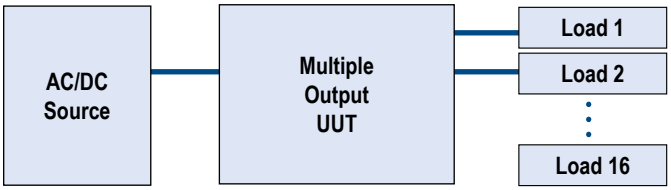


***Figure 1(b)** - Distributed Measurements: showing how a multi-output UUT & AC/DC source would be connected with one 4300 chassis. If UUT outputs and 8 or less, additional UUTs could be tested in parallel with addition of Power Analyzers.*

Digital Loads with Advanced Measurement Capability

The core of the S600 utilizes modular 120V and 500V loads with 150, 300 and 600W ratings. For higher power loading, the S600 can now be configured with 120V and 600 V loads from 1 to 6 kW ratings. All loads contain a digital measurement system featuring 2 isolated channels of 1MS/sec digitizing capability.

For multiple output supplies, the S600 precisely measures the relationship between all analog and digital voltages / currents of each output simultaneously (*Fig. 2*).

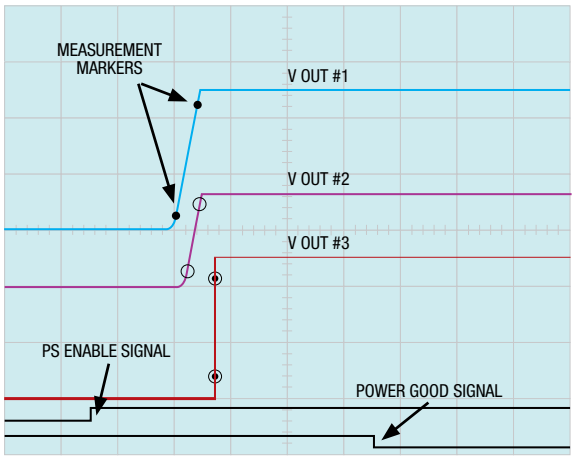


***Figure 2** - Multi Output/Multi UUT Monotonicity & Timing including Digital Logic*

Digital Power Analyzer

A single plug-in card contains the Digital Power Analyzer which is used to measure key parameters on individual channel input conditions when multiple UUTs are sharing the same AC or DC source. This capability allows measurement of critical input-to-output conditions such as efficiency (*Fig. 3*).

***Figure 3** - A key core instrument of the S600 Multi-Channel Test System is the Model 4301 Digital Power Analyzer.*

Ease of Expansion or Reconfiguration

The front-loading, card-based design of both the Modular Loads and Power Analyzer make reconfiguration for another type of device to be tested, a straight forward matter (*Fig. 4*).

***Figure 4** - Front loading, card-based design makes removal & reconfiguration easy*

Advanced AC/DC Source

An advanced AC/DC Power Source, the Model 9420, is now available for the S600 Series. With power ratings of 4, 8 or 12 kW and programmable single, split or 3-phase output, this versatile source can also program power line disturbances as well as measure Energy Star low currents (*Fig. 5*).

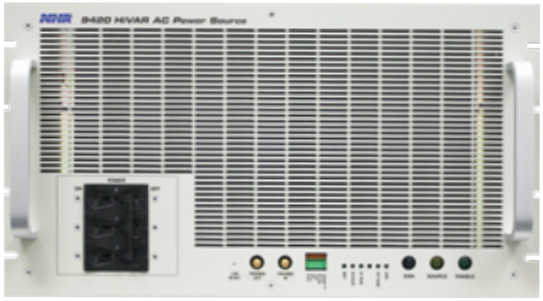


***Figure 5** - Model 9420-4 AC/DC Power Source*

*em*Power® Test Executive

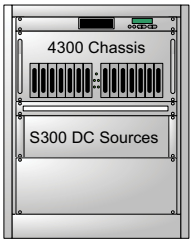
A comprehensive test executive is provided with the S600 Series for the rapid development of test sequences, full interactive (manual) control and display of all measurements and waveforms. Included is a comprehensive library of production–ready Test Routines (*Fig. 6*) and test report templates.

