

Source Section

DC Voltage Source

Range	Source Range	Resolution	Max. Load Current	Accuracy (One Year) ±(% of setting + V)	Temperature Coefficient ±(% of setting + V)/°C
200 mV	±200.000 mV	1 µV	±3.2 A	0.02 + 250 µV	0.003 + 35µV
2 V	±2.00000 V	10 µV	±3.2 A	0.02 + 400 µV	0.003 + 60µV
7 V	± 7.0000 V	100 µV	±3.2 A	0.02 + 2 mV	0.003 + 300µV
18 V	±18.0000 V	100 µV	±1.2 A	0.02 + 2 mV	0.003 + 300µV

Output resistance (for four-wire system remote sensing)
 200 mV, 2 V range: (Shunt resistance/40000) Ω or less
 7 V, 18 V range: (Shunt resistance/5000) Ω or less
 * Shunt resistance: See "DC Current Measurement"
 One year accuracy for 23±5 °C.
 Add the temperature coefficient for 5 to 18 °C and 28 to 40°C.

DC Current Source

Range	Source Range	Resolution	Max. Load Voltage	Accuracy (One Year) ±(% of setting + A)	Temperature Coefficient ±(% of setting + A)/°C
200nA	±200.000nA	1pA	±18V	0.06 + 3nA	500pA
2µA	±2.00000µA	10pA	±18V	0.04 + 3nA	500pA
20µA	±20.0000µA	100pA	±18V	0.03 + 3nA	0.0045 + 450pA
200µA	±200.000µA	1nA	±18V	0.03 + 30nA	0.0045 + 4.5nA
2mA	±2.00000 mA	10nA	±18 V	0.03 + 250 nA	0.0045 + 37.5 nA
20mA	±20.0000 mA	100nA	±18 V	0.03 + 2.5µA	0.0045 + 375 nA
200mA	±200.000 mA	1µA	±18 V	0.03 + 25µA	0.0045 + 3.75 µA
1A	±1.20000 A	10µA	±18 V	0.05 + 900µA	0.0075 + 135 µA
3A	±3.20000 A	10 µA	±7 V	0.05 + 1.5 mA	0.0075 + 225 µA

One year accuracy for 23±5 °C.
 Add the temperature coefficient for 5 to 18 °C and 28 to 40 °C.
 Output resistance
 (Shunt resistance x 50000) Ω or more
 * Shunt resistance: See "DC Current Measurement"
 One year accuracy for 23±5 °C.
 Add the temperature coefficient for 5 to 18 °C and 28 to 40 °C.

Current Limiter

Setting ^{*1}	Range	Resolution	Min. Setting
10.000 nA to 200.000 nA	200nA	1pA	10nA
0.20001 µA to 2.00000 µA	2µA	10pA	10nA
2.00001 µA to 20.0000 µA	20 µA	100pA	100nA
20.0001 µA to 200.000 µA	200 µA	1nA	1µA
200.001 µA to 2.00000 mA	2 mA	10nA	10µA
2.00001 mA to 20.0000 mA	20 mA	100nA	100µA
20.0001 mA to 200.000 mA	200 mA	1µA	1mA
0.20001 A to 1.20000 A	1A	10µA	10mA
1.20001 A to 3.20000 A	3A	10µA	10mA

Voltage Limiter

Setting ^{*1}	Range	Resolution	Min. Setting
1.000 mV to 200.000 mV	200 mV	1 µV	1 mV
0.20001 V to 2.00000 V	2 V	10 µV	1 mV
2.00001 V to 7.0000 V	7 V	100 µV	5 mV
7.0001 V to 18.0000 V	18 V	100 µV	5 mV

*1: Larger of the two values (high limit value) or (low limit value) when tracking is OFF

Response Time (Typical)

Source	Range	Response Time
Current Source	200 mV range	250µs
	2 V range	50µs
	7 V, 18 V range	100µs
	200 nA range	250ms
Voltage Source	2 µA range	25ms
	20 µA range	2.5ms
	200 µA range	250µs
	2 mA to 3 A range	80µs

In normal mode.
 The time for the output to reach within 0.1% of the final value after the output starts changing.
 Pure resistive load. The limiter setting is at the full scale of the range.
 Source voltage or current is at the maximum value of the range.

