

GPM-8320/8330

Digital Power Meter



FEATURES

• 5" TFT LCD

- Voltage/Current Meter Test Freq. Bandwidth: DC, 0.1Hz ~ 100kHz
- Waveform Display : V (Voltage), I (Current), P (Wattage)
- Distorted wave Current/Voltage Measurement: Full Range for CF=3, and Half Range for CF=6 (or 6A)
- Meeting IEC 61000-4-7 Harmonic Measurement (50/60Hz)
- Wiring Selecting Button (1P3W, 3P3W, 3P4W, 3V3A)
- Harmonic Measurement & Analysis up to 50 Orders
- Auto Ranging Function for Integration Mode
- Screen Capture Through USB Host
- Provide External Current Sensor Input (EXT1/EXT2)
- Standard Interface: RS-232C, USB Device/Host, LAN
- Optional Interface: GPM-DA12 GPIB + Digital I/O (Factory Installed Only)



GW Instek GPM-8320/8330 are digital power meters designed specifically for measuring power in three-phase AC power sources, making it suitable for most electrical and electronic product testing applications (GPM-8320 provides 2 modules, and GPM-8330 provides 3 modules). These models have a testing bandwidth of DC, 0.1Hz~100 kHz and feature 16-bit A/D converters and a sampling rate of 300 kHz. A 5-inch TFT LCD display, 5 digits of measurement readings, 25 different power measurement parameters, and high precision measurement capabilities are also provided. GPM-8320/8330 also feature waveform display capabilities (voltage/current/power), the integration measurement function, harmonics measurement and analysis of multiple orders (50/60Hz measurement complies with IEC61000-4-7 requirements), external sensor input terminals, and a variety of communications interfaces. These features help users achieve clear, convenient, and accurate power measurements, making them the most fully-featured and cost-effective power meters in the same category.

GPM-8320/8330 provide multiple input voltage configuration wiring modes (1P3W/3P3W/3P4W/3V3A). Users can choose the wiring mode according to their specific requirements to measure parameters for specific wiring methods, and even calculate efficiency. In addition, for a rated input voltage of 1000V and an input current of 20A, they support a minimum current range of 0.5A (resolution of 0.1mA), power measurement resolution of 0.1mW, crest factor of 3 (for half range, the CF can reach up to 6 or 6A), and voltage/current/power measurement accuracy of ±0.1% reading ±0.05% range. Users can select different measurement modes (AC+DC/AC/DC/V-MEAN) to provide up to 25 related parameters for power measurement. These parameters include voltage (Vrms/Vac/Vdc/Vmn/V+pk/V-pk), current (Irms/Iac/Idc/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), maximum current ratio (MCR), and MATH calculation function. Therefore, they provide the best range and accuracy support for measuring the power consumption of electrical and electronic products.

GPM-8320/8330 also effectively utilize the advantages of TFT LCD display, providing results of parameter measurements in both numerical and graphical formats. In terms of numerical display, it offers a general mode and a multiple mode. The general mode includes 4 tabs (page1~page4), and each tab can display 10 measurement parameters (2 main measurements + 8 monitoring measurements). Users can freely combine these parameters to display the results of measurements from various modules. The multiple mode can simultaneously display the measurement results of three modules, which is particularly suitable for comparing differences in measurements between modules, such as unbalanced three-phase. This mode also offers 4 tabs, and each tab can display 8 measurement parameters. In terms of graphical display, they offer a simple oscilloscope mode to display voltage, current, and power parameters in waveform format. Additionally, the display provides numerical or bar chart display for the measurement and analysis of harmonics signals at various orders that not only satisfies the need for accuracy and clear readability in process testing, but also meets the diverse measurement application requirements for research and development, design and quality verification.

