PC Software for Power Meter

For GPM-8310 & GPM-8213

Remote Viewer Guide

VERSION V.1.0





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NTRODUCTION

The PC Software Guide of GPM-8310/8213 is intended for showing how to use the remote PC software on Windows OS based computers (Windows 7 32bit or 64bit, Windows 8 32bit or 64bit, Windows 10 32bit or 64bit supported).

This manual consists of the following chapters.

- Setup: Installation, Uninstallation, Connecting Setting, Configuration
- Measurement: System Configuration, Measure Result and Graph viewing
- Test Report: Measure Result, Configuration and History Record

Software overview



The software contains the following functions.

- Performing measurements including Integrator and Harmonic functions
- Displaying measurement results in real-time
- · Storing and loading measurement log files
- Voltage/Current, Harmonics and Trend charts display
- Professional Test Report output



Wire Connection

Read the following instructions regarding how to set up remote interface on GPM-8310/8213 and method of cable connection when operating PC Software in conjunction with the GPM-8310/8213.

Note		There are several interfaces (RS232, USB, L to connect GPM-8310/8213 and PC Softwa following procedure describes an example connection with GPM-8310 for your referen	re. The of RS232
Configure to RS232 interface	1.	Use left and right arrow keys on the front panel to select System function key.	
	2.	Press Enter button to Enter SYSTEM INFORMATION screen.	Enter
	3.	Press Config soft key to Enter SYSTEM CONFIG setting screen.	Config
	4.	Press Enter button followed by pressing down arrow key to move cursor to I/O Model field.	Enter
	5.	Use soft keys to select and confirm the RS232 option.	00000

	6.	Press down arrow Baud Rate field.	key to move cursor to	
	7.	Use soft keys to se Baud Rate option. SYSTEM CONFIG Power On Status Setup Default Brightness 7 Key Sound Off I/O Model R5232 Baud Rate 9600 Terminator CR+LF	elect and confirm the	00000
		Option	9600, 19200, 38400, 57600,115200	
		Default value	9600	
	8.	Press down arrow Terminator field.	key to move cursor to	
	9.	Use soft keys to se Terminator option.	lect and confirm the	00
		SYSTEM CONFIG Power On Status Setup Default Brightness 7 Key Sound Off I/O Model R5232 Baud Rate 9600 Terminator CR+LF	ar ur Caut	0000
		Option	CR, LF, CR+LF	
		Default value	CR+LF	
Connect the RS232 cable	1.			PM-8310
		RS232 Female po rear panel of GPM		
	2.		end of the RS232 cable nding port on the host I	· · ·

Installation

Install PC	1. Go to the GPM-8310 product page from GWInstek
Software	website and enter the Downlaod section.



2. After entering the Download section, click on the PC software item to download the target file.

Description	Specifications	Accessories	Ordering Info.	Download
Please Select 🔻				
LabVIEW Driver GPH-8310 LabVIEW Driver (for LabVIEW 2010 or later) 2021-10-18	Assembly Manual The Rack Adapter assemb manual of GRA-422 2021-08-19	ly GPM-831	Model 10 3D DIME. 1-06-25	2D Drawing GPM-8310 2D DIME. 2021-06-25
Quick Start Guide The Quick Start Guide of GPM-810 (German) 2020-12-02	PC software Ver., 8.27 MB DOWNLOAD	GPM-8310 L (for LabVIEV	W Driver Th abVIEW Driver Th 2016 or later) 0-07-07	Brochure e brochure of GPM-8310. 2021-02-18

- 3. Go to the PowerMeterSeries directory from the downloaded target file.
- 4. Double click on the setup.exe.
- 5. The installation wizard will start up. Follow the directions of the installation wizard. When choosing an install location it is recommended that the default location is chosen.

The default location of the software is C:\Program Files (x86)\PowerMeterSeries\PowerMeterSeries.exe

A program icon should be available from the Start Menu.



Uninstallation

Follow the procedures described in this section when the PC software needs to be removed.

Uninstall the PC Software from Start Menu

Software from

Control Panel

- 1. Click on **Uninstall PowerMeterSeries** under the default folder of PowerMeterSeries from Start Menu.
 - PowerMeterSeries
 PowerMeterSeries
 Uninstall PowerMeterSeries
- 2. Click on **Yes** from the prompt message showing "Are you sure you want to uninstall this product?"

Windows Installer	
Are you sure you want to	uninstall this product?
Yes	No

3. The uninstalling process will proceed automatically until complete finish.

Uninstall the PC 1. Press **Control Panel** from the Windows Start menu.



2. Click Programs and Features option.

Programs and Features

3. Select **PowerMeterSeries** followed by pressing the **Uninstall** button.

Organize 🔻	Uninstall (Change Repair				
Name			Publisher	Installed On	Size	Version
PowerMe			GW	11/19/2021	12.8 MB	1.21.02.04
Google C	Uninstall		Google LLC	11/15/2021		96.0.4664.45
Uropbox 😳	Change		Dropbox, Inc.	11/15/2021		135.4.4221
BUBOTAda	Repair		聯邦銀行	11/10/2021		1.0.18.0125

4. Follow the instructions step by step to complete the uninstalling process.

Configuration

Check the host PC		Before making sure the PC Software is recognized by the connected PC, open the Device Manager (Start > Control Panel > (System) > Device Manager. Check which COM port the cable connection is assigned to. Here we take RS232 cable for example.
	3.	MOXA USB Serial Port (COM3) To see the baud rate of the RS232 connection, right click the corresponding port and select Properties.
		 Ports (COM & LPT) Communications Port (COM1) Communications Port (COM2) ECP Printer Port (LPT1) MOXA USB Serial Port (COM3) Processors Smart card readers Sound, video and game controller System devices Universal Serial Bus controllers Universal Serial Bus controllers
	4.	Click the Port Settings tab and check the baud rate of the connection.
		MOXA USB Serial Port (COM3) Properties
Configure the PC Software	1.	Activate the PC Software from the Start Menu. PowerMeterSeries PowerMeterSeries Uninstall PowerMeterSeries
	2.	Click on the Connection Setting tab from the top Tool Bar and open the Serial Port

dialog.

