

GPM-8213

Digital Power Meter

FEATURES

- 4" TFT LCD
- Basic Accuracy : $\pm(0.1\% \text{ of reading} + 0.1\% \text{ of range})$
- Two Data Display Modes
 - Standard Display : Displaying Two Major Measurement Items + Six Minor Measurement Items
 - Simple Display : Displaying Test Data of Four Different Measurement Items
- Met the Requirement of IEC 62301 Power Measurement
 - Voltage/Current Test Frequency Bandwidth : DC ~ 6kHz
 - Watt Resolution : 1mW
 - Current Resolution : 0.1 μ A
 - Current/Voltage Measurements Reach CF=3 for Distorted Wave and CF=6 for Half Range
 - W-h Power vs Time/A-h Current vs Time Integration Function
 - Total Harmonic Distortion Measurement
- Front Panel Test Terminal
- Standard Interfaces : RS-232C, USB Device, LAN
- Optional Test Fixture : GPM-001

GW INSTEK
Simply Reliable

GW Instek GPM-8213 power meter is designed specifically for single-phase (1P/2W) AC power supply's power measurements. Powerful features, including 4" TFT LCD, five-digit measurement display, 19 power measurement parameters, integral measurement function, high-accuracy voltage/current/power measurement capabilities, front/rear panel input terminals, and various communications ports, are to facilitate users with clear, convenient, and accurate power measurements.

GPM-8213 provides as many as 19 power measurement parameters, including voltage ($V_{rms}/V_{pk}/V_{-pk}$), current ($I_{rms}/I_{pk}/I_{-pk}$), frequency (VHz/IHz), power ($P/P_{pk}/P_{-pk}$), crest factor (CFV/CFI), apparent power (VA), reactive power (VAR), power factor (PF), phase angle (DEG), total harmonic distortion (THDV/THDI), high-accuracy voltage/current/power measurement capabilities (reading: $\pm 0.1\%$; level: $\pm 0.1\%$). The advantages of TFT LCD have been efficiently deployed to simple mode and standard mode. Simple mode displays conventional power meter's four measurement parameters to meet the requirement of accuracy and clarity for the test on manufacturing process. Standard mode extends the display to the maximum of 8 measurement parameters (2 major measurements + 6 monitor measurements) to satisfy the various measurement application requirements of R&D, design, and quality verification.

For DUT requiring IEC 62301/EN 50564 standby power consumption test, GPM-8213 provides the optimal measurement supports, including test frequency bandwidth of DC~6kHz, the minimum current level of 5mA (resolution: 0.1uA), power measurement resolutions (1uW for minimum current and voltage levels; 1mW for maximum current and voltage levels), crest factor reaching 3 (half range reaching 6), and measurement of total harmonic distortion (at least 13th order power harmonic). For large voltage/large current measurement applications of general power measurement, GPM-8213 provides PT/CT rate function to collocate with external potential transformer or current transformer to meet the measurement requirements.

With respect to data retrieval and storage, the standard RS-232C/USB interfaces (virtual COM)/LAN can be utilized to edit and retrieve programs or the optional GPIB interface (installed by manufacturer) can be selected to meet users' automatic test system requirements.

PANEL INTRODUCTION



A. TWO DISPLAY MODES



Standard Mode (Setting & 8 Measurements)



Simple Mode (4 Measurements)

GPM-8213 provides two display modes so as to maximize users' measurement effectiveness. Standard mode: simultaneously displays 8 measurement parameters (2 major measurements + 6 secondary

measurements) and related measurement setting parameters; ideal for R&D, design, and engineering verification. Simple mode: displays four measurement parameters; ideal for production tests.