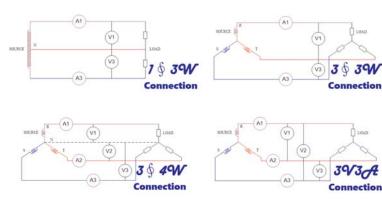
GPM-8320/8330 have comprehensive mechanisms and functions for auxiliary measurements. For applications that require measuring high voltage, they provide VT rate settings that can be used with external potential transformers. For measuring large current, it depends on the type of current transformer, whether it is a voltage output type or a current output type. If it is a current output type, it can be directly locked onto the meter's rear panel and used with CT rate settings for measurement. If it is a voltage output type, it can be measured through the external current sensor input terminals (EXT1/EXT2) provided by GPM-8320/8330. Automatic range switching can be customized to the required range to save unnecessary time spent on range switching. The internal memory of 10,000 data logs can store measurement data at the update rate set by GPM-8320/8330 or at a user-defined time interval for future analysis.

In terms of data acquisition and storage, GPM-8320/8330 offer a variety of communications interfaces, including RS-232C/USB device (virtual COM)/LAN, or optional GPIB. Users can choose to write programs to read measurement results according to their habits or in collocation with existing system interfaces. The USB host can support screen capture, internal data logging, and firmware updates for GPM-8320/8330. For those with the needs of using external signal control or data recorder for data recording, GPM-8320/8330 also offer an optional Digital I/O (DA12) interface (must be installed at the factory), which can be connected to external controllers such as PLC or data recorders to meet the needs of automated measurements or long recording applications.

A. WIRING SELECTION



GPM-8320/8330 provide multiple input voltage configuration wiring modes (1P3W/3P3W/3P4W/3V3A). Users can choose the wiring mode according to their specific requirements to measure parameters for specific wiring methods, and even calculate efficiency.



B. VARIOUS DISPLAY MODES



Numerical (Single) Mode

С

Numerical (Multiple) Mode

Numerical (Simple) ModeMode Waveform Mode Harmonics (Bar Graph) Measurement

Harmonics (List) Measurement

GPM-8320/8330 provide two display modes, numerical and graph, which help users maximize the benefits of their measurements. In numerical mode, there are two options: single and multiple. In single mode, there are four tabs that can be customized with the module's measurement settings, and each tab can display up to 10 measurement parameters (2 main and 8 secondary measurements). In multiple mode, there are also four tabs, and users can simultaneously observe the same 8 measurement parameters from three different modules. Parameters in both modes can be arranged and customized as needed, and a simple mode that displays only the first four parameters is also available regardless of which tab is selected. In graph mode, there is a simple oscilloscope function that displays the waveforms of three parameters: voltage, current, and power. The horizontal scale can be adjusted (from 50us/div to 10ms/div depending on the set data update rate), and three waveform observation magnification ratios are available. When measuring harmonics, the harmonics measurement results of each order can be displayed in a bar chart, and a specific observation order can be specified. Additionally, all relevant values for harmonics of each order (voltage/current/power voltage distortion percentage/current distortion percentage/power distortion percentage/voltage phase angle/current phase angle) can be fully recorded and presented.

RICH MEASUREMENT PARAMETERS

| Measurement Items | Symbols |
|---------------------------|------------------------------------|
| Voltage | Vrms, V+pk, V-pk, Vac*, Vdc*, Vmn* |
| Current | Irms, I+pk, I-pk, Iac*, 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 |
| Mathematical Computation | MATH |
| Maximum Current Ratio | MCR |
| Integration | WP, WP+, WP-, q, q+, q-, Vac, lac |

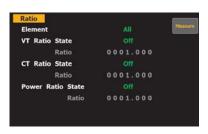
*: Only applicable to specific measurement modes and available for selection

GPM-8320/8330 provide a variety of measurement items, including voltage, current, frequency, active power, apparent power, reactive power, power factor, crest factor, total harmonic distortion, and even the ability to measure maximum current ratio. Additionally, GPM-8320/8330 are equipped with measurement functions for power or current time integration specific to the DUT. Users set a period of time to perform

| Mode | M | anual | | |
|-----------|----------|-----------|----------|----------|
| Function | W | att Hours | | |
| Set Time | | 000:00: | :00 | |
| Test Time | | 000:01: | 21 | |
| State | R | unning | | |
| | Element1 | Element2 | Element3 | Σ |
| WP[Wh] | 10.039 | 10.039 | 10.052 | 30.130 |
| WP+[Wh] | 10.039 | 10.039 | 10.052 | 30.130 |
| WP-[Wh] | -0.0000m | -0.0000m | -0.0000m | -0.0000m |
| Maasura | Set | Flement | | |