3. Select the target interface from the Connection Condition Setting box. We select RS232 communication, for example, followed by setting the corresponding Com Port to 3 and Baud Rate to 115200.

onnection Condition Communication RS232 USB	
RS232 Com Port 3 •	Baud Rate
LAN IP Address 192.1	68.0.101 Port 23
GPIB GPIB Addres	s 15 -
Ok	Cancel

- 4. Further click OK in green message box to establish the connection.
- 5. After clicking OK, the successful message with relevant information will appear in the bottom line of the PC Software as shown below.

PC Software Version:1.20210204 / Model: GPM-8310 / Com Port: 3 / Baud Rate: 115200 / Serial No: GPM831010 / FW Version: V1.03

7. Move on to the next Measure chapter.

EASUREMENT

System Configuration

Prior to measurement, follow the procedures for wire connection and configuration from the page 5 to 9.

1. After eatablishing connection between PC software and GPM-8310, press the **System Configuration** tab in the lower-left corner to enter the page.



2. Configure each setting individually as follows.

mp- Measure M				
• DC	• AC	C AC+DC	V-MEAN	Count On ● Off O Linear ● Exponent ● 8 ● 16 ◎ 32 ● 64
	Current / External Ra		Range Skipping Edit	Ratio
	 ▶ 15V ▶ 30V ▶ 5mA ▶ 20mA 	● 60V ● 150V Current ● 100mA ● 0.5A	● 300V ● 600V ● 2A ● 10A	
	0 10mA ● 50mA Ext1 © 2.5V ● 5V ●	200mA ● 1A 10V 0 50mV ● 100mV	• 5A • 20A Ext2 • 200mV • 1V • 500mV • 2V	CDIA Preconfigured format Preconfigured format Integrator Image:
etup Sync Sourc	ce	Harmonics	FF	
Crest Facto	CF6 CF6A	Order 50	-Max.Hold On Off	Show LCD Screen Display Page
Cine On Frequence On	• 011 Cy • 011	0.1s ● 0.5s ● 1 0.25s ● 1s ● 1 Time Out 1s ● 5s	2s 10s Auto 5s 20s	Default Load Save
asure Syste	em Configuration	0 10 0 20	0 105 0 205	

Measure Mode Select measurement mode. There are up to 4 measurement modes.

-Measure Mod	de		
DC	le AC	AC+DC	V-MEAN
AC+DC	Display all t signal.	he componer	nts of measurement
DC	Display the D	OC part of the r	neasurement signal.
AC	Display the A	C part of the	measurement signal.
V-MEAN	that is calibra same with th when sine w	ated to RMS va lose obtained aves are meas	ed as a mean value alue. The value is from RMS mode ured, but it is different es are measured.

Voltage / Current / Select an a External Range and EXT co

Select an appropriate range for Voltage, Current, EXT1 and EXT corresponding to measurement.



Voltage When Crest Factor is 3, the available voltage range is AUTO, 15V, 30V, 60V, 150V, 300V, 600V. When Crest Factor is 6/6A, the available voltage range is AUTO, 7.5V, 15V, 30V, 75V, 150V, 300V.

Current When Crest Factor is 3, the available current range is AUTO, 5mA, 10mA, 20mA, 50mA, 100mA, 200mA, 0.5A, 1A, 2A, 5A, 10A, 20A. When Crest Factor is 6/6A, the available current range is AUTO, 2.5mA, 5mA, 10mA, 25mA, 50mA, 100mA, 250mA, 0.5A, 1A, 2.5A, 5A, 10A.

- EXT1 When Crest Factor is 3, the available EXT1 range is 2.5V, 5V, 10V.When Crest Factor is 6/6A, the available EXT1 range is 1.25V, 2.5V, 5V.
- EXT2 When Crest Factor is 3, the available EXT2 range is 50mV, 100mV, 200mV, 500mV, 1V, 2V. When Crest Factor is 6/6A, the available EXT2

range is 25mV, 50mV, 100mV, 250mV, 0.5V, 1V.

Voltage / Current / External Skipping Range Configure appropriate skipping range(s) for Voltage, Current, EXT1 and EXT corresponding to measurement.

age / Cur	rent / Exte	mai Rango	e Skipping	Edit	
All Range	9	Voltaç	je Config		
v 15V	⊽ 30V	⊽ 60V	⊽ 150V	⊽ 300V	▼ 600V
Peak Over	Off	•			
		Curre	nt Config		
All Range	9				
🗸 5mA	🗸 20mA	🗸 100mA	V 0.5A	V 2A	🗸 10A
▼ 10mA	🗸 50mA	🛛 200mA	⊽ 1A	⊽ 5A	⊘ 20A
Peak Over	Off	•			
		Ext1	Config		
All Range	e		-		
▼ 2.5V		⊽ 5V		⊽ 10V	
Peak Over	Off	•			
		Ext	Config		
All Rang	е				
⊽ 50mV	⊽ 100mV	⊽ 200mV	⊽ 500mV	⊽ 1V	⊽ 2V
Peak Over	Off	-			

