KEYSIGHT TECHNOLOGIES (AGILENT HP)

U2723A

The Keysight U2723A is a 3-channel USB Modular Source Measure Unit (SMU) designed for precise voltage and current sourcing and measurement. With its 4-quadrant operating capability, each of the three channels can source or sink up to ±20 V and ±120 mA. A defining feature of the U2723A is its embedded test scripting capability, allowing for standalone test sequences of up to 10,000 steps without continuous host PC polling. Operating with high-speed USB 2.0 connectivity, the U2723A is isolated for robust safety and noise reduction, making it ideal for semiconductor characterization, educational laboratories, and high-throughput automated test environments.

SPECIFICATIONS

General

Interfaces	USB 2.0 High Speed (USBTMC-USB488), System Synchronous Interface (SSI)
Display	None (status LEDs only)
Warm-up Time	30 minutes
Recommended Calibration Interval	1 year

Physical

Power Supply	12 VDC via external AC/DC power adapter (100 to 240 VAC, 50/60 Hz input)
Operating Temperature	0 to 50 °C °C
Dimensions (W×H×D)	117.00 mm × 41.00 mm × 180.00 mm (chassis without bumpers) mm
Weight	0.68 kg kg
Security Feature	Kensington security slot

Core Signal and Electrical Performance

Number of Channels	3
Operating Quadrants	4-quadrant (Source and Sink)
Output Voltage Range	-20 V to +20 V (per channel)
Output Current Range	-120 mA to +120 mA (per channel)
Maximum Power per Channel	2.4 W
Voltage Programming Ranges	±2 V, ±20 V
Current Programming Ranges	±1 µA, ±10 µA, ±100 µA, ±1 mA, ±10 mA, ±120 mA
Channel-to-Channel Isolation Voltage	60 VDC
Voltage Programming Resolution (2 V Range)	100 µV
Voltage Programming Resolution (20 V Range)	1 mV
Voltage Measurement Resolution (2 V Range)	100 µV
Voltage Measurement Resolution (20 V Range)	1 mV
Current Programming Resolution (1 µA Range)	100 pA
Current Programming Resolution (10 µA Range)	1 nA
Current Programming Resolution (100 µA Range)	10 nA
Current Programming Resolution (1 mA Range)	100 nA
Current Programming Resolution (10 mA Range)	1 µA
Current Programming Resolution (120 mA Range)	10 µA
Current Measurement Resolution (1 µA Range)	100 pA
Current Measurement Resolution (10 µA Range)	1 nA
Current Measurement Resolution (100 µA Range)	10 nA
Current Measurement Resolution (1 mA Range)	100 nA
Current Measurement Resolution (10 mA Range)	1 µA
Current Measurement Resolution (120 mA Range)	10 µA
Voltage Programming Accuracy (2 V Range)	±(0.075% + 1.5 mV)
Voltage Programming Accuracy (20 V Range)	±(0.05% + 10 mV)
Voltage Measurement Accuracy (2 V Range)	±(0.075% + 1.5 mV)
Voltage Measurement Accuracy (20 V Range)	±(0.05% + 10 mV)
Current Programming Accuracy (1 µA Range)	±(0.085% + 0.85 nA)
Current Programming Accuracy (10 µA Range)	±(0.085% + 8.5 nA)

Current Programming Accuracy (100 µA Range)	±(0.075% + 75 nA)
Current Programming Accuracy (1 mA Range)	±(0.075% + 750 nA)
Current Programming Accuracy (10 mA Range)	±(0.075% + 7.5 µA)
Current Programming Accuracy (120 mA Range)	±(0.1% + 100 µA)
Current Measurement Accuracy (1 µA Range)	±(0.085% + 0.85 nA)
Current Measurement Accuracy (10 µA Range)	±(0.085% + 8.5 nA)
Current Measurement Accuracy (100 µA Range)	±(0.075% + 75 nA)
Current Measurement Accuracy (1 mA Range)	±(0.075% + 750 nA)
Current Measurement Accuracy (10 mA Range)	±(0.075% + 7.5 µA)
Current Measurement Accuracy (120 mA Range)	±(0.1% + 100 µA)

Measurement Capabilities and Timing

Embedded Test Scripting Memory	Up to 10,000 steps
Maximum Measurement Speed	18 readings/s

Connectivity, Ports, and Interfaces

Primary Connection Interface	USB 2.0 (Mini-B connector)
Multi-Unit Synchronization	System Synchronous Interface (SSI)
Output Connector Type	Plug-in terminal block

User Interface and Software Control

Programming Language Compatibility	SCPI
Standard Software Compatibility	Keysight Measurement Manager (KMM)
Software Driver Support	IVI-COM, IVI-C, LabVIEW

Power and Electrical Specifications

Power Supply Input Voltage	12 VDC
Maximum Current Consumption	3.0 A
Power Adapter Requirements	100 to 240 VAC, 50/60 Hz (AC/DC Adapter included)

Physical and Mechanical Attributes

Form Factor	USB Modular / Benchtop
Chassis Width	117.00 mm
Chassis Height	41.00 mm
Chassis Depth	180.00 mm
Chassis Weight	0.68 kg

Environmental and Compliance Standards

Storage Temperature Range	-20 to 70 °C
Operating Humidity Range	20% to 85% RH (non-condensing)
Storage Humidity Range	5% to 90% RH (non-condensing)
Maximum Operating Altitude	2,000 m
Safety Compliance Standards	IEC 61010-1, EN 61010-1
EMC Compliance Standards	IEC 61326-1, EN 61326-1, ICES-001, AS/NZS CISPR 11

Configurations, Options, and Accessories

Standard Included Accessories	AC/DC Power Adapter, Power Cord, USB Standard-A to Mini-B Cable, L-Mount Kit, Quick Start Guide, Keysight Measurement Manager (KMM) software, Calibration Certificate

Pulse Generation

Minimum Pulse Width	500 µs
Maximum Pulse Width	65.535 s
Pulse Width Resolution	100 µs
Minimum Pulse Period	1 ms
Maximum Pulse Period	65.535 s

Regulation

Voltage Line Regulation	0.01% + 100 µV
Current Line Regulation	0.01% + 100 pA
Voltage Load Regulation	0.01% + 100 µV
Current Load Regulation	0.01% + 100 pA

Measurement Performance

Voltmeter Input Impedance	> 10 GΩ

Noise and Ripple

Peak-to-Peak Voltage Noise (2 V Range, 0.1 Hz to 10 Hz)	< 50 µV
Peak-to-Peak Voltage Noise (20 V Range, 0.1 Hz to 10 Hz)	< 100 µV

Isolation & Safety

Maximum Common Mode Voltage	±60 VDC

Guard & Sense

Maximum Sense Lead Resistance	1 Ω (for rated accuracy)
Sensing Modes	2-wire (local) or 4-wire (remote) sensing

Source Performance

Voltage Source Overshoot	< 1% (typical, with resistive load)
Voltage Rise Time	< 1.0 ms (typical, 10% to 90% into 166 Ω load)
Current Rise Time	< 1.0 ms (typical, 10% to 90% into 166 Ω load)

Connectivity & I/O

USB Interface Standard	USB 2.0 High Speed (USBTMC-USB488)

Environmental

Pollution Degree	Pollution Degree 2
Operating Environment	Indoor use

Safety & Isolation

Maximum Terminal-to-Ground Voltage	60 VDC

TECHNOLOGY

Source Measure Unit (SMU)

APPLICATIONS

Semiconductor IV Characterization, Automated Testing, Multi-Channel Parametric Measurement