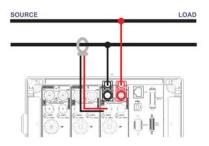
instantaneous power integration during this time, and then divide by the time to obtain the average power of the DUT. Moreover, during integration measurements, GPM-8320/8330 support automatic range switching function to obtain the most complete integration results in response to the power changes of the DUT in different time periods.

SUPERB MEASUREMENT ASSISTANCE



Ratio Configuration

In terms of measurement support, GPM-8320/8330 perform exceptionally well. Firstly, in the measurement of high voltage/power, they provide voltage/power ratio settings to restore the attenuation rate to the true value. In addition, for large current measurement, other than the current ratio setting, there are also terminals (EXT1/EXT2) for external current sensors that can be connected to voltage output type current transformers, making large current measurement more convenient.



External Current Sensor Input

Furthermore, GPM-8320/8330 provide 4 sets of panel settings for storage/recall and a memory that can store up to 10,000 measurements. The measurement storage can record the measurement results according to the update rate or a user-defined time interval for later analysis. The USB host on the front panel supports screen capture, measurement value storage, and firmware updates.

Ε.

FLEXIBLE LEVEL-CHANGING MECHANISM



Automatic level-changing under the integration function

GPM-8320/8330 offer automatic range switching mode for integral measurement, allowing users to calculate the total value of the DUT's power variation from the start to the end of the integration period. In

MEASUREMENT RANGE CONFIG On Mode Quick Skipping Config On V-Range 00 150V 300V 600V 600V Veak Over Off 00 I-Range 10A 0.5A 10A SA 10A Peak Over Off

Self-defined automatic level-changing mechanism

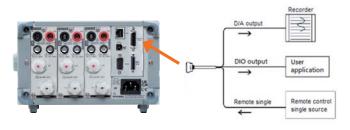
addition, GPM-8320/8330 also support a customizable range switching mechanism. Users can select the desired range, which not only saves time wasted during range switching but also speeds up the testing process.

F. CONVENIENT AND PRACTICAL INTERFACE



Practical Interface

GPM-8320/8330 offer a comprehensive and diverse set of communications interfaces, including RS-232/USB/LAN/GPIB (optional), suitable for users to remotely control and collect measurement results through command sets to program computer software. The optional Digital I/O (DA12) interface provides three different modes according to users' settings: including external control, DA12 output, and self-defined output. When the setting is external control mode, users can activate, stop, trigger, or reset the integration measurement function through



DA12 Interface Mechanism

external signals. When it is set to DA12 output mode, users can define 12 measurement parameter values from the provided 17 measurement parameters (even the result of integration measurement) to output in a fixed range (full scale +5V) or manual range (full scale \pm 5V) and receive the results in collocation with a data recorder. When it is set to custom output mode, it needs to be used with a communications interface, and the action of each defined pin is controlled through commands.