LC Load

Current Source/Measurement/ Limiter Range	Normal Mode		Stable Mode	
	Max. C load	Max. L load	Max. C load	Max. L load
200 nA to 2 mA	0.01 µF	10 µH	100 µF	1 mH
20 mA	0.1 µF			
200 mA	1 µF			
2 A, 3 A	10 µF			

Output Noise (Typical)

20 mVp-p
 For DC to 20 MHz, 2-V voltage source range, and 1-A current limiter range

Measurement Section

DC Voltage Measurement

Range	Measurement Range	Resolution	Accuracy ±(% of reading + V)	Temperature Coefficient ±(% of reading + V)/°C
200 mV	±210.000 mV	1 µV	0.015 + 200 µV (250 µV) {300 µV} [500 µV]	0.0025 + 30 µV (40 µV) { 45 µV} [60 µV]
2 V	±2.10000 V	10 µV	0.015 + 200 µV (400 µV) { 1 mV} [5 mV]	0.0025 + 30 µV (60 µV) {200 µV} [800 µV]
7 V	±7.1000 V	100 µV	0.015 + 2 mV (4 mV) { 10 mV} [50 mV]	0.0025 + 300 µV (600 µV) { 2 mV} [8 mV]
18 V	±18.0000 V	100 µV	0.015 + 2 mV (4 mV) { 10 mV} [50 mV]	0.0025 + 300 µV (600 µV) { 2 mV} [8 mV]

DC Current Measurement

Range	Measurement Range	Resolution	Shunt resistance	Accuracy ±(% of reading + A)	Temperature Coefficient ±(% of reading + A)/°C
200 nA	±210.000 nA	1 pA	1 M Ω	0.05 + 3 nA (3 nA) { 3 nA} [4 nA]	500 pA (500 pA) [500 pA] [600 pA]
2 µA	±2.10000 µA	10 pA	1 M Ω	0.025 + 3 nA (3 nA) { 4 nA} [6 nA]	500 pA (500 pA) [500 pA] [600 pA]
20 µA	±21.0000 µA	100 pA	100 k Ω	0.025 + 4 nA (6 nA) { 10 nA} [50 nA]	0.004 + 600 pA (900 pA) { 1.5 nA} [8 nA]
200 µA	±210.000 µA	1 nA	10 k Ω	0.02 + 40 nA (60 nA) { 100 nA} [500 nA]	0.003 + 6 nA (9 nA) { 15 nA} [80 nA]
2 mA	±2.10000 mA	10 nA	1 k Ω	0.02 + 400 nA (600 nA) { 1 µA} [5 µA]	0.003 + 60 nA (90 nA) { 150 nA} [800 nA]
20 mA	±21.0000 mA	100 nA	100 Ω	0.02 + 4 µA (6 µA) { 10 µA} [50 µA]	0.003 + 600 nA (900 nA) { 1.5 µA} [8 µA]
200 mA	±210.000 mA	1 µA	10 Ω	0.02 + 70 µA (100 µA) [150 µA] [500 µA]	0.003 + 10 µA (15 µA) { 20 µA} [80 µA]
1 A	±1.30000 A	10 µA	1 Ω	0.03 + 700 µA (1 mA) { 2 mA} [6 mA]	0.0045 + 100 µA (150 µA) [300 µA] [900 µA]
3 A	±3.20000 A	10 µA	1 Ω	0.05 + 1 mA (1.5 mA) { 2 mA} [6 mA]	0.0075 + 150 µA (200 µA) [300 µA] [900 µA]

One year accuracy for 23±5 °C.
 Add the temperature coefficient for 5 to 18°C and 28 to 40 °C.
 Values inside parentheses are for 0.1 PLC ? integration time < 1 PLC. Values inside braces are for 0.01 PLC ? integration time < 0.1 PLC.
 Values inside brackets are for 0.001 PLC ? integration time < 0.01 PLC.

