



## Applied Test Resources

# MTS-1020i Mixed Signal Test Systems

### System Description:

The MTS-1020i is a cost effective production ATE designed for testing high-volume linear and mixed signal semiconductor devices (Op Amps, high-voltage drivers, DAC, ADC, etc.), both at the wafer sort and final test stages of the manufacturing process.

It is a lower cost version of the MTS-2010i model. The only difference is that the MTS1020i has 8 slots.

### Architecture:

The MTS-1020i has a modular architecture that places all resources directly at the DUT board. Each resource contains a full system for measurement and sourcing. This permits real parallel testing of dual and quad devices by selecting the necessary cards. Any card may be placed on any of the 8 slots. One additional advantage of this architecture is that it makes it possible to use existing DUT boards from other test platforms by appropriately routing the connections on the DUT Board, making it possible to use existing hardware. The calibration methods used by the MTS1020i eliminate the errors introduced by the additional wiring and connections made when interfacing to existing Load Boards.

### New Technology:

There are two principal technical innovations present on the MTS1020i: Zero Time Averaging™ (ZTA™), and Real Time Hardware Error Correction™ (HEC™). ZTA is a hardware implementation that greatly improves the time to make measurements. With this hardware, it is possible to obtain the same repeatability obtained by averaging 20 measurements but only take the time for a single measurement. HEC allows the tester to actually achieve the accuracy, when forcing or measuring a parameter, of the calibration standard used when the resource was calibrated.

The use of ZTA, HEC, as well as onboard controllers on each of the resources results in the MTS-1020 achieving very fast test times, while actually increasing the accuracy of the results.

The final result of all this is much lower test costs and higher test yields.

### Handlers/Probers:

The MTS1020 can interface to any prober/handler that has either a parallel, IEE488/GPIB/HPIB, or RS232 Serial interface. The software has a very user friendly Graphical interface that permits easy configuration & driver creation. In addition, the handler port allows connection of up to three handlers simultaneously for full Parallel Operation, allowing for a virtual no-index time testing.

### System Software:

The system software is WINDOWS-NT/2000/XP\* based. It is very powerful, and secure, while maintaining the user-friendly environment of the WINDOWS operating systems. The operator interface was created so that any person familiar with programs like WORD, EXCEL, Power Point, or other Windows software, would be able to operate the tester in a matter of a few minutes.

The Engineering interface uses Visual C++ from Microsoft. This development environment is very widely used and very easy to learn, while providing very powerful control capability over the tester.

### System Resources:

There are two types of resources available: General Purpose System Resources, and Device Family Specific Resources. General Purpose System Resources are design to be used for testing a wide variety of devices from different family types. They contain a high degree of flexibility and capability. Device Specific Family Resources are optimized for a specific family of parts. They are fully integrated resources that contain all the sub-modules necessary to test a particular family of devices. They bring a high degree of cost effectiveness and efficiency to testing the family of devices they are targeted for.

\* Microsoft, Windows NT, Windows 2000, Windows XP, Visual C++ are registered trademarks of Microsoft Corporation



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## System Specifications

Input Specifications					
Parameter	Conditions / Description	Min	Nom	Max	Units
Input Voltage – AC (Note 1)	Jumper Selectable	90	100	105	VAC
		108	120	125	VAC
		200	220	230	VAC
		215	240	250	VAC
Input Frequency	AC Input	47		63	Hz
Input Current				20	Amps

Environmental Specifications					
Parameter	Conditions / Description	Min	Nom	Max	Units
Ambient Operating Temperature	Functional	15	25	35	°C
	Within Specification	20	25	28	°C
Storage Temperature		-40		85	°C
Relative Humidity	Non-condensing	10%		10%	RH

\* Note 1: AC must be free of voltage transients. A high quality Power Line Conditioner may be required for equipment using high current and or high level transients present on AC line

Physical Specifications			
		Raw	Crated
Weight		75 Kg	100 Kg
Length		0.68 m	0.97 m
Width		0.56 m	0.72 m
Height		0.49 m	0.66 m

**Corporate Office:**  
Applied Test Resources Inc.  
Contact: Antonio Perez-Vargas  
Phone: (480) 829-8488  
Fax: (480) 829-8898  
Email: sales@atr-inc.org  
Website: www.atr-inc.org

**Distributor & Sales (Asia):**  
MIRAQ PTE LTD  
Contact: Patrick Ryan; Alex Khoo  
Phone: +65 6554-7233  
Fax: +65 6554-0280  
Email: sales@miraq.com.sg  
Website: www.miraq.com.sg



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## System Resources

### IC Family Specifications Resources

**PFM1010** Power Mosfet test Module. 50 V / 50 A Pulse power for 1 mS capability. Rds(on) Measurement capability to an accuracy  $\pm 1\%$  and a resolution of 1  $\mu\Omega$ .

**QOAL400** Quad OP Amp Module. Four Independent Channels. It is capable of measuring all common parameters of an Op Amp, including AC as well as DC parameter.

### Generic Resources

**DB1600** 16-Bit Digital Card; allows for the control of 16 bit of data. The logic levels may be programmed anywhere within the range of  $\pm 12$  V.

**DPB8800** 11" x 14" DUT Prototype Board; interfaces the tester with the DUT. Contains generous area for custom circuitry and extra relays. Available with standard solutions to test families of components like Op-Amps, Regulators, ADC's.  $\pm 15$  V and  $\pm 5$  V are available to support circuitry biasing.

**MATX4001** General Purpose Relay Matrix; provides an 8 x 5 switch matrix and 4 additional Relay Drive Lines. Each relay is capable of handling 1 Amp and can isolate up to 5 KV.

**MATX4010** General Purpose Relay Matrix; provides an 8 x 5 switch matrix and 4 additional Relay Drive Lines. Each relay is capable of handling 10 Amp and can isolate up to 5 KV.

**PM0650** 6-Channel Power Source providing 3 different supply requirements: 50 V / 2 A, 50 V / 50 mA continuous and 50 V / 2 A pulse. Floating  $\pm 2000$  V.

**PM0820** 8 independent Power Modules on a single card. Each module has a Four-Quadrant Power Source (20 V / 100 mA). Voltage / Current, Force / Measure capabilities.

**PM0825** 8 independent Power Modules on a single card. Each module has a Four-Quadrant Power Source. 3 different supply requirements: 20 V / 500 mA, 20 V / 100  $\mu$ A, 20 V / 100 mA. Voltage / Current, Force / Measure capabilities.

**PM0830** 8 independent Power Modules on a single card. Each module has a Four-Quadrant Power Source, 2 modules (30 V / 500 mA). And the other 6 modules (30 V / 50 mA). Voltage / Current, Force / Measure capabilities.

**PM1000** 1000 V / 20 mA Programmable Voltage supply. Force / Measure capabilities. Dissipation is limited to 5 W.

**PM2000** 200 V / 10 mA Programmable Voltage supply. Force / Measure capabilities to  $\pm 10$  nA accuracy.

**PM2010** Four-Quadrant Power Sources (20 V / 10 A). Voltage / Current, Force / Measure capabilities. Dissipation is limited to 50 W.

**SSM4010** General Purpose Switching Matrix; provides an 8 x 5 switch matrix. Each Row / Column consists of independent Force / Sense lines that are switched simultaneously.

**TMM200** Time measurement Unit for measuring such parameters as propagation delays, rise time, fall time and any other time-related parameter. It is well suited to test both digital and analog devices.