PANEL INTRODUCTION



| SPECIFICATIONS | | | |
|--|--|--|---|
| INPUT | | | |
| Item | Specifications | | |
| Input Type | Voltage / Current | | Floating input through resistive voltage divider; Floating input through shunt |
| Measure Range | Voltage | | 15V, 30V, 60V, 150V, 300V, 600V, 1000V |
| | Current Direct input Sensor input | | 0.5A, 1A, 2A, 5A, 10A, 20A EXT 1: 2.5 V, 5 V, 10 V ; EXT 2: 50 mV, 100 mV, 200 mV, 500 mV, 1 V, 2 V |
| Input Impedance | Sensor Input range 2 | ange 0.5A ~ 20A 5V ~ 10V (EXT1) 0mV ~ 2V (EXT2) | Input resistance: approach 2 M Ω Input resistance: approach 5 m Ω Input resistance: approach 100 k Ω Input resistance: approach 20 k Ω |
| Continuous Maximum Allowable Input | Voltage Current Direct input i Sensor input | ange 0.5A ~ 20A | peak value of 1.5kV or RMS value of 1kV, whichever is less peak value of 100A or RMS value of 30A, whichever is less peak value less than or equal to 5 times of the rated range |
| Input Bandwidth | DC, 0.1 Hz ~ 100kHz | | |
| Continuous Maximum | 600 Vrms, CAT 🛛 | | |
| Common-mode Voltage Line Filter | select OFF or ON (cut of | frequency of EOO H- | |
| | | | , |
| Frequency Filter A/D Converter | select OFF or ON (cut of | | |
| 1 | | | inputs; Resolution 16bits; Maximum conversion rate Approx. 300kHz |
| Display Update Interval | 200 ms. When the c | lata update inter | 0 ms the numeric display 10 items display update interval is val is 100 ms or 250ms and the numeric value display is set to interval is 500 ms. The waveform display update intervals are |
| VOLTAGE AND CURRENT ACCURACY Item | Specifications | | |
| Requirements | Temperature Humidity Input waveform common-mode voltage Number of displayed digi Frequency filter | 0 V ts 5 digits Turn on to rm-up time has passo | H crest factor = 3 measure voltage or current of 200 Hz or less ed; After measurement range is changed (zero-level compensation); |
| Accuracy | $\begin{array}{l} DC\\ 0.1 \ Hz \leq f < 45 \ Hz\\ 45 \ Hz \leq f \leq 66 \ Hz\\ 66 \ Hz < f \leq 1 \ HHz\\ 1 \ kHz < f \leq 10 \ kHz\\ 10 \ kHz < f \leq 100 \ kHz\\ Values \ for \ voltage \ in \ excellarge \ excellarge \ in \ excellarge \ excellarge \ in \ excellarge \ in \ excellarge \ excellarge \ excellarge \ excellarge \ in \ excellarge \ excellarge \ in \ excellarge \ exc$ | ± (0.1 % of reading ± (0.07 *f) % of reading ± (0.5 % of reading | g + 0.2 % of range) g + 0.05 % of range) |
| Temperature Coefficient | Add $\pm 0.03\%$ of reading/°C within the range 5 to 18°C or 28 to 40°C. | | |
| When the Line Flter is Turned ON | 45 ~ 66 Hz < 45 Hz | 45 ~ 66 Hz Add 0.3% of reading | |
| Accuracy When the Crest Factor is Sset to 6 or 6A | | 0 | ent range error for the accuracy when the crest factor is set to 3 |
| Accuracy Changes Caused by Data Update Interval | When the data update interval is 100 ms, and Auto, add 0.05% of reading to the 0.1 Hz to 1 kHz accuracy. | | |
| Influence of Temperature Changes After Zero-level Compensation or Range Change | Add 0.02% of range/°C to the DC voltage accuracy. Add the following value to the DC current accuracies. 5 mA/10 mA/20 mA/50 mA/100 mA/200 mA ranges 5 μA/°C 0.5 A/1 A/2 A/5 A/10 A/20 A ranges 500 μA/°C External current sensor input (/EXT1) 1 mV/°C External current sensor input (/EXT2) 50 μV/°C | | |
| Accuracy When the Crest Factor is Set to 6 or 6A | accuracy obtained by doubling the measurement range error for the accuracy when the crest factor is set to 3 | | |
| Accuracy Changes Caused by Data Update Interval | When the data update int | erval is 100 ms, and | Auto, add 0.05% of reading to the 0.1 Hz to 1 kHz accuracy. |
| ACTIVE POWER ACCURACY Item | Specifications | | |
| Requirements | same as the conditions for Power factor | or voltage and curren | t. |
| Accuracy | $\begin{array}{llllllllllllllllllllllllllllllllllll$ | | |
| Influence of Power Factor | when power factor (λ) = ± 0.1 % of S for 45 Hz \leq ± {(0.1 + 0.15 × f) % of S • f is frequency of input si when 0 < λ < 1 (Φ : phase (power reading) × [(pow power value) + {tan Φ × (| ^F ≤ 66 Hz } for up to 100 kHz gnal in kHz angle of the Voltage er reading error%) + | , as reference data and current) (power range %) × (power range / indicated apparent |

