# GSM-20H10

## Source Measure Unit

USB Device

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## **FEATURES**

- \* Maximum Output ±210V/±1.05A/22W
- \* Built-in 4 Sequence Output Modes (Stair, Log, SRC-MEM, Custom), up to 2500 Points
- \* OVP /OTP Protection Function
- \* 0.012% Basic Measure Accuracy with 61/2-digit
- \* Variable Sampling Speed
- \* SDM (Source Delay Measure) Cycle
- \* 2-, 4-, and 6-wire Remote V-source and Measure Sensing
- \* Variable Display Digits
- \* Built-in Limit Function
- \* Built-in 5 Calculation Functions
- \* 4.3" TFT LCD, Digital Number Keyboard
- \* Built-in RTC Clock
- \* Interface: RS-232, USBTMC, LAN, GPIB (Optional)

GW Instek GSM-20H10 is a Source Measure Unit that provides highly stable DC power and instrumentgrade 6½-digit multimeter measurements. While operating, it can be used as a voltage source, current source, voltmeter, ammeter, and ohmmeter, which is uniquely ideal for the evaluation of component characteristics and the test applications of production, including nanomaterials and components, semiconductor architecture, organic materials, high-efficiency illumination, passive components and material characteristics analysis, etc.

GSM-20H10 provides four-quadrant operation of ±210V/±1.05A/22W. The first and third quadrants operate as power supplies to supply power to the load. The second and fourth quadrants function as loads to consume power internally. Voltage value, current value and resistance value can be measured while operating the power supply or load function with an accuracy of 0.012% and a resolution of  $1\mu V/10pA/10\mu Ω$ .

With respect to sampling rate, GSM-20H10 supports a sampling rate of up to 50k points/second, which can accurately analyze the characteristics of the DUT. With the large 4.3-inch screen, all measurement settings, parameters and results can be completely displayed on the screen. The SDM (Source Delay Measure) function is provided to delay sampling when the signal changes so as to prevent the unstable signal from being captured and cause misjudgment. There are four built-in sequence output modes (Stair, Log, SRC-MEM, Custom), which can support up to 2500 points of sequence variation output.

Pertaining to protection, GSM-20H10 provides OVP/OTP modes. The design of OVP allows users to self-define the range of OVP. OTP can effectively prevent errors caused by temperature drift during the test process. For interfaces, this product supports standard SCPI commands and provides RS-232, USBTMC, LAN, GPIB (optional) interfaces to meet users' different interface needs.

# **APPLICATIONS**

- \* Semiconductor Component Characteristic Testing
- \* Energy and Efficiency Characteristic Testing
- \* Organic Material Characteristic Testing
- \* Nanomaterial Characteristic Testing

#### SPECIFICATIONS NOTE:

- 1. Speed = Normal (1 NPLC). For 0.1 PLC, add 0.005% of range to offset specifications, except 200mV, 1A ranges, add 0.05%. For 0.01 PLC, add 0.05% of range to offset specifications, except 200mV, 1A ranges, add 0.5%.

  2. Required to reach 0.1% of final value after Command is processed. Resistive load. 10μA to 100mA range.

  3. Overshoot into a fully resistive 100kΩ load, 10Hz to 1MHz BW, adjacent ranges: 100mV typical, except 20V/200V.

- $4.\ Maximum\ time\ required\ for\ the\ output\ to\ begin\ to\ change\ following\ the\ receipt\ of: SOURce: VOLTage|CURRent$
- 5. Reading rates applicable for voltage or current measurements, autorange off, filter off, display off, trigger delay
- = 0, and binary reading forma.

  6. Purely resistive lead. 1µA and 10µA ranges <65ms.

  7. 1000 point sweep was characterized with the source on a fixed rang.
- Note that the performed using one high limit and one low math limit.

  Includes time to re-program source to a new level before making measurement.

  Includes time to re-program source to a new level before making measurement.

  Includes from falling edge of START OF TEST signal to falling edge of END OF TEST signal.

  Command processing time of: SOURce: VOLTage|CURRent: TRIGgered <nrf> Command not included.