Voltage Config	When Crest Factor is 3, the available skipping voltage range is 15V, 30V, 60V, 150V, 300V, 600V. When Crest Factor is 6/6A, the available skipping voltage range is 7.5V, 15V, 30V, 75V, 150V, 300V.
	In addition, the Peak Over function, which defines a measurement range to switch to when peak over-range happens in Auto range mode, provides the options corresponding to the selected options from the Voltage Config.
Current Config	When Crest Factor is 3, the available skipping current range is 5mA, 10mA, 20mA, 50mA, 100mA, 200mA, 0.5A, 1A, 2A, 5A, 10A, 20A.
	When Crest Factor is 6/6A, the available skipping current range is 2.5mA, 5mA, 10mA, 25mA, 50mA, 100mA, 250mA, 0.5A, 1A, 2A, 5A, 10A.
	In addition, the Peak Over function provides the options corresponding to the selected options from the Current Config.
EXT1 Config	When Crest Factor is 3, the available skipping EXT1 range is 2.5V, 5V, 10V.
	When Crest Factor is 6, 6A, the available EXT1 skipping voltage range is 1.25V, 2.5V, 5V.
	In addition, the Peak Over function provides the options corresponding to the selected options from the EXT1 Config.
EXT2 Config	When Crest Factor is 3, the available EXT2 skipping range is 50mV/100mV/200mV/500mV/1V/2V.
	When Crest Factor is 6/6A, the available EXT2 skipping voltage range is 25mV/50mV/100mV/250mV/0.5V/1V.
	In addition, the Peak Over function provides the options corresponding to the selected options from the EXT2 Config.

Sync Source	Select sy - Sync Sou	
	ΟV	• I • Off
	V	Select the voltage of signals as synchronization source.
	I	Select the current of signals as synchronization source.
	Off	Select the entire interval of data updating period as synchronization source.
Crest Factor	Select a	crest factor corresponding to measurement.
	Crest Fact	© CF6 CF6A
	3	Crest Factor is 3.
	6	Crest Factor is 6.
	6A	Crest Factor is 6A where input range of measurement range will be extended and greater than 6. This is practical for restraining from frequent range changes while measuring, under auto range, a distorted waveform.
Line Filter	Turn on	or off line filter corresponding to measurement.
	Filter Line On	Off
	On	Turn on the line filter function, which is inserted into voltage and current measurement input circuits and affects voltage, current as well as power measurements without high frequency components included within measured values.
	Off	Turn off the line filter function. The cutoff frequency is 500Hz.

Frequency Filter Turn on or off frequency filter corresponding to measurement.



- On Turn on the frequency filter function, which is inserted into frequency measurement input circuit and affects frequency measurements with high frequency components included within measured values.
- Off Turn off the frequency filter function. The cutoff frequency is 500Hz.

Harmonics

Select desired option for harmonics when necessary.



IEC	Calculate the ratio of harmonic quantity of the 2nd through the upper limit 50th harmonic to the 1st harmonic.
CSA	Calculate the ratio of harmonic quantity of the 2nd through the upper limit 50th harmonic to the 1st through the 50th harmonic.
Off	Turn off the harmonic calculation function.
Order	Set the upper limit of measured harmonic order within the range from 1 to 50.

Auto Zero Turn on or off auto-zero function.



On	Auto-zero function is activated once per hour or when range is switched.
Off	Auto-zero function is only activated once

when the range is switched. The auto-zero function is turned off when the integrator function is executed.

Max. Hold	Turn or Max.H	n or off max hold function.
	On	When Max. Hold function is activated, the measured value on display is updated only when the current measured value is greater than the previous measured value. The maximum display value is retained on display.
	Off	The measured value on display is kept being updated continiously regardless of scale of value.

Data Update Rate Designate a data update rate for measurement.



0.1s/ 0.25s/ 0.5s/1s/2s/ 5s/10s/20s	Measured value is updated in accordance with the designated time interval. The Update 5s status icon, for example, on the display lights up in green when 5s option is selected.
Auto	Data is only updated when a set period (Time Out) of the input waveform is detected.
Time Out (1s/5s/ 10s/ 20s)	Time Out period acts like the time limit for detecting a period of the input waveform.

Average

Turn on or off line filter corresponding to measurement.

Average	Tuno		Count			
State On Off	lype O Linear	Exponent	0 8	16	32	6 4

On Turn Average function On for either Linear or Exponential averages of numeric data. It is particularly practical for large changes in load or power of low input signal frequency.

	Off	Turn off Average function.
	Type - Linear	With the designated linear count, it is used to compute linear averages.
	Type - Exponent	With the specified attenuation count, numeric data will be averaged exponentially.
	Count (8/16/ 32/64)	It includes 8, 16, 32 and 64 for exponentially attenuation count and linearly average count.
atio	Turn on or	off VT, CT and SF ratio respectively.
	Ratio ⊻ v⊤	1.000 Z CT 1.000 Z SF 1.000
	VT	Turn on the VT (Voltage Transformer) ratio calculation function.
	СТ	Turn on the CT (Current Transformer) ratio calculation function.
	SF	Turn on the power ratio calculation function.
	Ratio	Designate ratio for VT, CT and SF individually and it ranges from 0000.001 to 9999.999.
ternal	Turn on or	off EXT1 and EXT2 sensor input terminal.
	State	Ext1 Ratio(V/A) 1.000 Ext2 Ext2 Ratio(mV/A) 10.000
	Ext1	Turn on the Ext1 terminal function that receives voltage up to 10V including shunts and clamps from external output current sensor for measurement.
	Ext1 Ratio (V/A)	The setting range for Ext1 is from 0000.001 to 9999.999.
	Ext2	Almost identical with the Ext1, the Ext2 terminal receives up to 2V voltage.
	Ext2 Ratio (mV/A)	The setting range for Ext2 is from 0000.001 to 9999.999.