| When The Line Filler is Tunnel ON 41: 0. 401 36 of reading Temperature Conflicient 3am as the impartance conflicient for allog and carrent is requested and the inal age of a second of the accuracy of them the sympathy the measurement regime of the accuracy of them the sympathy the measurement regime of the accuracy of them the sympathy accuracy of the sympathy accuracy o | SPECIFICATIONS | | | | |
|--|-------------------------------------|-------------------------|--|----------------------------------|--------------|
| Tomport Confliction Series (Series of Academy Meet The Confliction Series of Academy Meet Top Series (Series Of Academy Meet Top Series Of Academy Meet | | 45 ~ 66 Hz | Add 0.3 % of reading | | |
| Accuracy When The Certification is solving of plaquent Power 5 exclusion of plaquent power 4 (~ 1.004 / 1.22) * (/ | | < 45 Hz | 8 | | |
| Set to 6 ro A. excess of Appanet Power 5 event accurate a | Temperature Coefficient | | 6 | | |
| Accuracy of Apparent Power 3 evaluation of Apparent Power 4 (-1 1004 - 30): (-1 - 123) r0(0 + 1 - 200 - 1001 (-1 - 200 - 100 | * | | publing the measurement range error for the accu | racy when the crest factor is | |
| Accuracy of functive Power Q accuracy of appaint power - L ² (2004 - 22) - (2 - 123, 2003 - 2004 - 200 | | | | | |
| Accuracy of Power Factar A = (0.471 (0.0027) is case acception: 1 (if linearse from the power factar when 2 = 0.91(0.001) 1 al digit when values and commerts are at the researcement range and power factar when 2 = 0.90(1.001) 1 al digit when values and commerts are at the researcement range and power factar when 2 = 0.90(1.001) 1 al digit when values and commerts are at the researcement range and power factar when 1 the cost factor 1 is set to 3 for 4 | | а , | , | | |
| does of the Difference 0 index index and current are ther measurement range rand up at the index index with x = 0.6 k / 100 l = 1 digit when when the dist random when x = 0.6 k / 100 l = 1 digit when when x = 0.6 k / 100 l = 1 digit when when x = 0.6 k / 100 l = 1 digit when when x = 0.6 k / 100 l = 1 digit x = 0.0 k / 100 l = | | , | | | |
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| is Set for 6 A set 0.3 means the set of a set 0.3 means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to the 0.1 Hz to 1 kHz means 4.0 to .0.39% of reading to .0.39% of re | Accuracy of Phase Difference Φ | when voltage and curre | nt are at the measurement range rated input | | |
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| $ \begin{array}{llllllllllllllllllllllllllllllllllll$ | | | | | |
| $ \begin{array}{c cccc} 1 & s & 2.0 \ Hz \leq f \leq 100 \ Hz \\ 2 & s & 1.0 \ Hz \leq f \leq 100 \ Hz \\ 5 & s & 0.5 \ Hz \leq f \leq 100 \ Hz \\ 10 & s & 0.2 \ Hz \leq f \leq 100 \ Hz \\ 20 & s & 0.1 \ Hz \leq f \leq 100 \ Hz \\ 4uto (*) & 0.1 \ Hz \leq f \leq 100 \ Hz \\ 4uto (*) & 0.1 \ Hz \leq f \leq 100 \ Hz \\ (*) \ Limit of the measurement lower limit frequency by the Timeout setting Timeout & lower limit frequency \\ 1 & s & 2.0 \ Hz \\ 5 & s & 0.5 \ Hz \\ \end{array} $ | | | | | |
| 5 s $0.5 \text{ Hz} \le f \le 100 \text{ Hz}$ 10 s $0.2 \text{ Hz} \le f \le 100 \text{ Hz}$ 20 s $0.1 \text{ Hz} \le f \le 100 \text{ Hz}$ Auto (*) $0.1 \text{ Hz} \le f \le 100 \text{ Hz}$ (*) Limit of the measurement lower limit frequency by the Timeout settingTimeoutlower limit frequency1 s 2.0 Hz 5 s 0.5 Hz | | | | | |
| 10 s $0.2 \text{ Hz} \le f \le 100 \text{ kHz}$ 20 s $0.1 \text{ Hz} \le f \le 100 \text{ kHz}$ Auto (*) $0.1 \text{ Hz} \le f \le 100 \text{ kHz}$ (*) Limit of the measurement lower limit frequency by the Timeout settingTimeoutlower limit frequency1 s 2.0 Hz 5 s 0.5 Hz | | | | | |
| 20 s $0.1 \text{ Hz} \le f \le 100 \text{ kHz}$ Auto (*) $0.1 \text{ Hz} \le f \le 100 \text{ kHz}$ (*) Limit of the measurement lower limit frequency by the Timeout settingTimeoutlower limit frequency1 s 2.0 Hz 5 s 0.5 Hz | | | | | |
| Auto (*) $0.1 \text{ Hz} \le f \le 100 \text{ kHz}$ (*) Limit of the measurement lower limit frequency by the Timeout settingTimeoutlower limit frequency1 s2.0 Hz5 s0.5 Hz | | | | | |
| TimeoutIower limit frequency1 s2.0 Hz5 s0.5 Hz | | | | | |
| 1 s 2.0 Hz 5 s 0.5 Hz | | | | ng | |
| 5 s 0.5 Hz | | | . , | | |
| | | | | | |
| | | 10 s | 0.2 Hz | | |
| 20 s 0.1 Hz | | 20 s | 0.1 Hz | | |