Speed   NPLC/Trig	J. Len I	CALIONS												
Company   Comp				±210V										
Magnetic	MAXIMUM	Current		±1.05A										
Control   Cont														
Court   Cour														
Column			Output Voltage	±21V / ±1.05A, ±210V / ±105 mA										
Victor			Current Limit			000		.2.000001		.20.00001		T	200 0001/	
Viving														
Control   Cont				Accuracy	cy ±(0.02%+600μV)		±							
Control   Cont		DC Voltage			100μV									
Property   Company   Com					scale step.resistive le	ad, 10mA range)								
Page			Recovery Time											
SOURCE   Formation Confident						*	T compliancely							
Page														
No. Current				±1.05A / ±21V, ±105 mA / ±210V										
Position of the Section	SOURCE					±10.0000µA	±	100.000µA	±1.00000mA	±10.00000	mA	±100.000mA	±1.00000A	
Common   Section   Secti				Resolution	10pA	100pA		1nA	10nA	100nA		1μΑ	10μΑ	
Part   Control		DC Current	•			±(0.033%+2n	A) ±(0.	031%+20nA)	±(0.034%+200nA)	±(0.045%+2	2μA) ±	(0.066%+20µA)	±(0.27%+900μA)	
Control   Cont					.uupa									
Content   Final Content			Overshoot	<0.1% typical (1m										
Corest   C				±(0.15 × accuracy specification)/°C (0°~18°C & 28°~50°C)										
Company   Comp														
Compared Accuracy		General	DC Floating Voltage	Output can be floated up to ±250VDC										
Page   Dange Change Chemical Value				Up to 1V drop per load lead  Add 0.3% of range and ±0.02% of reading to base specification										
Minimum Complates Value   15 of fire large   15 o														
Volge   Property   P			Minimum Compliance Value	0.1% of range										
March   Marc				Autorange On:10ms. Autorange Off: 7ms										
Walge												200.000V		
Maintained Collision		Voltage						10μV						
MASSISSIMENT			•		Accuracy ±(0.012%+300μV) :						V)	±(0.0	)15%+10mV)	
Current   Programmed Source Recision   Security   1,000,000,000   1,000,000   1,					specification)/ C (0	-18°C & 28°~50°C)								
MESUREMENT  MESURE		Current	, ,		±1.00000μA		±	Αμ00.000			mA	±100.000mA	±1.00000A	
### MESUREMENT  ### Temperature Coefficient  ### Accuracy  ### Decident  ### Accuracy  ### Decident  ### Accuracy  ### Decident							A) (0				20. 41			
MESURAMENT			Temperature Coefficient				pA)   ±(0.	UZ5%+bnA)	±(0.027%+60nA)	±(0.035%+60	JUNA) :	¿(0.055%+6µА)	±(0.22%+570μA)	
Page			Temperature coemicient	Z(0.11 % decuracy .			000Ω	20.000	00Ω	200.000Ω	2.00	000kΩ	20.0000kΩ	
Resistance			·											
Resistance	MEASUREMENT				(0.19/0.002.0) Normal(0.099/0.02.0) Normal(0.079/0.2.0) Normal(0.079/0.2.0) Normal(0.079/0.2.0)									
Peristance				Accuracy	Source IACC+Meas.VACC Source IACC+		:+Meas.VACC							
Resistance								00MΩ 20.0000N						
Accuracy   16(0079-1800), Normal   6(0119-1800), Normal   16(018-100), Normal   16(018		Resistance												
Temperature Coefficient   Sign 13 x accuracy specification (**   19,035%+1000; privanced   19,		Resistance			±(0.07%±300) Normal ±(0.11%±3000) Normal ±(0.11%±100) Normal ±(0.66%±1000) Normal									
Section   Component   Compon				Accuracy ±(0.05%+10Ω), Enhanced ±(0.05%+10Ω), Enhanced ±(0.05%+50Ω), Enhanced ±(0.35%+5kΩ), Enhanced source IACC+Meas.VACC										
Source W mode, Manual OHMS   To CHMS Mode   Mailable using active thms goard and goard senses. Misc. Guard Output Current: 30mA (except 1A.range). Accuracy is lead dependent				$\pm (0.15 \times accuracy specification)$ /°C (0°~18°C & 28°-50°C)										
Mainrum Range Change Rate														
Maximum Rasper Change Rate				Available using ac	tive ohms guard and	guard sense. Max. Guai	d Output Curre	nt: 50mA (except	1A range). Accuracy is	load dependent				
Maximum Measure Auto Range Time		Maximum Pange C			ıde .									
Special   Spec					e) *6									
Sequence Reading Rates = 7			Speed											
Rales 7		Securence Bending	•								TO GPIB			
Fig.   Jacob   Fig.   Fast   Component   The Fast		Rates *7 (rdg./second) for		0.01 / Internal					0 (000) 001		00 (040)			
Normal   1 / Internal   59 (49)   59 (48)   59 (48)   59 (48)   50 (47)   56 (47)   56 (47)   44 (38)   44 (38)   58 (48)   59 (49)   59 (49)   59 (48)   57 (48)				0.01 / external		1079 (1050)				2 (900) 8		165 (162)		
SYSTEM   SPEED 'S			Medium	0.1 / internal	1239 (1200) 510 (433)	509 (433)	1018 (990 470 (405)	910	5 (835) 830 0 (410) 389	2 (900) 8 0 (830) 7 9 (343) 3	756 (780) 88 (343)	165 (162) 163 (160) 133 (126)	162 (160) 132 (126)	