D/A

Display

Select either Normal or Integrator mode for D/A output

Preconfigured Normal CH1 V	format Integrator CH2 CH3 CH4 VHz
Normal	The D/A output parameters for each channel will be changed to the default setting of Normal mode as follows.
Default Val	C
Integrator	The D/A output parameters for each channel will be changed to the default setting of Integrator mode as follows.
Default Val	ue CH1 P CH2 WP CH3 q CH4 VHz
Rated Integrator	The setting range for time of rated integrator is from 0000:00:00 to 9999:59:59. When the time is set 0000:00:00, D/A output value will be 0V.
GPM-8310 available to	off LCD display on the connected /8213. Also, when turning on display, it is o designate a specific display page.
- Display Show LCD Sci ❹ On	© Off Measurement
On	The LCD screen display on the connected GPM-8310/8213 will be turned on.
Off	The LCD screen display on the connected GPM-8310/8213 will be turned off.
Display Page	Specify which page to be shown on GPM-8310/8213 LCD display. Refer to the available options below.

- Measurement
- Enlarge
- Integrator
- System_Info
- System_Config
- SCPI
- Setup
- Average
- V/A_Range_Config
- Extern_Range_Config
- Ratio
- External
- Save/Load
- D/A
- HARDCOPY
- MATH
- Graph
- Harmonics_Graph
- Harmonics_List_Graph

Default / Load / Save The settings of System Configuration can be saved into the specific directory and recalled in the late time when necessary for operator.

Default		Load		Save	
Default	Press the the default	button to re: t settings.	store the s	settings ba	ck to
Load	setting file	button to ree from the di MeterSeries\	rectory of	. ,	
Save	user-defin	button to sa ed filename ⁄IeterSeries\	into the d	lirectory of	

Measure

V/I Range and System Status After setting up the System Configuration, press the Measure tab in the lower-left corner to enter the Measure page.



2. From the top-left section of Measure page, it clearly shows the currently applied measurement V and I range settings individually. The "Auto" indicates auto range is activated. Also, the icons for each setting from System Configuration are displayed within the System Status section. See the table below for details.



AC+DC	Current Measurement Mode (AC, DC, AC+DC, V-MEAN)
Update 0.25	Current Data Update Rate (0.1/0.25/0.5/1/2/5/10/20/Auto)
CF3	Current Crest Factor (3/6/6A)
VT	External voltage magnification (On-green /Off-gray)

СТ	External current magnification (On-green /Off-gray)
SF	External power magnification (On-green /Off-gray)
LF	Voltage and Current line Filters (On-green /Off-gray)
FF	Frequency Filters (On-green /Off-gray)
MAX Hold	Retain and display the maximum measurement reading (On-red /Off-gray)
AVG-8	Current Average number of sampling (8/16/32/64) (On-green /Off-gray)
SYNC.I	Current Sync Source (V/I/Off) (On-green /Off-gray)
HRM.C	Current Harmonics calculation method (IEC/CSA/Off) (On-green /Off-no show)
Ext1	Current External signal input function (Ext1/Ext2/Off) (On-green /Off-no show)
Integrator	It indicates if the Integrator function is being executed (On-red /Off-gray)
P_V	The voltage exceeds the Peak Over measurement range (On-red /Off-gray)
P_I	The current exceeds the Peak Over measurement range (On-red /Off-gray)
0	The indicator will be blinking between red and green when measurement is ongoing. It's soild red when no measurement is executed.

 Start/Stop
 To initiate measurement, press the Start button in Measurement and Log Data
 To initiate measurement, press the Start button, the top-right section. After pressing the Start button, a prompt message reading "Will the parameters be recorded?" pops up. Click OK to record measurement Log Data into host PC. Pressing the Stop button simply halts measurement.



Note The Log Data is saved into the specific directory C:\PowerMeterSeries\MeasResult.

2. When activating log data recording, it is available to define a name for data. In addition, user can define interval of log recording by inputing value in second(s) in the Log Time (Sec) field.



Measure Result – List Measure

 After starting measurement, the live-measured data including Measured value, Max value and Min value for varied measure functions are displayed within the table, respectively. Double click on any of itmes from the "Function" column to change measure function.

List Me	re Result asure Enlarge	Integrator Harm	onics	
ELis	t Measure Item1 to	Item8 and Screen S	ynchronize	
Item	Function	Measure	Max	Min
1	v	0.0000 V	0.0000 V	0.0000 V
2	I	0.0000 mA	0.0000 mA	0.0000 mA
3	Р	0.0000 mW	0.0000 mW	0.0000 mW
4	VA	0.0000 mVA	0.0000 mVA	0.0000 mVA
5	VHz	Error Hz	Error Hz	Error Hz
6	THDV	Error %	Error %	Error %
7	PF	Error	Error	Error
8	VAR	0.0000 mvar	0.0000 mvar	0.0000 mvar
9	IHz	Error Hz	Error Hz	Error Hz
10	THDI 🗸	Error %	Error %	Error %
	THDI ACR MCR MATH Time			
	WP+		Add Item	Delete Item

 Press the Add Item button to add more measure functions into list. User can add as many functions as desired. And it is available to add from 1 ~ 10 functions per time.

ist Mea	sure Enlarge	Integrator Harmo	onics		volta 🗹
List	Measure Item1 to	Item8 and Screen S	ynchronize		Voltage / Curren
ltem	Function	Measure	Max	ly Item	
		0.0000 V	0.0000 App	ly item	
2	1	0.0000 mA	0.0000 n Ples	ase key in Item	
3	Р	0.0000 mW	0.0000 m		
4	VA	0.0000 mVA	0.0000 mi		OK Cancel
5	VHz	Error Hz	Error Hz	EITOT Fiz	
6	THDV	Error %	Error %	Error %	8
7	PF	Error	Error	Error	6
8	VAR	0.0000 mvar	0.0000 mvar	0.0000 mvar	5
9	IHz	Error Hz	Error Hz	Error Hz	3
10	V				2
					0
					1 1
			Add Item	Delete Item	

 Press the Delete Item button to remove function(s) from the list. At least one function should be remained in list. And it is available to delete from 1 ~ 10 functions per time.