| SPECIFICATIONS Measurement Range Frequency Filter Accuracy INTECRATION Item Mode Timer Accuracy Range Setting Timer Accuracy Remote Control HARMONIC MEASUREMENT Item Measured Item Measured Method | Auto switching among six types: 100mHz, 1 Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, and 100 kHz. Select OFF or ON (cut off frequency of 500 Hz) Requirements When the input signal level is 30% or more of the measurement range If the crest factor is set to 3. (60% or more if the crest factor is set to 6 or 6A) |
|---|---|
| Accuracy INTEGRATION Item Mode Timer Accuracy Range Setting Timer Accuracy Remote Control HARMONIC MEASUREMENT Item Measured Item | Requirements When the input signal level is 30% or more of the measurement range If the crest factor is set to 3. (60% or more if the crest factor is set to 6 or 6A) • Frequency filter is ON when measuring voltage or current of 200 Hz or less. ± (0.06% of reading) Specifications Select manual integration mode, standard integration mode, or repetitive integration mode. Automatically stop integration by setting a timer. Selectable range: 0 hours 00 minutes 00 seconds to 9999 hours 59 minutes 59 seconds ± (Power accuracy (or current accuracy) + 0.1% of reading) (fixed range) Auto range or fixed range is available for Integration ±0.02% Start, stop and reset operations are available using an external remote signal. (option) |
| Accuracy INTEGRATION Item Mode Timer Accuracy Range Setting Timer Accuracy Remote Control HARMONIC MEASUREMENT Item Measured Item | Requirements When the input signal level is 30% or more of the measurement range If the crest factor is set to 3. (60% or more if the crest factor is set to 6 or 6A) • Frequency filter is ON when measuring voltage or current of 200 Hz or less. ± (0.06% of reading) Specifications Select manual integration mode, standard integration mode, or repetitive integration mode. Automatically stop integration by setting a timer. Selectable range: 0 hours 00 minutes 00 seconds to 9999 hours 59 minutes 59 seconds ± (Power accuracy (or current accuracy) + 0.1% of reading) (fixed range) Auto range or fixed range is available for Integration ±0.02% Start, stop and reset operations are available using an external remote signal. (option) |
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| Timer Accuracy Range Setting Timer Accuracy Remote Control HARMONIC MEASUREMENT Item Measured Item | Automatically stop integration by setting a timer. Selectable range: 0 hours 00 minutes 00 seconds to 9999 hours 59 minutes 59 seconds ±(Power accuracy (or current accuracy) + 0.1% of reading) (fixed range) Auto range or fixed range is available for Integration ±0.02% Start, stop and reset operations are available using an external remote signal. (option) |
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| Range Setting Timer Accuracy Remote Control HARMONIC MEASUREMENT Item Measured Item | Auto range or fixed range is available for Integration ±0.02% Start, stop and reset operations are available using an external remote signal. (option) Specifications |
| Timer Accuracy Remote Control HARMONIC MEASUREMENT Item Measured Item | Start, stop and reset operations are available using an external remote signal. (option) Specifications |
| HARMONIC MEASUREMENT Item Measured Item | Specifications |
| Item Measured Item | |
| Measured Item | |
| | Voltage, Current, Power |
| | Zero-cross simultaneous calculation method |
| Frequency Range | 10 Hz to 1.2 kHz. |
| FFT Data Length | 4096 (Auto switch when both 50Hz/60Hz and update rate must be greater than or equal to 0.5s) |