Speed   NPLC/Trig   Measure   Source-Measure 91   Source-Measure 92   Source-Measure Pass/Fall test 92, 91		60Hz (50Hz)	Medium 488.2	0.1 / internal 0.1 / external	1239 (1200) 510 (433) 438 (380)	509 (433) 438 (380)	1018 (990 470 (405) 409 (360)	910 470 409	5 (835) 830 0 (410) 389 9 (365) 374	2 (900) 8 0 (830) 7 9 (343) 3 4 (333) 3	56 (780) 88 (343) 74 (333)	165 (162) 163 (160) 133 (126) 131 (125)	162 (160) 132 (126) 131 (125)	
Operation Rates (rig/second) for (rig	SYSTEM	60Hz (50Hz)	Medium 488.2 Normal	0.1 / internal 0.1 / external 1 / internal	1239 (1200) 510 (433) 438 (380) 59 (49)	509 (433) 438 (380) 59 (49)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	5 (835) 836 0 (410) 389 9 (365) 374 3 (48) 56	2 (900) 8 0 (830) 7 0 (343) 3 4 (333) 3 5 (47)	56 (780) 88 (343) 74 (333) 56 (47)	165 (162) 163 (160) 133 (126) 131 (125) 44 (38)	162 (160) 132 (126) 131 (125) 44 (38)	
Volgs-scorolly of Ort 2 (OHz)	SYSTEM SPEED*5	. ,	Medium 488.2 Normal 488.2	0.1 / internal 0.1 / external 1 / internal 1 / external NPLC/ Trig	1239 (1200) 510 (433) 438 (380) 59 (49)	509 (433) 438 (380) 59 (49) 57 (48) Measure	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	5 (835) 836 0 (410) 385 0 (365) 374 8 (48) 56 7 (47) 56 Source-Measure *5	2 (900) 8 0 (830) 7 0 (343) 3 1 (333) 3 5 (47)	56 (780) 88 (343) 74 (333) 56 (47) 56 (47)	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) ource-Measure Pass	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 45/Fail test *8, *9	
Normal (488.2)		Single Reading Operation Rates	Medium 488.2 Normal 488.2 Speed	0.1 / internal 0.1 / external 1 / internal 1 / external NPLC/ Trig Origin	1239 (1200) 510 (433) 438 (380) 59 (49)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	5 (835) 830 (1410) 385 (145) 374 (147) 56 Source-Measure *5 TO GPIB	2 (900) 8 0 (830) 7 0 (343) 3 1 (333) 3 5 (47)	56 (780) 88 (343) 74 (333) 56 (47) 56 (47)	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) ource-Measure Pass TO GPII	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 45/Fail test *8, *9	
Component   Interface Handler   Time for 60Hz   Fast   0.01 / internal   1.04 ms (1.08 ms)   0.5 ms (0.5 ms)   4.82 ms (5.3 ms)		Single Reading Operation Rates (rdg./second) for	Medium 488.2 Normal 488.2 Speed Fast(488.2)	0.1 / internal 0.1 / external 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal	1239 (1200) 510 (433) 438 (380) 59 (49)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	5 (835) 836 0 (410) 389 9 (365) 377 6 (48) 56 7 (47) 56 Source-Measure *5 TO GPIB 79 (83)	2 (900) 8 0 (830) 7 0 (343) 3 1 (333) 3 5 (47)	56 (780) 88 (343) 74 (333) 56 (47) 56 (47)	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) ource-Measure Pass TO GPII	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 47 (38) 48 (38) 49 (38)	
Interace Handlet   Time for 6thz (50Hz) *8,*10   Medium		Single Reading Operation Rates (rdg./second) for	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2)	0.1 / internal 0.1 / external 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal	1239 (1200) 510 (433) 438 (380) 59 (49)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	5 (835) 83( ) (410) 383 ) (365) 37/ 8 (48) 56 F (47) 55 Source-Measure 95 TO CPIB 79 (83) 72 (70) 34 (31)	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) ource-Measure Pass TO GPII 79 (83) 69 (70) 35 (30)	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) /Fail test *8, *9	
Medium   0.1 / internal   2.55 ms (2.9 ms)   0.5 ms (0.5 ms)   6.27 ms (7.1 ms)		Single Reading Operation Rates (rdg./second) for 60Hz (50Hz)	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Normal(488.2)	0.1 / internal 0.1 / external 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 0.1 / internal 1 / internal NPLC / Trig	1239 (1200) 510 (433) 438 (380) 59 (49)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	5 (835) 830 (410) 38: 0 (410) 38: 10 (48) 57 (48) 57 (7 (47) 5: Source-Measure ** TO GPIB 79 (83) 72 (70) 34 (31) Source Pass/Fail te:	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) ource-Measure Pass TO GPII 79 (83) 69 (70) 35 (30) ource-Measure Pass	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) /Fail test *8, *9 8	
Load Impedance   Stable into 20,000pF typical   21,31 ms (20,9 ms)   0.5 ms (0.5 ms)   21,31 ms (20,0 ms)		Single Reading Operation Rates (rdg./second) for 60Hz (50Hz) Component Interface Handler	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Normal(488.2) Speed	0.1 / internal 0.1 / external 1 / internal 1 / external 1 / external NPLC/ Trig Origin 0.01 / internal 0.1 / internal 1 / internal NPLC / Trig Origin	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) TO GPIB	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	5 (835) 830 (410) 388 9 (365) 374 (48) 57 (47) 50 Source-Measure 9 TO GPI8 79 (83) 72 (70) 34 (31) Source Pass/Fail ter	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 44 (38) 70 GPII 79 (83) 69 (70) 35 (30) purce-Measure Pass TO GPII	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 45 (38) 46 (38) 47 (38) 47 (38) 48 (38) 49 (38)	