4. Check the box "List Measure Item1 to Item8 and Screen Synchronize" to sync the Item1 to Item8 functions with the 8 measurement parameters from GPM-8310/8213.

List Mea	e Result- Isure Enlarge	Integrator Harmo	onics	
🗸 List	Measure Item1 to	Item8 and Screen S	ynchronize	
Item	Function	Measure	Max	Min
1	v	0.0000 V	0.0000 V	0.0000 V
2	l.	0.0000 mA	0.0000 mA	0.0000 mA
3	Р	0.0000 mW	0.0000 mW	0.0000 m₩
4	VA	0.0000 mVA	0.0000 mVA	0.0000 mVA
5	VHz	Error Hz	Error Hz	Error Hz
6	THDV	Error %	Error %	Error %
7	PF	Error	Error	Error
8	VAR	0.0000 mvar	0.0000 mvar	0.0000 mvar
9	IHz	Error Hz	Error Hz	Error Hz
10	THDI	0.0000 V	0.0000 V	0.0000 V
			Add Item	Delete Item

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Measure Result – Enlarge

 Press the Enlarge tab to enter the Enlarge section where up to 4 measurements along with Max and Min values, respectively, are displayed. Click on each Item (1-4) to change its measure function.



2. The function page is shown where several measure functions are available to select. Click **OK** to confirm your selection.



Measure Result – Integrator

 Press the Integrator tab to enter the Integrator section where user can operate integration function by starting from selecting a Mode first.

Medaule Reault				
List Measure Er	nlarge Integrator	Harmonics		
Mode Manual Standard Continuous	 Watt Ampere 	Set Time (HH/MM		Start Stop
State:	Reset	0000:00	3:00	Reset
WP	0.	00	00	mWh
WP+ 🚺	.0000 mw	h WP-	0.000	0 mWh

- Standard: It allows user to define a period of Set Time for integrator measurement, which ranges from 1 secs to 9999 hrs, 59 mins and 59 secs.
- Manual: User is not able to define a Set Time. The integrator measurement will be running constantly till Stop button is pressed by user.
- Continuous: Partly identical with the Standard mode, the integrator measurement runs for a cycle of the Set Time and repeats the cycle indefinitely until Stop button is pressed by user.
- 2. Select which Function to apply. The measured values will be shown in the lower section where function units vary in accord with selected Function.



Watt

WP: Total power WP+: Positive total power WP-: Negative total power

Ampere
 g: Total mAh

q+: Positive total mAh q-: Negative total mAh

3. Define a Set Time period which indicates the time of integrator measurement to be set. It can be set from 1 second to 9999 hours, 59 minutes and 59 seconds.



Note Set Time is not applicable to Manual Mode. When the Set Time is zero, neither Standard nor Continuous Mode can be executed.

4. Press the **Start** button to initiate integrator function. The Test Time will elapse untill the Set Time is reached.



- **Start**: Press the button to initiate integrator function.
- **Stop**: Press the button to halt integrator function.
- **Reset**: Press the button to clear integrator data.

Note Only Standard mode will stop in accordance with the Set Time. Both Manual and Continuous modes require user to press the Stop button to halt integration function.

5. After initiating integrator by pressing **Start**, the State field indicates Running meaning operation is underway. See the following for descriptions of other States. The measured values of integrator will be displayed in the lower section accordingly.



- **Running:** Integrator measurement is in progress.
- Stop: Integrator measurement is stopped manually.
- **Timeout:** The Set Time for running integrator measurement in Standard Mode is up.
- **Reset:** The integrator measurement status is cleared.
- Measure Result Harmonics
- 1. Press the **Harmonics** tab to enter the harmonics section where user can observe measured values of harmonic function in both list and chart views.



2. Before operating harmonics function, make sure the Harmonics setting is activated from the System Configuration (p.16). Check the Harmonics box from the Graph section in right side followed by clicking on **Start** button for measurement.



3. The lower-left table shows relevant values of each order of harmonic. Use the scroll bar to observe different orders of harmonic. See the list below for descriptions of each item within the list.



- Order: The harmonic order number
- Voltage[V]: RMS voltage value of the harmonic order
- Hdf%: Voltage harmonic distortion factor of the harmonic order
- Current[A]: RMS current value of the harmonic order
- Hdf%: Current harmonic distortion factor of the harmonic order
- The lower-right chart shows both harmonic voltage and current values in bar graphs. The Y axis indicates voltage and current ranges units (V and mA), whereas the X axis stands for order numbers.



Graph – Voltage/Current	1.	Press the Voltage/Current tab under the right-side Graph section to enter the graph page where user can observe measured values of voltage and current in a clear chart mode. The Y axis indicates voltage and current ranges units (V and mA), whereas the X axis stands for count numbers.
		PV-Range Autor 1.5 kange Autor 2.5 kange Auto



Graph – Harmonics 1. Press the **Harmonics** tab under the right-side Graph section to enter the graph page where user can observe measured values of harmonic voltage and current in a bar graph. The Y axis indicates harmonic voltage and current ranges units (V and mA), whereas the X axis stands for order numbers.

