



GW Instek GPM-8213

Digital Power Meter

New Product Announcement

This document allows GW Instek's partners to quickly grasp product's main features, FAB and ordering information.

GPM-8213 Digital Power Meter

New Product Announcement

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
Digital Power Meter

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.

Two Display Modes

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.



Standard mode
(Setting & 8 measurements)



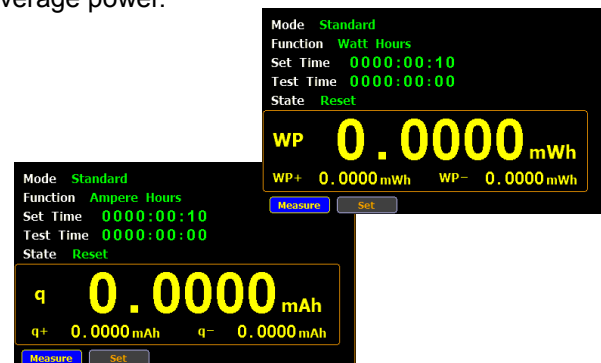
Simple mode
(4 measurements)

Variety of Measurement Parameters

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.

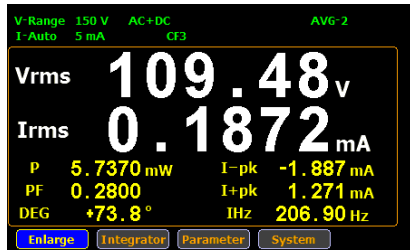
Measurement Items	Symbols
Voltage	Vrms, V+pk, V-pk, Vdc*
Current	Irms, I+pk, I-pk, Idc*
Power	P, P+pk, P-pk, VA, VAR
Power Factor	PF
Crest Factor	CFV, CFI
Phase Angle	DEG
Frequency	VHz, IHz
Total Harmonic Distortion	THDV, THDI
Integration	WP, WP+, WP-, q, q+, q-

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

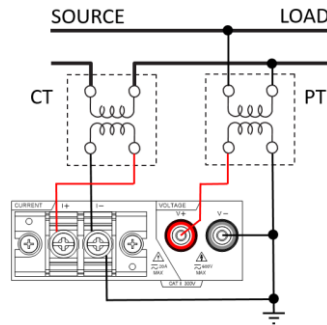


Optimal Measurement Capabilities

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. 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.



Low current range & High resolution



PT / CT Connection

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.



Key Features

- 4" TFT LCD
- Two data display modes
 - Standard : two major measurement items + six secondary measurement items
 - Simple : 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
 - Lowest current range : 5mA, resolution : 0.1uA
 - 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 interface : RS-232C, USB device, LAN
- Optional interface : GPIB
- Optional test fixture : GPM-001

4" TFT LCD display, provides a greater view of setting parameters and testing results.

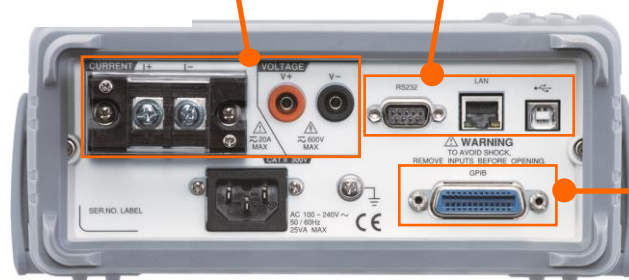
Function & Arrow keys provide quick operation environment.



Front panel terminal for lower power measurement (<10A)

Rear panel terminal allows the higher current input (>10A) and provides the convenience for system integration.

RS-232/LAN/USB ports facilitate the communication with a PC.



GPIB (optional)

Specifications comparison

Specifications highlighted in red represent better performance

“X” represents “no such function” or “function not available”