Differential Mode Voltage   250VPk   250VPk   250VPk   250VPc		Single Reading Operation Rates (rdg./second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Normal(488.2) Speed Fast Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal NPLC / Trig Origin 0.01 / internal 0.1 / internal	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 1.04 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}\$ \$33 \$\langle (410)  385 \$\langle (430)  3365 \$\langle (355)  375 \$\langle (48)  55 \\rangle (47)  56 \$\text{TO CPIB}\$ \$\tag{79}  (83)  72  (70)  34  (31)  \text{Source Pass/Fail term TO CPIB}\$ \$\text{UC OF DIS }  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  (0.5 \text{ ms}) \qu	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Common Mode Voltage   250VDC   Common Mode Isolation   >10CG, <1000pF		Single Reading Operation Rates (rdg./second) for 60Hz (50Hz)  Component Interface Handler Time for 60Hz (50Hz) *8, *10	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Normal(488.2) Speed Fast Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal 0.1 / internal 1 / internal 1 / internal	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 1.04 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}\$ \$33 \$\langle (410)  385 \$\langle (430)  3365 \$\langle (355)  375 \$\langle (48)  55 \\rangle (47)  56 \$\text{TO CPIB}\$ \$\tag{79}  (83)  72  (70)  34  (31)  \text{Source Pass/Fail term TO CPIB}\$ \$\text{UC OF DIS }  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  (0.5 \text{ ms}) \qu	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Over Range   105% of range, source and measure		Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz)  Component Interface Handler Time for 60Hz (50Hz) *\$,*10 Load Impedance Differential Mode V	Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal NPLC / Trig Origin 0.01 / internal 1 / internal 1 / internal Stable into 20,000	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 104 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}\$ \$33 \$\langle (410)  385 \$\langle (430)  3365 \$\langle (355)  375 \$\langle (48)  55 \\rangle (47)  56 \$\text{TO CPIB}\$ \$\tag{79}  (83)  72  (70)  34  (31)  \text{Source Pass/Fail term TO CPIB}\$ \$\text{UC OF DIS }  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  (0.5 \text{ ms}) \qu	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Max. Voltage Drop   5V		Single Reading Operation Rates (rdg./second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) *\$, *10 Load Impedance Differential Mode V Common Mode Vol	Medium   488.2   Normal   488.2   Speed   Fast(488.2)   Medium (488.2)   Normal (488.2)   Normal (488.2)   Speed   Fast   Medium   Normal (488.2)   Medium   Medium   Normal (488.2)   Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / external NPLC/Trig Origin 0.01 / internal 1 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal 1 / internal 5 table into 20,000	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 104 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}\$ \$33 \$\langle (410)  385 \$\langle (430)  3365 \$\langle (355)  375 \$\langle (48)  55 \\rangle (47)  56 \$\text{TO CPIB}\$ \$\tag{79}  (83)  72  (70)  34  (31)  \text{Source Pass/Fail term TO CPIB}\$ \$\text{UC OF DIS }  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  0.5 \text{ ms }  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  \text{VS ms}  (0.5 \text{ ms})  (0.5 \text{ ms}) \qu	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Max. Sense lead Resistance   1MΩ   100GΩ		Single Reading Operation Rates (rdg/second) for 60Hz (S0Hz)  Component Interface Handler Time for 60Hz (S0Hz) %, 10  Load Impedance Differential Mode V Common Mode Vol Common Mode Iso	Medium   488.2   Normal   488.2   Speed   Fast(488.2)   Medium (488.2)   Normal (488.2)   Normal (488.2)   Speed   Fast   Medium   Normal (488.2)   Medium   Medium   Normal (488.2)   Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 3 / internal 1 / internal 1 / internal Stable into 20,000 250VPk 250VPC >10GΩ, <1000pF	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 104 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}  833 \$\left(410)  385 \$\left(365)  375 \$\left(365)  375 \$\left(48)  55 \\ (247)  56 \$\text{TO CPIB}  72 \left(70)  34 \left(31)  50 \text{core Pissor}  70 \text{CPIB}  70 \text{CPIB}  50 \text{core Pissor}  50 \text{core Pissor}  70 \text{CPIB}  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms}  (0.5 \text{ ms})  0.5 \text{ ms}  0.5  0.5  0.5  0.5 \qua	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