| Sample rate, window width, and upper limit of Analysis | Fundamental FrequencySample rate Window Width upper limit of Analysis orders 45 Hz to 55 Hz f×512 10 50 |
| orders* | 43 Hz to 55 Hz 1 × 512 10 30 54 Hz to 66 Hz f × 512 12 50 |
| FFT Data Length | 1024 |
| Sample rate, window width, and upper limit of Analysis | Fundamental Frequency Sample rate Window Width upper limit of Analysis orders 10 Hz to 67 Hz f × 1024 1 50 |
| orders* | 67 Hz to 150 Hz f×512 2 32 |
| | 150 Hz to 300 Hz f × 256 4 16 |
| | 300 Hz to 600 Hz f × 128 8 8 600 Hz to 1200 Hz f × 64 16 4 |
| Accuracy | Frequency Voltage Current Power |
| | $10 \text{ Hz} \le f < 45 \text{ Hz}$ 0.15% of reading 0.15% of reading 0.35% of reading 0.35% of reading |
| | $\begin{array}{c} + 0.35\% \text{ of range} \\ 45 \text{ Hz} \leq f < 440 \text{ Hz} \end{array} \begin{array}{c} + 0.35\% \text{ of range} \\ 0.15\% \text{ of reading} \\ 0.15\% \text{ of reading} \end{array} \begin{array}{c} + 0.50\% \text{ of range} \\ 0.25\% \text{ of reading} \\ 0.25\% \text{ of reading} \end{array}$ |
| | + 0.35% of range + 0.35% of range + 0.50% of range |
| | 440 Hz \leq f < 1.2kHz 0.20% of reading 0.20% of reading 0.40% of reading 0.20% of reading |
| | + 0.35% of range + 0.35% of range + 0.50% of range |
| * 50Hz/60Hz Compliant IEC61000-4-7 | 7 (update rate must be > 0.5s) n which FFT data length is divided into 2 types: 1024 and 4096. |
| | nes in accord with the Frequency and Update Rate of measured signal. |
| D/A OUTPUT (OPTIONS) | |
| Item | Specifications |
| Output Voltage | ±5 V FS (approach ±7.5 V maximum) against each rated value. |
| Number Of Output Channels Output Items | 12 Set for each channel: V, I, P, VA, VAR, PF, DEG, VHZ, IHZ, Vpk, Ipk, WP, WP±, q, q±, Off |
| Accuracy | \pm (accuracy of each measurement item + 0.2% of FS) (FS = 5 V) |
| D/A Conversion Resolution | 16 bits |
| Minimum Load | 100 kΩ |
| Update Interval | Same as the data update interval. In the case of Auto Update Rate, update interval is equal to signal interval. More than 100ms. |
| Temperature Coefficient | ±0.05%/°C of FS |
| REMOTE CONTROL INPUT/OUTPUT | , |
| Item | Specifications |
| Remote Control Input Signal | EXT HOLD, EXT TRIG, EXT START, EXT STOP, EXT RESET |
| Remote Control Output Signal | INTEG BUSY |
| I/O Level I/O Logic Format | TTL Negative logic, Falling edge |
| | |
| | re originated from the measured values including voltage, current and active power which go through computation process. ordingly, the value acquired from other instruments, which employ different methods, may differ from that acquired from |
| GPM-8320/8330 unit. | |
| * "Zero" will be shown for S or Q and "" 1% when crest factor is set 6) | " will be displayed for λ and Φ when either current or voltage is less than 0.5% of the rated range (less than or equivalent to |
| GENERAL | |
| | The below are the basic conditions required to operate the CDM \$220/\$220 within specifications: |
| | The below are the basic conditions required to operate the GPM-8320/8330 within specifications: |
| ∠ ! Note | 1-year Calibration: Yearly Operating Environment: 18~28 °C (64.4~82.4 °F) The power supply cable must be grounded to ensure accuracy. Input voltage and current must be standard sine wave. |
| | Humidity: <80%RH, The power factor must be 1. |
| | Accuracy: ± (% of reading + % of range) The crest factor must be 3. |
| | • The specifications apply when it warmed up for at least • The common-mode voltage must be zero. |
| | 30 minutes and operates in the slow rate. |
| | |