V-Range-	5 v	5	CF3 AVG	FFF HRM.I VT P_V		Log File N Ti g Time(Sec) 1	Tame Emp Start	Stop
List Measu	ire Enlarge Int	tegrator Harmo	nics			Voltage / Current	🛙 Ha	rmonics
PF: 0.5443				Hz THDI: 144.29 3	Voltage	/ Current Harmonics T	Frend	
Ordes	Voltage[V]	Hdf(2)	Current[A]	Hdf(2)			Harmonics Voltage	
Total	234.81		202.66 m					
1	234.79	99.990	115.59 .	57.038		200		
2	0.0569	0.024	0.0551 m	0.027	(V)	160		
3	1.4205	0.605	103.96 m	51.299	1	100		
4	0.0443	0.019	0.1209 m	0.060		60		
5	1,6522	0.764	90.457 m	44,635			5 5 7 5 9	10 11 12 13 14
6	0.0329	0.014	0.2793 m	0.138				
7	2,0885	0.889	71.654 m	35.357		1	Harmonics Current	
8	0,02219	0.010	0.4260 m	0.210		100		
9	0.9727	0.414	50.490 m	24.914		80		
10	0.0200	0.009	0.5375 m	0.265	(mA)	60		
	0.7395	0.315	29.884 m	14.746		40		
12	0.0433	0.018	0.5956 m	0.294		20		
13	0.5323	0.227	11.866 =	5.855		0 1 2 3 4	5 6 7 8 9	10 11 12 13 1

Graph – Trend

 Press the Trend tab under the right-side Graph section to enter the chart page where user can observe the measured values of voltage, current and power in respective charts. The Y axis indicates ranges units (V-Voltage, A-Current, W-Power), whereas the X axis stands for count numbers.



2. Press the **Scales** button in the lower corner to open the Trend Edit box in which user can select among V, I and P for graph display type and the Scales, which indicates the Y axis for range unit, can be customized by selecting Manual with defining Upper and Lower limits individually. Also, user can simply select Auto, which allows software to define range automatically in accordance with measured values.



EST REPORT

The PC Software provides test report function for user to obtain the measured results in a well-organized manner. The following chapters will further introduce the test report in details for better manipulation.

Configuration

Report

Report

1. Click on the **Test Report** tab from the top Tool Bar to enter the Test Report section.



2. Click on the **Configuration** tab to enter the Report page where several settings for a complete test report can be edited by operator as following details.

Fest Report No:	Temp-2021120115165	<u> </u>	Method-		St	op Time (hhhh:	nm:ss)—	V-Range
Customer		<mark>^ © ۱</mark>	werage C	Sampling	[0:20:		15 0
Name:	Appliance Test Co		Issuer					
Address:	Taipei, Taiwan		Name:		Leo			- A
			Address:		Taipei.Ta			II 🗾 🧲 🖺
			Address,					🚽 🔍 n
Unit Under Test			Date of issue:		2021712	2/01		-System Status-
Manufacturer:	Тетр		Test Method:		Avera	oe		AC+DC LF FF HRMJ CF3 AVG-8
Description:	Temp USB Charger							Update 0.25s SYNC V
Model:	Temp-USB		Test Officer					MAXHold VT CT SI
Serial Number:	Temp-0001		Full Name:		Leo			Start
Rated Voltage:	100-240V	Iten	Function	MaxLimit	tinu	Min Limit	1 Sec.	Start
Rated Frequency:	50760Hz	item						
Documentation ref:		1	Power	0.0000	ww	0.0000	nW	Stop
Test Conditions		2	Voltage	0.0000	•	0.0000	v	· · ·
Test Conditions Time of Test:	2021/12/01-15-16-50	3	Current	0.0000	•••	0.0000	mA.	Save
	2021/12/01-15:16:50 2309 j012	4	Frequency	0.0000	Hz	0.0000	Hz	Save
Test Voltage: Test Frequency:	230V (012 60Hz (013	5	Power Factor	0.0000		0.0000		
Voltage Distortion:	< 23 THC	6	Voltage Crest Facto	0.0000		0.0000		Clear
Voltage Distortion:	1.39 < Vol < 1.49	7	Current Crest Facto	0.0000		0.0000		
Temperature:	23eXC (03eXC	8	Voltage THD	0.0000	2	0.0000	2	Print
Humidity:	< 75%		Result Interval	0.0000	s	0.0000	•	Fint

Test Report No

Input a tittle name into this field for test report.

	Test Report No: Temp-20211201151650
Customer	 Name: Inputs name of customer Address: Inputs address of customer
	Customer Appliance Test Co Address: Taipei,Taiwan
Unit Under Test	 Manufacturer: Inputs manufacturer name of test unit Description: Inputs description for test unit Model: Inputs model name of test unit Serial Number: Inputs serial number of test unit Rated Voltage: Inputs rated voltage of test unit Rated Frequency: Inputs rated frequency of test unit Documentation ref: Adds reference if necessary
Test Conditions	 Time of Test: Designates test date and time Test Voltage: Inputs the set test voltage Test Frequency: Inputs the set test frequency Voltage Distortion: Inputs voltage distortion of test Voltage Crest Factor: Inputs voltage crest factor of test Temperature: Designates test temperature Humidity: Designates test humidity

Test Method & Stop Time	•	 Test Method: 2 methods for test are available. Average: This method takes a minimum of 20 minutes and calculates the average values from start to end of measurement. It is recommended to apply this method to test unit with fair stability. Sampling: This method takes a minimum of 15 minites in which data of the first 5 minutes is discarded. It applies to broadly all test units and is specifically for test unit with fluctuating stability.
	•	Stop Time : Sets a period of duration for test.
		Average Sampling
lssuer	•	Name: Sets name of issuer Address: Sets address of issuer Date of issue: Designates date of issue Test Method: It shows which test method is adopted Test Officer Full Name: Sets full name of test officer
		Issuer Name: Leo Address: Taipei,Taiwan Date of issue: 2021/12/01 Test Method: Average Test Officer
Test Function & Parameters	•	Item: The number of test functions which can Not be edited by user Function: The designated test functions which contain up to 9 modes and can not be edited Max. Limit: Sets upper limit for each test function unit: Sets unit of upper limit for each test function Min. Limit: Sets lower limit for each test function unit: Sets unit of lower limit for each test function $\frac{1}{2} \frac{Power}{\sqrt{0.000}} \frac{1}{\sqrt{\sqrt{\sqrt{0.000}}} \sqrt{\sqrt{\sqrt{\sqrt{0.000}}}}}{\sqrt{\sqrt{\sqrt{0.000}} \sqrt{\sqrt{\sqrt{\sqrt{0.000}}}}}$
		4 Frequency 0.0000 MV TV 0.0000 Hz 5 Power Factor 0.0000 TV 0.0000 0.0000 6 Voltage Crest Factor 0.0000 EV 0.0000 0.0000 7 Current Crest Factor 0.0000 ZV 0.0000 0.0000 8 Voltage THD 0.0000 S 0.0000 S 9 Result Interval 0.0000 S 0.0000 S