SYSTEM GENERAL  Source Output Modes Source Memory List Source Memory List Memory Buffer Source Memory List Memory List Insulation		Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) *8, *10 Load Impedance Differential Mode V Common Mode Vol Common Mode Iso Over Range	Medium   488.2   Normal   488.2   Speed   Fast(488.2)   Medium (488.2)   Normal (488.2)   Normal (488.2)   Speed   Fast   Medium   Normal (488.2)   Medium   Medium   Normal (488.2)   Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / external NPLC / Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 0.1 / internal 0.1 / internal 1 / internal 1 / internal 1 / internal 250VPk 250VDC >10GΩ, <1000pF 105% of range, sc	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 104 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}  833 \$\left(410)  385 \$\left(365)  375 \$\left(365)  375 \$\left(48)  55 \\ (247)  56 \$\text{TO CPIB}  72 \left(70)  34 \left(31)  50 \text{core Pissor}  70 \text{CPIB}  70 \text{CPIB}  50 \text{core Pissor}  50 \text{core Pissor}  70 \text{CPIB}  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms}  (0.5 \text{ ms})  0.5 \text{ ms}  0.5  0.5  0.5  0.5 \qua	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
SOURCE Output Modes Fixed DC level, Memory List (mixed function), Stair (linear and log) Source Memory List 100 points max.  Memory Buffer 5,000 readings @ 5 digits (two 2,500 point buffers). Includes selected measured value(s) and time stamp. Lithium battery backup(3 yr + battery life) Programmability 1EEE-488.2 (SCPI), RS-232; 5 user-definable power-up states plus factory default and *RST.  Digital I/O Connector Active low input. Start of test, 3 category bits.; +5V@ 300mA supply.; 1 trigger input, 4 TTL/Relay Drive outputs (33V@500mA, diode)  Remote Interface USB/GPIB/LAN/RS-232 Insulation Chassis and terminal: 20MΩ or above (DC 500V); Chassis and AC cord: 30M Ω or above (DC 500V)  Operation Environment Indoor use, Altitude: ≤ 2000m Ambient temperature: 0 ~ 40°C Relative humidity: ≤ 80%; Installation category: II, Pollution degree: 2  Storage Environment Temperature: 20°C ~ 70°C; Humidity: < 80% Input Power Power Consumption 80W		Single Reading Operation Rates (rdg./second) for 60Hz (50Hz)  Component Interface Handler Time for 60Hz (50Hz) *8,*10  Load Impedance Differential Mode Vo Common Mode Vo Common Mode Iso Over Range Max. Vontage Drop Max. Sense lead Re	Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal Stable into 20,000 250VPR 250VPC 210GΩ, <1000pF 105% of range, so V 1 ΜΩ	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 104 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}  833 \$\left(410)  385 \$\left(365)  375 \$\left(365)  375 \$\left(48)  55 \\ (247)  56 \$\text{TO CPIB}  72 \left(70)  34 \left(31)  50 \text{core Pissor}  70 \text{CPIB}  70 \text{CPIB}  50 \text{core Pissor}  50 \text{core Pissor}  70 \text{CPIB}  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms}  (0.5 \text{ ms})  0.5 \text{ ms}  0.5  0.5  0.5  0.5 \qua	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Source Memory List   100 points max.   100 po		Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) *8, *10 Load Impedance Differential Mode V Common Mode Vol Common Mode Iso Over Range Max. Voltage Drop Max. Sense lead Re Sense lengt Impedance	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Mormal(488.2) Speed Fast Medium Normal Voltage Itage	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / internal 1 / external NPLC / Trig Origin 0.01 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 0.1 / internal 1 / internal 1 / internal 250VPk 250VDC >10GΩ, <1000pF 105% of range, sc 5V IMΩ >100GΩ	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)	509 (433) 438 (380) 59 (49) 57 (48) Measure TO CPIB 256 (256) 167 (166) 49 (42) Measure TO CPIB 104 ms (1.08 ms) 2.35 ms (2.9 ms)	1018 (990 470 (405) 409 (360) 58 (48)	910 470 409 58	\$\frac{835}{(835)}  833 \$\left(410)  385 \$\left(365)  375 \$\left(365)  375 \$\left(48)  55 \\ (247)  56 \$\text{TO CPIB}  72 \left(70)  34 \left(31)  50 \text{core Pissor}  70 \text{CPIB}  70 \text{CPIB}  50 \text{core Pissor}  50 \text{core Pissor}  70 \text{CPIB}  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms}  (0.5 \text{ ms})  0.5 \text{ ms}  0.5  0.5  0.5  0.5 \qua	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Memory sumer         5,000 readings go 5 aligits (vor 2-00 point burlers), includes selected measured value(s) and time stamp. Lithium battery backup(3 yr + battery line)           Programmability         IEEE-48.2 (SCPI), IRS-232; 5 user-definable power-up states puls factory default and *RST.           