General Tests	Dynamic Tests (continued)	Output Control	Measurements (continued)
Output Accuracy	Worst-Case Dynamic Transient	Single Digital (Out) Control	RMS (AC or DC Coupled)
Output Adjustment	Over/Under-Shoot	Byte/Word Digital Control	Frequency Spectrum
Output Trim	Settling/Recovery Voltage	Over-Voltage Driver	Voltage Waveform Capture & Analysis
RMS Noise/Ripple	Settling/Recovery Time	Over-Temperature Driver	Current Waveform Capture & Analysis
Operator Data Entry	**Production Tests**	**Regulation Tests**	Digital State
Visual Confirmation (Acceptance)	Efficiency	Line Regulation	Time at Event
Operator Workflow Instructions	Average Efficiency	Load Regulation	Measurement at Event
Power Fail Signaling	Over-Current Protection	Cross-Channel Load Regulation	**Timing Tests**
Power Good Signal	High-Accuracy OC Protection	Output Regulation (V, I, P)	Rise/Fall Time
P/S ON Signal	Over-Voltage Protection	**Measurements**	Turn-On/Off Time
Multi-Measure	Under-Voltage Protection	Voltage/Current/Power	Hold-Up Time
Monotonicity	High-Accuracy OV Protection	Mean	Transient Recovery Time
Dynamic Tests	Over-Power Protection	DC Peak (+ & -)	Overshoot/Undershoot Width
Single Load Transient	High-Accuracy OP Protection	AC Peak (Min/Max)	
Multi-Output Load Transient	Short Circuit Recovery	Peak-Peak	

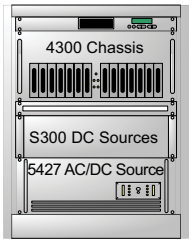
Figure 6 *- S600 emPower Production Ready Test Routines*

Compact Cabinet Choices

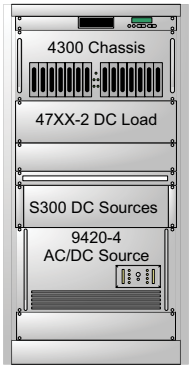
The S600 Series of testers come in 3 standard sizes of cabinets that are determined by the quantity and size of selected power/measurement stimulus (*see configurator on last page*). Once the necessary instruments are selected, the illustrations below show how they may be configured within each of the cabinets.



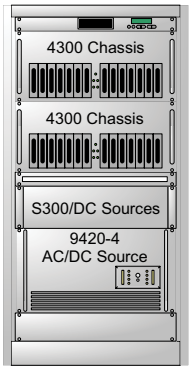
S650 DC-DC Tester
Up to 16 Outputs
Up to 2400W DC Loads
Up to 2400W DC Sources



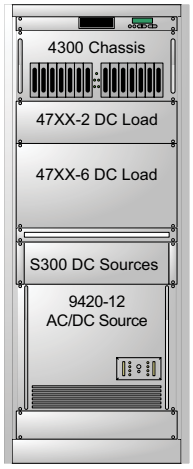
S650 AC-DC Tester
Up to 16 Outputs
2.7KVA/2kW AC/DC Source
Up to 2400W DC Loads
Up to 2400W DC Sources



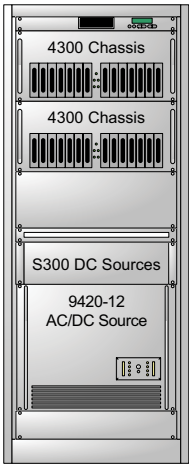
S670 AC-DC Tester
Up to 17 Outputs
10KVA/4kW AC/DC Source
Up to 8400W DC Loads
Up to 2400W DC Sources