Functions

■ Source

Function: Voltage or current
 Mode: DC or pulse (pulse width: 50 μ s to 3,600 s)
 Sweep mode: Linear, logarithmic, or program (up to 100,000 steps)
 Trigger source: External or internal timers 1 and 2 (period: 100 μ s to 3600 s)
 Sweep start source: External or internal timers 1 and 2 (period: 100 μ s to 3600 s)
 Source delay: 15 μ s to 3600 s
 Response characteristics: Normal or stable

■ Measurement

Function: Voltage, current, auto, voltmeter mode, ammeter mode, or resistance meter mode
 Integration time: 0.001 to 25 PLC (Power Line Cycle)
 Trigger source: External or internal timers 1 and 2 (period: 100 μ s to 3600 s)
 Measure delay: 0 μ s to 3600 s
 Measurement data storage: Up to 100000 data points
 Average: Moving average (average count: 2 to 256)
 Voltage sense: Two-wire system or four-wire system
 Auto zero: Measure the internal zero reference every measurement and correct the measured value

NULL computation: Computes the difference with respect to the current measured value or user-defined value

User-defined computation: Computes user-defined equations in real-time
 Operators: +[addition], -[subtraction], *[multiplication], /[division], ^ [exponentiation], % [mod], | [logic OR], & [logic AND], ! [negation], < <= > >= != [comparison], = [substitution],

Functions: ABS() [absolute value], SQRT() [square root], LN(), LOG() [logarithm], SIN(), COS(), TAN() [trigonometric functions], ASIN(), ACOS(), ATAN() [inverse trigonometric functions], SINH(), COSH(), TANH() [hyperbolic functions], RAND() [random number generation], EDGE() [logic change extraction], TRUNC(), FLOOR() [rounding to an integer], ISINF() [infinity judgment], ISNAN [not-a-number judgment]
 Conditional statement: IF-THEN-ELSE

External I/O

■ BNC I/O

Connector type: BNC connector
 I/O level: TTL
 I/O logic format: Negative logic, falling edge
 Minimum pulse width: 10 μ s

■ Digital I/O

Connector type: D-Sub 15-pin (765601 standard model)
 Half-pitch 50-pin (765602 digital I/O installed model)
 I/O level: TTL
 Minimum pulse width: 10 μ s

Signal Name		Signal Name	
Channel 1 comparison result output	Comparison end	Digital output	DO12 *
	Comparison result low		DO13 *
	Comparison result IN		DO14 *
	Comparison result high		DO15 *
Channel 2 comparison result output	Comparison end	Digital input	DIO
	Comparison result low		DI1
	Comparison result IN		DI2 *
Interlock input			DI3 *
Digital output	DO0		DI4 *
	DO1		DI5 *
	DO2 *		DI6 *
	DO3 *		DI7 *
	DO4 *		DI8 *
	DO5 *		DI9 *
	DO6 *		DI10 *
	DO7 *		DI11 *
	DO8 *		DI12 *
	DO9 *		DI13 *
	DO10 *		DI14 *
	DO11 *		DI15 *

* DO2 to 15, DI2 to 15
 Available on the digital I/O installed model (765602)



D-Sub 15-pin (model 765601)



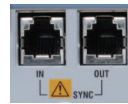
Half-pitch 50-pin (model 765602)

■ I/O for Synchronized Operation

Connector type: RJ-11 connector
 BNC connector (select the signal to be assigned to the input and output, separately)
 I/O level: TTL
 Minimum pulse width: 10 μ s