Digital I/O Connector         Active low input. Start of test, a category bits.; +5V@ 300mA supply.; 1 trigger input, 4 TTL/Relay Drive outputs (33V@500mA, diode)           Remote Interface         USB/GPIB/LAN/RS-232           Insulation         Chassis and terminal: 20MΩ or above (DC 500V); Chassis and AC cord: 30MΩ or above (DC 500V)           Operation Environment         Indoor use, Altitude ≤ 2000m Ambient temperature: 0 – 40°C Relative humidity: ≤ 80%; Installation category: II, Pollution degree: 2           Storage Environment         Temperature: 20°C ~ 70°C; Humidity: < 80%           Input Power         100-240NAC, 50-60Hz           Power Consumption         30W	SPEED*s	Single Reading Operation Rates (rdg./second) for 60Hz (S0Hz) Component Interface Handler Time for 60Hz (S0Hz) *8, *10 Load Impedance Differential Mode V Common Mode Iso Over Range Max. Voltage Drop Max. Sense lead Re Sense Input Impedi Guard Offset Voltag	Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal 1 / internal 1 / internal 0.1 / internal 0.1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal 1 / internal 250VPR 250VPR 250VPR 105% of range, sc 5V 1MΩ >100Ω <150µV, typical	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)  pF typical	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 1.04 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (2.9 ms)	1018 (9900 470 (405) 490 (360) 58 (48) 57 (48)	910 470 409 58	\$\frac{835}{(835)}  833 \$\left(410)  385 \$\left(365)  375 \$\left(365)  375 \$\left(48)  55 \\ (247)  56 \$\text{TO CPIB}  72 \left(70)  34 \left(31)  50 \text{core Pissor}  70 \text{CPIB}  70 \text{CPIB}  50 \text{core Pissor}  50 \text{core Pissor}  70 \text{CPIB}  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms} \left(0.5 \text{ ms})  0.5 \text{ ms}  (0.5 \text{ ms})  0.5 \text{ ms}  0.5  0.5  0.5  0.5 \qua	2 (900) 8 0 (830) 7 (343) 3 1 (333) 3 1 (333) 3 5 (47) 5	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Digital I/O Connector         Active low input. Start of test, end of test, 3 category bits.; +5V@ 300mA supply.; 1 trigger input, 4 TTL/Relay Drive outputs (33V@.500mA, diode)           Remote Interface         USB/GPIB/LAN/RS-232           Insulation         Chassis and terminal: 20MΩ or above (DC 500V); Chassis and AC cord: 30MΩ or above (DC 500V)           Operation Environment         Indoor use, Altitude: ≤ 2000m Ambient temperature: 0 ~ 40°C Relative humidity: ≤ 80%; Installation category: II, Pollution degree: 2           Storage Environment         Temperature: 20°C ~ 70°C; Humidity: < 80%	SPEED*S	Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) %, 410 Load Impedance Differential Mode V Common Mode Iso Over Range Max. Voltage Drop Max. Sense lead Re Sense Input Impedi Guard Offset Voltag Source Memory Lis	Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / internal 1 / external NPLC/Trig Origin 0.01 / internal 1 / internal 1 / internal 1 / internal 1 / internal 2 / internal 1 / in	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)  10 FF typical  urce and measure	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 1.04 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (20.9 ms)	1018 (990 470 (405) 470 (405) 58 (48) 57 (48)	) 910 470 470 55 5.	