| SPECIFICATIONS | |
|-------------------------|---|
| Specification Condition | Temperature: 23°C±5°C;Humidity: <80%RH(non-condensing) |
| Operation Condition | Temperature 0°C ~ 40°C, • 30 ~ 40°C, Relative Humidity < 70%RH (non-condensing) • >40°C, Relative Humidity < 50%RH (non-condensing) Indoor use only Altitude: < 2000 meters Pollution degree 2 |
| Storage Condition | Temperature -40°C ~ 70°C ; Humidity: < 90%RH (non-condensing) |
| Power Source | AC 100-240V, 50–60Hz ; Consumption Max. 35VA |
| Dimensions | 220(W) x 132(H) x 402.5(D)mm(w/t bumpers) |
| Weight | Approx. 3.85kg |

ORDERING INFORMATION

GPM-002

GTL-209

 GPM-8320
 Digital Power Meter (RS-232C/USB device & Host/LAN)

 GPM-8320
 Digital Power Meter (RS-232C/USB device & Host/LAN and opt. GPIB+DA12)

 (with GPM-DA12)
 Digital Power Meter (RS-232C/USB device & Host/LAN and opt. GPIB+DA12)

 GPM-8330
 Digital Power Meter (RS-232C/USB device & Host/LAN)

 GPM-8330
 Digital Power Meter (RS-232C/USB device & Host/LAN and opt. GPIB+DA12)

 MCESSORIES
 Safety Instruction Sheet x 1, Power cord x 1, Test lead GTL-209 x 2, Test lead GTL-212A x 2 (for GPM-8320), Test lead GTL-209 x 3, Test lead GTL-212A x 3 (for GPM-8330), CD x 1 (including complete user manual and USB driver), DA12 cable GTL-214 (available for GPM-8320/8330 with GPM-DA12 only), GPM-002 Terminal Cover

GTL-212A

Specifications subject to change without notice. PM-83208330CD1BH OPTION GPM-DA12 GPIB+DA12 Interface (including cable, GTL-214) Note : The option is 2-in-1 interface and must be installed in factory. OPTION ACCESSORIES GTL-209 Test Lead, Banana to Bare-wire, Approx. 1000mm GTL-214 Test Lead, O-Type to Bare-wire, Approx. 1000mm GTL-214 DA4 Cable, Approx. 1000mm 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-258 GPIB Cable, 25-pin Micro-D Connector, Approx. 1900mm GRA-452 Rack Mount Kit, 19" 3U size



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