B. VARIETY OF MEASUREMENT PARAMETERS

MEASUREMENT ITEMS	Symbols
Voltage	Vrms, V+pk, V-pk, Vdc*
Current	Irms, I+pk, I-pk, Idc*
Power	P, P+pk, P-pk, VA, VAR
Power Factor	PF
Crest Factor	CFV, CFI
Phase Angle	DEG
Frequency	VHz, IHz
Total Harmonic Distortion	THDV, THDI
INTEGRATION	WP, WP+, WP-, q, q+, q-

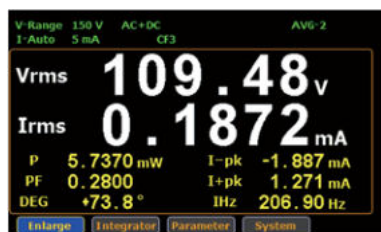
Note : " * " Vdc/Idc is selectable only when measurement mode DC is selected



Comparing with products of the same category, GPM-8213 provides more diverse measurement items and functions, including voltage, current, frequency, active power, apparent power, reactive power, power factor, crest factor, and total harmonic distortion

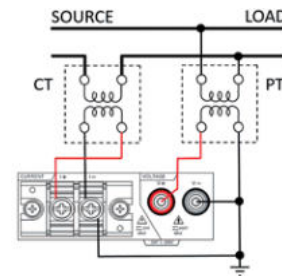
measurement. GPM-8213 also features the integral measurement function for DUT's power or current time. Users can set a time period to execute the transient power integration and divide the result by time to receive DUT's average power.

C. OPTIAML MEASUREMENT CAPABILITIES



Low Current Range & High Resolution

For IEC 62301/EN 50564 standby power consumption test requirement, GPM-8213 can fully meet the demand by its features, including measurement frequency bandwidth of DC~6kHz, minimum current level of 5mA (resolution: 0.1uA), power measurement resolutions (1uW for minimum current and voltage levels; 1mW for maximum current and voltage levels). Beyond that, time resolution for integral measurement is one second.



PT/CT Connection

With respect to large power measurement, users can utilize terminal on the rear panel to conduct 600V/20A measurement. Users can also use external potential transformer/current transformer for measurement and collocate with PT/CT to set multiplying factor (1~9999) to change readings to the original input voltage or current values without the trouble of additional calculation.

D. VARIOUS STANDARD INTERFACES



The various practical interfaces, RS-232/USB device/LAN, are equipped as standard making control convenient and flexible for

remote control and measurement result collection. Also, GPIB is available as optional.

SPECIFICATIONS

MEASUREMENT CHARACTERISTICS

INPUT

ITEM RATING VOLTAGE RATING CURRENT IMPEDANCE(50/60Hz)	Voltage Current Current	Range 600 Vrms 20 Arms 2.4 MΩ 5mA~200mA:500 mΩ 0.5A~20A: 5 mΩ 700 Vrms 25 Arms 300 V
MAXIMUM VOLTAGE MAXIMUM CURRENT MAXIMUM COMMON MODE VOLTAGE LOW PASS FILTER	Cutoff frequency	500 Hz

PARAMETERS

ITEM MEASUREMENT	Voltage Current Power Crest Factor Power Factor Frequency Angle Total Harmonic Distortion Integration	Symbol Vdc, Vrms, V+pk, V-pk Idc, Irms, I+pk, I-pk P, P+pk, P-pk, VA, Var CFV, CFI PF VHz, IHz Deg THDV, THDI Time, WP, WP+, WP-, q, q+, q- 5 digits DC, 45Hz~6kHz 1, 2, 4, 8, 16, 32, 64 1 ~ 9999.999 1 ~ 9999.999 8 measurement Item 4 measurement Item
DISPLAY DIGITS FREQUENCY BANDWIDTH AVERAGE PT RATE CT RATE DISPLAY MODE	Standard Simple	

VOLTAGE

ITEM RANGE CREST FACTOR ACCURACY	CF=3 CF=6 Effective Range DC 45Hz ≤ f ≤ 66Hz 66Hz < f ≤ 1kHz 1kHz < f ≤ 6kHz Filter(ON)	Range 15V, 30V, 60V, 150V, 300V, 600V 7.5V, 15V, 30V, 75V, 150V, 300V 3 or 6 (selectable) 1% ~ 105% of range ±(0.2% of reading+0.2% of range) ±(0.1% of reading+0.1% of range) ±(0.1% of reading+0.2% of range) ±3% of reading Add 0.3% of reading@45Hz ~ 66Hz Add ±0.03% of reading/°C 0.5% of range
TEMPERATURE EFFECT RESIDUAL NOISE	5-18°C / 28-40°C	