Company	GW Instek	GW Instek
Model	GPM-8213	GPM-8212
Display	4" TFT LCD	7-Segment * 3
Wiring/ Mode	1P2W / AC, DC	1P2W / AC
Measurable Parameters (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	V/A/W/PF/ Hz/Max/Min
Integrated Function	W-h / A-h (WP/ WP+/ WP-/ q/ q+/ q-)	X
Sample Rate	96kHz	12kHz
Input Resistance	A : 5mΩ/500mΩ V : 2.4MΩ	A : 10mΩ V : ≥1MΩ
Input Terminal	4-wire, isolated	3-wire, non-isolated
Max input V,A	600Vrms, 20Arms	640Vrms, 20Arms
Volt Range	CF≤3 : 15.000~600.0V (6 ranges) CF≤6 : 7.500 ~ 300.0V (6 ranges)	5.000~640.0V (8 ranges) , CF≤1.5
Volt Accuracy (Best)	±0.1% of reading ±0.1% of range	±0.1% of reading ±0.1% of range
Amp Range	CF≤3 : 5.0000mA ~ 20.000A (11 ranges) CF≤6 : 2.5000mA ~ 10.000A (11 ranges)	160.0mA~20.48A (8 ranges), CF≤1.5
Amp Accuracy (Best)	± 0.1% of reading ± 0.1% of range	±0.1% of reading ±0.1% of range
Power Range	75.000mW ~ 12.000kW (66 ranges)	800.0 mW ~ 13.10kW (64 ranges)
Power Accuracy (Best)	±0.1% of reading ±0.1% of range	±0.2% of reading ±0.2% of range
Freq Range	DC,45Hz~6kHz	40.0Hz~400.0Hz
Interface	RS232+ USB+ LAN (Option: GPIB)	(Option: RS485/232)
PT/CT scaling	YES	YES
CE Approval	YES	X

Note : Optional GBIP interface is installed in factory only.

Applications Field

- Home/Office/IT electronics (power consumption/Stand by)
- Industrial electronics (power measurement)

Target Markets and Associated Features

■ Manufacturing Engineering

- Simple mode (four major measurement items) and 0.1% basic accuracy (voltage/current/power) to meet the requirements of measurement observation and accuracy on manufacturing process.
- 1/2 Rack and 2U height design are ideal for system integration.
- RS-232C/ USB device / LAN / GPIB (option) provide automatic control on manufacturing process; collect and manage test results for product analysis and improvement.

■ Quality Assurance Verification

- 0.1% basic accuracy (voltage/current/power) and high resolutions (0.1uA/ 1uW) to meet the requirements of precision and accuracy on quality verification.
- Various measurement items and integral function to satisfy quality verification requirements.
- RS-232C/ USB device / LAN / GPIB (option) collect and manage test results for product analysis and improvement.

■ Research and Development

- 0.1% basic accuracy (voltage/current/power) and high resolutions (0.1uA/ 1uW) to meet the requirements of precision and accuracy on quality verification.
- Standard mode (2 major measurements + 6 secondary measurements) and various measurement items and auxiliary functions to satisfy various test requirements on product development.
- RS-232C/ USB device / LAN / GPIB (option) collect and manage analysis results for product development.

Key Dates for Product Announcement

1. Order Queue Open – August 28, 2017
2. Global Market Announcement – September 28, 2017

Service Policy

1. **1-year warranty**
2. **Service Support**

The service instructions in the Service Manual will help distributors repair defective units promptly. Should the board replacement is necessary to fix the defective unit, the board swapping service support is provided by Good Will Instrument to facilitate the repair jobs done at the distributor's site.
3. GW Instek continually provides the after-sales support through its website. The most up-to-date version of service manual and Marcom material of GPM-8213 will be posted on the distributor zone of GW Instek Website at <http://www.gwinstek.com>

Specifications

General

- The specifications apply when the GPM is warmed up for at least 30 minutes.
- Below are the basic conditions required to operate the GPM within specifications:
 - 1-year calibration cycle
 - All specification are ensured under SLOW speed
 - Accuracy: \pm (%of reading+ %of range)
 - The power cord protective grounding conductor must be connected to ground
 - Input voltage/current should be sinewave
 - Power factor is 1
 - Crest factor is 3
 - Common mode voltage is 0



Note

Specification Condition	Temperature: 23°C \pm 5°C Humidity: <80%RH(non-condensing)
Operation Condition	Temperature 0°C ~ 40°C, <ul style="list-style-type: none"> • 30 ~ 40°C, Relative Humidity < 70%RH(non-condensing) • >40°C, Relative Humidity < 50%RH(non-condensing)
Storage Condition	Temperature -40°C ~ 70°C Humidity < 90%RH(non-condensing)
Power Source	AC 100-240V, 50-60Hz ; Consumption Max. 25VA
Dimension & Weight	270(W) x 110(H) x 350(D) mm, Approx. 2.9kg

Input

Item	Spec.	
Input voltage	600 Vrms	
Input current	20 Arms	
Input impedance(50/60 Hz)	Voltage	2.4M Ω
	Current	5mA - 200mA 0.5A - 20A
Maximum display voltage	700 Vrms	
Maximum display current	25 Arms	
Maximum allowable isolation voltage	300 V	
Low frequency filter	Cut-off frequency	500 Hz