Profile Settings relevant buttons	 Default: Clicks the button to restore the full profile settings of test report back to the factory defaults New: Clicks the button to erase the full profile settings of test report in empty Load: Clicks the button to load the previously saved profile settings of test report Save: Clicks the button to save the current profile settings into a designated directory. Default New Load Save Profile setting is saved into the specific directory Note C:\PowerMeterSeries\TestReportConfiguration.
Test Time	 Test Time: In the upper-right corner, it indicates the elapsed test time.
V/I Range and System Status	 This section is identical with that of the previous main measurement. Refer to the page 21 for details.
	15 v I-Range 5 mA System Status AC+DC LF FF HRM.J P_V CF3 AVG-8 P_I Update 0.25s SYNC.V MAX Hold VT CT SF
General Function Buttons in Test Report	 Start: Clicks the button to initiate test report measurement Stop: Clicks the button to halt test report measurement Save: Clicks the button to save the measured result of test report format in the specific directory. It is available to define a file name by operator. Clear : Clicks the button to erase the measured result of test report Print: Clicks the button to output an A4 size test
	 Main Test Monitor: Clicks the button to switch to the main measurement (not test report measurement)



/ Note

Measured result of test report format is saved into the specific directory C:\PowerMeterSeries\TestReportMeasResult.

System

System

 Click on the System tab in upper-left corner to enter the System configuration page for test report. This page is identical to the System Configuration of main measurement. Refer to the previous page 11 for details.



/! Note

D/A output function is Not available in test report measurement and thus no D/A setting exists in System configuration page here.

Measure Result

Measure

Measure

1. Click on the **Measure Result** tab from the upper-left corner to enter the test report measure section.



2. Click on the **Start** button to perform test report measurement. The Configuration settings of test report are imported into this page where the upper section shows profile settings, whilst the lower section illustrates measure function relevant values.



3. The lower measurement section illustrates not only the set Max. & Min. limit of each function, it also reads the measued Average, Maximum and Minimum values of each function. In addition, the Status column displays judgments of each function.

Item	Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status
1	Power	27.000 W	25.000 W	25.895 W	25.941 W	25.741 W	Pass
2	Voltage	240.00 V	220.00 V	233.38 V	233.83 V	232.95 V	Pass
3	Current	220.00 mA	Am 0000.0	196.89 mA	208.55 mA	193.19 mA	Pass
4	Frequency	50.100 Hz	49.900 Hz	49.989 Hz	49.992 Hz	49.975 Hz	Pass
5	Power Factor	0.7000	0.5000	0.5636	0.5733	0,5312	Pass
6	Voltage Grest Factor	1.4140	1.4000	1.4053	1.4059	1.4032	Pass
7	Current Crest Factor	3.1000	2.9000	3.2494	3.2718	2.9840	Fail
8	Voltage THD	1.50 %	1.20 %	1.31 %	1.38 %	1.29 %	Pass
9	Result Interval	0.3000 S	0.1000 S	0.1870 S	0.2030 S	0.1400 S	Pass

Status Column:

- **Pass**: When measured values are within the set Max and Min limits, "Pass" judgment will be shown.
- Fail: When measured values are beyond the set Max and Min limits, "Fail" judgment will be shown.
- **Stop**: When Stop button is pressed amid measurement, "Stop" will be shown in the Status column.

Graph

Graph

1. Click on the **Graph** tab from the upper-left corner to enter the test report graph section.



2. Click on the **Start** button to perform test report measurement. The measured power watt values with W in unit will be illustrated in a chart display in which X axis indicates Time domain whereas Y axis stands for range of measured power watt values.

easure R		onfiguration History Record	-Test Time	0:1
		Power Gra	-V-Range-	. ^
	271	1		
(W)	26.9			<u> </u>
	26.8		Range-	
	26.7-			
	26.6			0
	26.5			
	26.4		System Statu-	
	26.3		SEAL AVG.	
	26.2		Update 6.25s stru	C.V
	26.1		MAX Hold VT	
	26			_
	25.9		Star	
	25.8		V V V V V V V V V V V V V V V V V V V	
	25.7			
	25.6		Stop	0
	25.5			
	25.4			_
	25.3		Sav.	
	25.2			
	25.1		Clea	
	25			
	10:00:001	H		
	0:00	00:00	Print.	
	000	51:00:000	Print.	
			ime)	
			Main Test M	

History Record

Measure

Measure

1. Click on the **History Record** tab from the upper-left corner to enter the Measure history section.

Measure Result		tecord					
Measure Graph	h						
Test Report P	No:						*
Customer				Issuer			
Name:				Name:			
Address:				Address:			
				Date of issue:			
Unit Under To				Reference Instrument			
Manufacture				Manufacturer:			
Description				Description:			-
Item	Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status
1	Power						
2	Voltage						
3	Current						
4	Frequency						
5	Power Factor						
6	Voltage Crest Factor						
7	Current Crest Factor Voltage THD						
8	Result Interval						
3	nesuk interval						
	Print		Lo	ad	Clear		

2. Press the **Load** button from the lower section to recall the previous measure result of test report.

asure Graph							
Test Report No							
Customer				Issuer			
Name:				Name:			
Address:				Address:			
				Date of issue:			
Unit Under Tes				Reference Instrument			
Manufacturer:				Manufacturer:			
Description:				Description:			
Item	Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status
1	Power	Max.Linik	MILLENING	Average	Maxindin	Million	Status
2	Voltage						
3	Current						
4	Frequency						
5	Power Factor						
6	Voltage Crest Factor						
7	Current Crest Factor						
8	Voltage THD						
9	Result Interval						



Measure results of test report are located in the specific directory

C:\PowerMeterSeries\TestReportMeasResult.