I/O signal for synchronized operation

Pin No.	Sync Input Connector	Sync Output Connector
1	Output relay control input	Output relay control output
2	Sweep start input	Sweep start output
3	Trigger input	Trigger output
4	GND	GND
5	Auxiliary trigger input	Auxiliary trigger output
6	Zero source control input	Zero source control output



RJ-11 connector

Compatible cable: 758930

Communication Interface

■ GPIB

Electrical and mechanical specifications: Conforms to IEEE St'd 488-1987
 Functional specifications: SH1, AH1, T6, L4, SR1, RL1, PPO, DC1, DT1, C0
 Protocol: Conforms to IEEE St'd 488.2-1987
 Address: 0 to 30

■ RS232

Connector type: D-Sub 9-pin
 Electrical specifications: Conforms to EIA RS232
 Connection format: Point-to-point
 Transmission mode: Full-duplex
 Synchronization mode: Start-stop synchronization
 Baud rate: 9600, 14400, 19200, 38400, 57600, 115200 bps

■ USB interface

Number of ports: 1
 Connector type: Type B connector (receptacle)
 Electrical and mechanical specifications: Conforms to USB Rev. 2.0
 Protocol: Mass storage class, USB-TMC

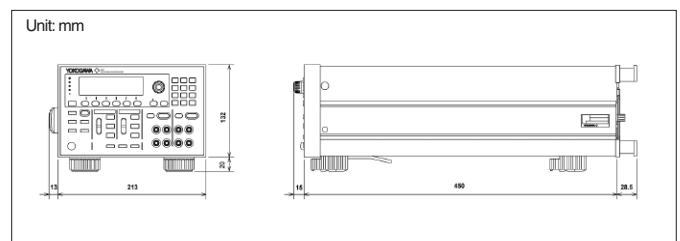
■ Ethernet

Number of Ethernet ports: 1
 Connector type: RJ-45 connector
 Electrical and mechanical specifications: Conforms to IEEE 802.3
 Transmission system: 100BASE-TX/10BASE-T
 Data rate: 100 Mbps or 10 Mbps
 Protocol: VXI-11 server, HTTP server, FTP server, DHCP client, and command socket

General Specifications

Display: 256 \times 64 dot VFD
 Rated supply voltage: 100 to 120 VAC or 200 to 240 VAC
 Rated supply frequency: 50/60 Hz
 Power consumption: Approx. 250 VA
 Warm-up time: At least 60 minutes
 Operating temperature and humidity range: 5 $^{\circ}$ C to 40 $^{\circ}$ C and 20% to 80%RH (no condensation)
 Storage temperature and humidity range: -15 $^{\circ}$ C to 60 $^{\circ}$ C and 20% to 80%RH (no condensation)
 Max. common-mode voltage: Between the case and each terminal \pm 250 Vpk
 Maximum allowable input voltage: Between high sense and low sense \pm 18 Vpk
 Between high output and low output \pm 18 Vpk
 Between high sense and high output \pm 0.5 Vpk
 Between low sense and low output \pm 0.5 Vpk
 Between each terminal of CH1 and each terminal of CH2 \pm 250 Vpk
 External dimensions: Approx. 213 (W) \times 132 (H) \times 450 (D) mm (excluding projections)
 Weight: Approx. 8 kg

■ External Dimensions



MODEL and SUFFIX Code

Model	Suffix Code	Notes
765601		GS820 Multi Channel Source Measure Unit Standard Model
765602		GS820 Multi Channel Source Measure Unit Digital I/O Installed Model
Power cord	-D	UL/CSA standard
	-F	VDE standard
	-R	AS standard
	-Q	BS standard
	-H	GB standard

Note:
The test certificate and calibration certificate can be requested only at the time of the order. Please don't forget to request them as they cannot be issued after the product has been delivered.