(835) 836(35) 836(35) 836(35) 836(36) 836(365) 376(365) 8376(365)	2 (900) 8 (830) 7 (333) 3 (343) 3 (47) (47)	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Remote Interface         USB/GPIB/LAN/RS-232           Insulation         Chassis and terminal: 20MΩ or above (DC 500V); chassis and AC cord: 30M Ω or above (DC 500V)           Operation Environment         Indoor use, Altitude: \$2000m Ambient temperature: 0 - 40°C Relative humidity: < 80%; Installation category: II, Pollution degree: 2	SPEED*s	Single Reading Operation Rates (rdg./second) for 60Hz (S0Hz)  Component Interface Handler Time for 60Hz (S0Hz) *8, *10  Load Impedance Differential Mode V Common Mode Iso Over Range Max. Voltage Drop Max. Sense lead Re Sense Input Impedi Guard Offset Voltag Source Output Moc Source Memory Lis Memory Buffer	Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal 0.1 / internal 1 / internal 0.1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal 1 / internal 25 / internal 1 / internal 1 / internal 1 / internal 5 / internal 6 /	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)  77 (48)  pF typical  urce and measure	509 (433) 438 (380) 59 (49) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 1.04 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (2.9 ms)	1018 (9900 470 (405) 490 (360) 58 (48) 57 (48)	9 910 477 477 478 478 478 478 478 478 478 478	(835) 836(35) 836(35) 836(35) 836(36) 836(365) 376(365) 8376(365)	2 (900) 8 (830) 7 (333) 3 (343) 3 (47) (47)	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Operation Environment         Indoor use, Altitude: ≤ 2000m Ambient temperature: 0 ~ 40°C Relative humidity: ≤ 80%; Installation category: II, Pollution degree: 2           Storage Environment         Temperature: 20°C ~ 70°C; Humidity: < 80%	SPEED*S	Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) %, 10 Logo Mifferential Mode V Common Mode So Over Range Max. Voltage Drop Max. Sense lead Re Sense Input Imped Cuard Offset Voltag Source Output Mod Source Output Mod Source Memory Lis Memory Buffer Programmability	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Mormal(488.2) Speed Fast Medium Normal Voltage latge latge sistance ance ge	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal 1 / internal 1 / internal 0.1 / internal 0.1 / internal 0.1 / internal 0.1 / internal 1 / internal 2500/pc 105% of range, so 500/pc 105% of range, so 1000 GP 2150/pc 2	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48)  PF typical  urce and measure  emory List (mixed fun 5 digits (two 2,500 pr , R5-232; 5 user-defir	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 104 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (20.9 ms)	1018 (990 470 (40) 470 (40) 58 (48) 57 (48)	y 91\() 91\() 47\() 47\() 47\() 47\() 45\() 55\() 55\()	(835) 836(35) 836(35) 836(35) 836(365) 376(365) 376(365) 376(365) 376(47) 56(47) 56(47) 576(47	2 (900) 8 (830) 3 (830) 7 (840) 8 (830) 7 (840) 8 (840	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Storage Environment         Temperature: -20° C − 70° C; Humidity: < 80%	SPEED*S	Single Reading Operation Rates (rdg./second) for 60Hz (S0Hz) Component Interface Handler Time for 60Hz (S0Hz) *8, *10 Load Impedance Differential Mode V Common Mode Iso Over Range Max. Voltage Drop Max. Sense lead Re Sense Input Impedi Guard Offset Voltag Source Output Moc Source Memory Lis Memory Buffer Programmability Digital I/O Connect Remote Interface	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Mormal(488.2) Speed Fast Medium Normal Voltage latge latge sistance ance ge	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 0.1 / internal 1 / internal 1 / internal NPLC / Trig Origin 0.01 / internal NPLC / Trig Origin 0.01 / internal 1 / internal 25 / internal 26 / internal 27 / internal 26 / internal 26 / internal 27 / internal 28 / internal 28 / internal 28 / internal 28 / internal 29 / internal 20	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48) 57 (48)  urce and measure  emory List (mixed fun 5 digits (two 2,500 pr ,RS-232; 5 user-defr	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 1.04 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (2.9 ms) 7.53 ms (2.9 ms) it, 3 category bits.; +5v	1018 (990 470 (405) 490 (360) 58 (48) 57 (48)	d value(s) and til and *RST.	(835) 836(35) 836(35) 836(35) 836(410) 388(365) 37. (365) 37. (368) 56 (447) 56 (50 CP)B 79 (83) 72 (70) 34 (31) 50urce Pass/Fail te TO GPIB 0.5 ms (0.5 ms) 0.5 ms (0.5 ms) 0.5 ms (0.5 ms) 0.5 ms (0.5 ms) 4 (31)	2 (900) 8 (830) 3 (830) 7 (840) 8 (830) 7 (840) 8 (840	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