CURRENT

ITEM MEASUREMENT	CF=3 CF=6	Range 5mA, 10mA, 20mA, 50mA, 100mA, 200mA, 500mA, 1A, 2A, 5A, 10A, 20A 2.5mA, 5mA, 10mA, 25mA, 50mA, 100mA, 250mA, 0.5A, 1A, 2.5A, 5A, 10A 3 or 6 (selectable)
CREST FACTOR ACCURACY	Effective Range DC 45Hz ≤ f ≤ 66Hz 66Hz < f ≤ 1kHz 1kHz < f ≤ 6kHz Filter(ON)	1% ~ 105% of range ±(0.2% of reading+0.2% of range) ±(0.1% of reading+0.1% of range) ±(0.1% of reading+0.2% of range) ±3% of reading Add 0.3% of reading@45Hz ~ 66Hz Add ±0.03% of reading/°C 0.5% of range
TEMPERATURE EFFECT RESIDUAL NOISE	5-18°C / 28-40°C	

POWER

ITEM ACCURACY	Effective Range DC 45Hz ≤ f ≤ 66Hz 66Hz < f ≤ 1kHz 1kHz < f ≤ 6kHz Filter(ON)	Range 1% ~ 110% of range ±(0.2% of reading+0.2% of range) ±(0.1% of reading+0.1% of range) ±(0.1% of reading+0.3% of range) ±3% of reading Add 3% of reading@45Hz~66Hz Add ±0.03% of reading/°C
TEMPERATURE EFFECT	5-18°C / 28-40°C	

FREQUENCY

ITEM MEASUREMENT	Filter(ON) Filter(OFF)	Range 30.000 Hz~499.99 Hz 30.000 Hz~9.9999 kHz Voltage, Current 10%~105% of voltage input ±0.06% of reading
PARAMETER EFFECTIVE RANGE ACCURACY		

INTEGRATION

ITEM INTERGRATION TIME	Accuracy Range Accuracy	Range ±(voltage or current accuracy+0.1% of reading) 0 hour 00 min ~ 9999 hour 59 min ±0.01%±1second
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GENERAL INFORMATION

DISPLAY STANDARD INTERFACE POWER SOURCE POWER CONSUMPTION DIMENSION & WEIGHT	4" TFT LCD RS-232C, USB device, LAN AC 100~240 V, 50-60Hz Max. 25VA 270(W) x 110(H) x 350(D) mm, Aapprox. 2.9kg
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Specifications subject to change without notice. PM-8213CD1BH

ORDERING INFORMATION

GPM-8213 with GPIB	Digital Power Meter (RS-232C/USB device/LAN/Opt.01 GPIB)
GPM-8213	Digital Power Meter (RS-232C/USB device/LAN)

ACCESSORIES

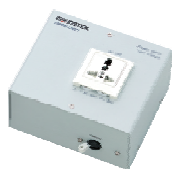
Safety Sheet x 1, Power Cord x 1, Test Lead GTL-209 x 2
CD x 1 (User manual/ USB driver)

OPTION

Opt.01 GPIB card (factory installed)

OPTION ACCESSORIES

GPM-001	Test Fixture
GTL-232	RS-232 Cable, 9-pin Female to 9-pin, null Modem for Computer
GTL-246	USB Cable, A-B type, approx. 1200mm
GTL-248	GPIB Cable, approx. 2000mm
GTL-251	GPIB-USB-HS+ (high Speed)
GRA-422	Rack Adapter Panel (19", 2U)



GPM-001 Test Fixture



GPM-001(EU) Test Fixture



GTL-213 Test Lead



GTL-210 Test Lead

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