Display

Synchronization frequency	45Hz~ 6kHz
Average	1, 2, 4, 8, 16, 32, 64
Displayed items(Standard mode)	8 items simultaneously.
Displayed items(Simple mode)	4 items simultaneously.
Displayed digits	5
Voltage converter (PT ratio)	1 to 9999.999
Current converter (CT ratio)	1 to 9999.999
Measurement items	Voltage, current, active power, apparent power, reactive power, power factor, phase angle, frequency, integrated current, integrated power, positive integrated power, negative integrated power, integration time, voltage crest factor, current crest factor, voltage peak, current peak, Thd
Displayed measurement parameters	Vdc, Vrms, V+pk, V-pk, Idc, Irms, I+pk, I-pk, P, P+pk, P-pk, VA, VAR, PF, CFV, CFI, DEG, VHz, IHz, THDV, THDI

Voltage Measurement

Measurement range	CF=3 : 15V, 30V, 60V, 150V, 300V, 600V CF=6 : 7.5V, 15V, 30V, 75V, 150V, 300V	
Crest factor	3, 6	
Accuracy	Effective range	1 % to 105 % of range
	DC	±(0.2 % reading + 0.2 % range)
	45 Hz ≤ f ≤ 66 Hz	±(0.1 % reading + 0.1 % range)
	66 Hz < f ≤ 1kHz	±(0.1 % reading + 0.2 % range)
	1 kHz < f ≤ 6kHz	± 3 % of range
	The filter is turned on	Increase 0.3 % reading @ 45Hz to 66Hz
Temperature effect	5-18°C / 28-40°C	Increase ±0.03% reading / °C
Residual noise		0.5 % of range

Current Measurement

Measurement range	CF=3 : 5mA, 10mA, 20mA, 50mA, 100mA, 200mA, 500mA, 1A, 2A, 5A, 10A, 20A CF=6 : 2.5mA, 5mA, 10mA, 25mA, 50mA, 100mA, 250mA, 0.5A, 1A, 2.5A, 5A, 10A	
Crest factor	3, 6	
Accuracy	Effective range	1 % to 105 % of range
	DC	±(0.2 % reading + 0.2 % range)
	45 Hz ≤ f ≤ 66 Hz	±(0.1 % reading + 0.1 % range)
	66 Hz < f ≤ 1kHz	±(0.1 % reading + 0.2 % range)
	1 kHz < f ≤ 6kHz	± 3 % of range
	The filter is turned on	Increase 0.3 % reading @ 45Hz to 66Hz
Temperature effect	5-18°C / 28-40°C	Increase ±0.03% reading / °C
Residual noise		0.5 % of range

Power Measurement

Accuracy	Effective range	1 % to 110 % of range
	DC	±(0.2 % reading + 0.2 % range)
	45 Hz ≤ f ≤ 66 Hz	±(0.1 % reading + 0.1 % range)
	66 Hz < f ≤ 1kHz	±(0.1 % reading + 0.3 % range)
	1 kHz < f ≤ 6kHz	± 3 % of range
	The filter is turned on	Increase 0.3 % reading @ 45Hz to 66Hz
Temperature effect	5-18°C / 28-40°C	Increase ±0.03% reading / °C

Frequency Measurement

Measurement range	The filter is turned on	30.000Hz to 499.99Hz
	The filter is turned off	30.000Hz to 9.9999kHz
Measurement items		Voltage, Current
Effective input range		10% to 105% of voltage input range
Accuracy		±(0.06 % reading)

Integrator Measurement

Integrator	Accuracy	±(Accuracy of voltage or current+ 0.1 % reading)
Time	Range	0 hour 0 minute to 9999 hours 59 minutes
	Accuracy	±0.01% ±1second

Ordering information

GPM-8213 with GPIB Digital Power Meter with RS-232C / USB device / LAN and opt. GPIB
GPM-8213 Digital Power Meter with RS-232C / USB device / LAN

Standard Accessories

Safety Instruction Sheet x 1
Power cord x 1
Test lead GTL-209 x 1
CD x 1 (including complete user manual and USB driver)

Optional

Opt.01 GPIB Interface

Note : Optional GBIP interface must be installed in factory.

Optional Accessories

GPM-001 Test Fixture (with connection cable)
GTL-232 RS-232C cable, 9-pin Female to 9-pin, null modem for computer, Approx. 2000mm
GTL-246 USB Cable, A-B type, Approx. 1200mm
GTL-248 GPIB Cable, Approx. 2000mm
GTL-251 GPIB-USB-HS+ (high speed)



GPM-001

Should you have any questions on the GPM-8213 announcement, please don't hesitate to contact us.

Sincerely yours,

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