Standard Accessories

Power cord, rubber feet (4 pieces), measurement leads 758933 (2 sets), small alligator clip adapters 758922 (2 sets), user's manuals (1 set) External I/O connector

Rack Mount Kits

Model	Product	Specifications
751533-E3	Rack mount kit	For EIA single mount
751533-J3	Rack mount kit	For JIS single mount
751534-E3	Rack mount kit	For EIA dual mount
751534-J3	Rack mount kit	For JIS dual mount

Core 2 Duo is a registered trademark of Intel Corporation.
LabView is a registered trademark of National Instruments.
Ethernet is a registered trademark of XEROX Corporation.

Optional Accessories

Model	Product	Specifications
758933	Measurement lead	Safety terminal cable 1 m and 2 leads (red and black) in a set
758917	Measurement lead	Safety terminal cable 0.75 m and 2 leads (red and black) in a set
758919	Banana plug set	ø 4-mm plug/ø 4-mm socket adapter
758922	Small alligator clip adapter	Safety terminal-alligator clip adapter and 2 adapters (red and black) in a set
758929	Large alligator clip adapter	Safety terminal-to-alligator clip adapter and 2 adapters (red and black) in a set
758921	Fork terminal adapter	Safety terminal-to-fork terminal adapter and 2 adapters (red and black) in a set
758924	Conversion adapter	BNC-to-binding post adapter
366924	BNC cable	BNC-BNC cable 1 m
366925	BNC cable	BNC-BNC cable 2 m
758923	Safety terminal adapter	Spring clamp type pe 2 adapters (red and black) in a set
758931	Safety terminal adapter	Screw-in type pe 2 adapters (red and black) in a set
758960	Synchronization operation cable	RJ11 6-pin 1 m



758933 Measurement lead

2 pieces (red and black) in 1 set, length: 1.00 m
Used in combination with the 701959, 758921, 758922, or 758929.
Rating: 1000 V CAT III/19 A



758917 Measurement lead

2 pieces (red and black) in 1 set, length: 0.75 m
Used in combination with the 701959, 758921, 758922, or 758929.
Rating: 1000 V CAT III/32 A



758921 Fork terminal adapter

Safety terminal (banana female)-to-4 mm fork terminal adapter, 2 pieces (red and black) in 1 set
Rating: 1000 V CAT II
Connected to the 758933, 758917, or 701901.



758919 Banana plug set

ø 4-mm plug/ø 4-mm socket adapter
Rating: 30 VAC to 60 VDC 30 A



758922 Small alligator clip adapter

Safety terminal (banana female)-to-alligator clip adapter, 2 pieces (red and black) in 1 set
Rating: 300 V CAT II
Connected to the 758933, 758917, or 701901.



758929 Large alligator clip adapter

Safety terminal (banana female)-to-alligator clip adapter, 2 pieces (red and black) in 1 set
Rating: 1000 V CAT II
Connected to the 758933, 758917, or 701901.



758924 Conversion adapter

Safety terminal (banana female)-to-BNC (male) adapter
Connected to the 758933, 758917, or 701901.



366924/366925 BNC cable

366924: Length 1 m
366925: Length 2 m



758923 Safety terminal adapter set

Spring clamp type (banana male) 2 pieces in 1 set
Easy attachment/detachment of the cable.



758931 Safety terminal adapter set

Screw-in type (banana male) 2 pieces in 1 set
Comes with a B9317WD 1.5-mm hexagonal wrench for fixing the cable in place.

Related Products



GS610 Source Measure Unit

Wide-range source and measurement function
Source and measurement range: ±110 V and ±3.2 A



7651 Programmable DC Source

Highly accurate, highly stable, and low noise
Output range: ±30 V and ±120 mA

Note



Due to the nature of the product, it is possible for the user to come in contact with metal parts and receive electric shock. Exercise caution when using the product.

*1 Wire diameter of cables that can connect to the adapter
758923 Core wire diameter: 2.5 mm or less, covering diameter: 5.0 mm or less
758931 Core wire diameter: 1.8 mm or less, covering diameter: 3.9 mm or less