S670 AC-DC Tester
Up to 32 Outputs
10KVA/4kW AC/DC Source
Up to 8400W DC Loads
Up to 2400W DC Sources



S680 AC-DC Tester
Up to 18 Outputs
30KVA/12kW AC/DC Source
Up to 8400W DC Loads
Up to 2400W DC Sources



S680 AC-DC Tester
Up to 32 Outputs
30KVA/12kW AC/DC Source
Up to 8400W DC Loads
Up to 2400W DC Sources

S600 Configurator *(See separate datasheets for complete specifications of individual instruments below)*

Physical	S650	S670	S680		
Common Equipment*	Dell PowerEdge Server preconfigured w/ emPower Test Executive (1U), 4300 16-Slot Chassis (5U) & pass-through cable management slot (1U)				
Overall Cabinet Height**	30”/762mm	49”/1245mm	61”/1549mm		
Instrument Space	24½”/622mm (14U)	40¼”/1022mm (23U)	52½”/1333mm (30U)		

*includes ≥ 3.3GHz Intel processor, ≥ 500GB hard drive, Windows 10 **includes 2” casters, 2 U reserved for internal wiring

Power Analyzer Measurements					
Voltage	600VDC, 350VRMS, Vpk+, Vpk-				
Current	20ADC, 20ARMS, Ipk+, Ipk-				
Power	Average, True, Apparent, Reactive, Power Factor				
Frequency	10 - 1000Hz				
Waveform	Rise Time, Fall Time, Settling Time, Turn-On Time, Hold-Up Time, Time Event, THD				
Timing	Trigger In, DIN State & Time				
Record Length	256K Points				
Power Instrument Options					
AC/DC Sources	Power	Voltage	Current	Panel Ht./Slots	Phases
5427	2.7 kVA/2 kW	300 VRMS/424 VDC	9 ARMS/9 ADC	7”/178mm (4U)	1
9420-4	4 kW/10½ kVA	350 VRMS/400 VDC	30 ARMS/30 ADC	10½”/267mm (6U)	1
9420-8	8 kW/21 kVA	350 VRMS/400 VDC	60 ARMS/60 ADC	15¾”/400mm (9U)	1, Split
9420-12	12 kW/32 kVA	350 VRMS/400 VDC	90 ARMS/90 ADC	15¾”/400mm (9U)	1, Split, 3

Modular DC Sources for 6- Slot S300 Chassis				
	Power	Voltage	Current	Panel Ht./Slots
6102	450W	0 -20VDC	60A	1
6104	450W	0 - 40VDC	30A	1
6108	450W	0 - 80VDC	15A	1
6145	450W	0 - 450VDC	8A	1
Modular Electronic Loads for 16-slot 4300 Chassis				
4312-150	150W	0.6 - 120VDC	40A	1
4312-300	300W	0.6 - 120VDC	80A	2
4312-600	600W	0.6 - 120VDC	150A	4
4350-150	150W	2.3 - 500VDC	30A	1
4350-300	300W	2.3 - 500VDC	60A	2
4350-600	600W	2.3 - 500VDC	120A	4
High-Power, High-Current Loads				
	Power	Voltage	Current	Panel Ht./Slots
4700-1	1kW	1 -120VDC	200A	5¼”/133mm (3U)
4700-2	2kW	1 -120VDC	400A	5¼”/133mm (3U)
4700-3	3kW	1 -120VDC	600A	10 ½”/267mm (6U)
4700-6	6kW	1 -120VDC	1200A	10 ½”/267mm (6U)
High-Power, High-Voltage Loads				
4760-1	1kW	7 - 600V DC	50A	5¼”/133mm (3U)
4760-2	2kW	7 - 600V DC	100A	5¼”/133mm (3U)
4760-3	3kW	7 - 600V DC	150A	10 ½”/267mm (6U)
4760-6	6kW	7 - 600V DC	300A	10 ½”/267mm (6U)

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