Input Power         100-240VAC, 50-60Hz           Power Consumption         80W	SPEED*S	Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) %, 10 Common Mode Vol Common Mode So Over Range Max. Voltage Drop Max Sense langular Max Sense langular Source Output Mod Source Mutput Mod Source Mutput Mod Source Memory Lis Memory Buffer Programmability Digital I/O Connect Remote Interface Insulation	Medium	0.1 / internal 0.1 / external 1 / internal 1 / internal 1 / internal 1 / internal 1 / external NPLC/ Trig Origin 0.01 / internal 1 / internal 1 / internal 1 / internal NPLC / Trig Origin 0.01 / internal 1 / internal Stable into 20,000 250VPL 250VDC 105% of range, so VS VI NIM 100 points max. 5,000 readings @ IEEE-488.2 (SCP) Active low input. USB/CPIB/LAN/ Chassis and term	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48) 57 (48)  pF typical  urce and measure  emory List (mixed fun 5 digits (two 2,500 pr R§2322; 5 user-definatar of test, end of te	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 104 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (20.9 ms) ction), Stair (linear and	log) log) log) log) dog) log) dog) dog) dog) dog) dog) dog) dog) d	d value(s) and til til and *RST. y, ; 1 trigger inpl Ω or above (DC	(835) 836(35) 836(35) 836(35) 836(36)	2 (900) 8 (830) 3 (830) 7 (840) 8 (830) 7 (840) 8 (840	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
	SPEED*S	Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) *8, *10 Load Impedance Differential Mode V Common Mode Iso Over Range Max. Voltage Drop Max. Sense lead Re Sense Input Imped. Guard Offset Volta Source Output Mod Source Memory Lis Memory Buffer Programmalify Digital I/O Connect Remote Interface Insulation Operation Environn	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Normal(488.2) Speed Fast Medium Normal Voltage Itage Ita	0.1 / internal 0.1 / external 1 / internal 1 / external NPLC/Trig Origin 0.01 / internal 0.1 / internal 1 / internal 1 / internal 0.1 / internal 0.1 / internal 0.1 / internal 0.1 / internal 0.250VPk 250VPC 250VPC 250VPC 210CΩ, <1000pF 10S% of range, so 5V 1MΩ 2100 points max 5,000 readings @ 1EEE-48.2 (SCPP Active low input. USB/GPIB/LAN// Chassis and term	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48) 57 (48)  pp typical  urce and measure  emory List (mixed fun 5 digits (tiwo 2,500 p 6,87-232; 5 user-defin start of test, end of te 85-232. end of te 85-232. and or above de: \$2000m Ambient	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 1.04 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (2.9 ms) ction), Stair (linear and soint buffers). Includes sable power-up states pt, at, 3 category bits.; +5V	log) log) log) log) dog) log) dog) dog) dog) dog) dog) dog) dog) d	d value(s) and til til and *RST. y, ; 1 trigger inpl Ω or above (DC	(835) 836(35) 836(35) 836(35) 836(36)	2 (900) 8 (830) 3 (830) 7 (840) 8 (830) 7 (840) 8 (840	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	
	SPEED *5	Single Reading Operation Rates (rdg,/second) for 60Hz (50Hz) Component Interface Handler Time for 60Hz (50Hz) **, **10 Load Impedance Differential Mode V Common Mode Not Common Mode So Over Range Max. Voltage Drop Max. Sense lead Re Sense Input Impedi Guard Offset Voltag Source Output Mod Source Output Mod Source Memory Lis Memory Buffer Programmability Digital I/O Connect Remote Interface Insulation Operation Environe Storage Environe Input Power	Medium 488.2 Normal 488.2 Speed Fast(488.2) Medium(488.2) Normal(488.2) Speed Fast Medium Normal Voltage Itage lation sistance ance ge des t t	0.1 / internal 0.1 / external 1 / internal NPLC/ Trig Origin 0.01 / internal 0.1 / internal 1 / internal 1 / internal 1 / internal 2 / internal 1 / internal 250VPC 250VDC 2150VDC 2	1239 (1200) 510 (433) 438 (380) 59 (49) 57 (48) 57 (48)  pF typical  urce and measure  emory List (mixed fun 5 digits (two 2,500 pg, RS-232; 5 user-defir start of 25; 5 user-defir start of 5 test, end of te 5 com Ambient	509 (433) 438 (380) 59 (49) 57 (48) Measure TO GPIB 256 (256) 167 (166) 49 (42) Measure TO GPIB 1.04 ms (1.08 ms) 2.55 ms (2.9 ms) 7.53 ms (2.9 ms) ction), Stair (linear and soint buffers). Includes sable power-up states pt, at, 3 category bits.; +5V	log) log) log) log) dog) log) dog) dog) dog) dog) dog) dog) dog) d	d value(s) and til til and *RST. y, ; 1 trigger inpl Ω or above (DC	(835) 836(35) 836(35) 836(35) 836(36)	2 (900) 8 (830) 3 (830) 7 (840) 8 (830) 7 (840) 8 (840	56 (780) 88 (343) 74 (333) 56 (47) 56 (47) Sc Sc	165 (162) 163 (160) 133 (126) 131 (125) 44 (38) 44 (38) 50 (70) 79 (83) 69 (70) 35 (30) 50 (70) 50 (	162 (160) 132 (126) 131 (125) 44 (38) 44 (38) 44 (38) 44 (38) 45 all test *9, *11 8 ms) ms)	

### ORDERING INFORMATION

GSM-20H10 with GPIB Source Measure Unit GSM-20H10 Source Measure Unit CD User manual x 1, Quick Start manual x 1, Test Lead GTL-207A x 1, Alligator Clip x 2

SM-01 Digital I/O Adapter, Convert DB15 to DB9 + 8-pin micro-DIN
 SM-02 Digital I/O Adapter, Convert DB15 to DB37 + 8-pin micro-DIN

GTL-248 GPIB Cable, 2000mm

GTL-246 USB Cable (USB 2.0 A-B Type, approx.. 1200mm)