3. The loaded measure result will be displayed explicitly. The upper half part describes the profile settings of test report including Customer, Unit Under Test, Test Conditions and Issuer for which refer to page 32. The additional Reference Instrument explains the connected GPM-8310/8213 info, and the Test Summary illustrates a synopsis of test report.

	ph						
Documentati	on Ref:						
Test Cond	itions			Test Summary			_
Time of Test:		021/12/02-11:06:54		Average Power:	0.0000 mW		
Test Volta	ige:	230V jÚ1%			0.0000 mW <power<0.0000 mw<="" td=""></power<0.0000>		
Test Frequ	ency:	60Hz jÓ1%			Test Period:		
Voltage Distortion:		< 2% THC		Test Method:		Average	
Voltage Crest Factor:		1.39 < Vcf < 1.49		Test Status:		Stop	
Temperat	ure:	23eXC j03eXC					
Humidit	y:	< 75%					
Item	Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status
	Power	0.0000 mW	0.0000 mW	0.0000 mW	0.0000 m₩	0.0000 mW	Stop
			0.0000 V	0.0000 V	0.0000 V	0.0000 V	Stop
2	Voltage	0.0000 V	0.0000 V	0.0000 +			
	Voltage Current	0.0000 V 0.0000 mA	0.0000 V	0.0000 mA	0.0000 mA	0.0000 mA	Stop
2	-					0.0000 mA Error Hz	Stop Stop
2	Current	0.0000 mA	0.0000 mA	0.0000 mA	0.0000 mA		
2 3 4	Current Frequency	0.0000 mA 0.0000 Hz	0.0000 mA 0.0000 Hz	0.0000 mA 0.0000 Hz	0.0000 mA Error Hz	Error Hz	Stop
2 3 4 5	Current Frequency Power Factor	0.0000 mA 0.0000 Hz 0.0000	0.0000 mA 0.0000 Hz 0.0000	0.0000 mA 0.0000 Hz 0.0000	0.0000 mA Error Hz Error	Error Hz Error	Stop Stop
2 3 4 5 6	Current Frequency Power Factor Voltage Crest Factor	0.0000 mA 0.0000 Hz 0.0000 0.0000	0.0000 mA 0.0000 Hz 0.0000 0.0000	0.0000 mA 0.0000 Hz 0.0000 0.0000	0.0000 mA Error Hz Error Error	Error Hz Error Error	Stop Stop Stop

4. The lower half part shows a table where measure parameters, which contain test Function, Max. Limit and Min. Limit and measured values, which include Average, Maximum, Minimum and Status, are well revealed. Refer to page 37 for more details.

easure Grap	bh						
Documentatio	n Ref:						
Test Conditi	ions			Test Summary			
Time of Test: 202		2021/12/02-11:06:54		Average Power:	0.0000 mW		
Test Voltage:		230V jú1%	230V jÚ1%		0.0000 mW <power<0.0000 mw<="" td=""></power<0.0000>		
Test Frequency:		60Hz jÓ1%		Test Period:	0000:00:54		
Voltage Distortion:		< 2% THC		Test Method:	Average		
Voltage Crest Factor:		1.39 < Vcf < 1.49		Test Status:	Stop		
Temperature:		23cXC j03cXC					
Humidity:		< 75%					
ltem	Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status
ltem 1	Function Power	Max Limit 0.0000 mW	Min.Limit 0.0000 mW	Average 0.0000 mW	Maximum 0.0000 mW	Minimum 0.0000 mW	Status Stop
				_			
1	Power	0.0000 mW	0.0000 m₩	0.0000 mW	0.0000 m₩	0.0000 mW	Stop
1	Power Voltage	0.0000 mW 0.0000 V	0.0000 mW 0.0000 V	0.0000 mW 0.0000 V	0.0000 mW 0.0000 V	0.0000 mW 0.0000 V	Stop Stop
1 2 3	Power Voltage Current	0.0000 mW 0.0000 V 0.0000 mA	0.0000 mW 0.0000 V 0.0000 mA	Vm 0000.0 V 0000.0 Am 0000.0	0.0000 mW 0.0000 V 0.0000 mA	0.0000 mW 0.0000 V 0.0000 mA	Stop Stop Stop
1 2 3 4	Power Voltage Current Frequency	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz	0.0000 mW 0.0000 V 0.0000 mA Error Hz	0.0000 mW 0.0000 V 0.0000 mA Error Hz	Stop Stop Stop Stop
1 2 3 4 5	Power Voltage Current Frequency Power Factor	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 Hz	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 Hz	0.0000 mW 0.0000 V 0.0000 mA Error Hz Error	0.0000 mW 0.0000 V 0.0000 mA Error Hz Error	Stop Stop Stop Stop Stop
1 2 3 4 5 6	Power Voltage Current Frequency Power Factor Voltage Crest Factor	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 Hz 0.0000	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 0.0000	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 Hz 0.0000	0.0000 mW 0.0000 V 0.0000 mA Error Hz Error Error	0.0000 mW 0.0000 V 0.0000 mA Error Hz Error Error	Stop Stop Stop Stop Stop Stop
1 2 3 4 5 6 7	Power Voltage Current Frequency Power Factor Voltage Crest Factor Current Crest Factor	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 0.0000 0.0000	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 0.0000 0.0000	0.0000 mW 0.0000 V 0.0000 mA 0.0000 Hz 0.0000 0.0000 0.0000	0.0000 mW 0.0000 V 0.0000 mA Error Hz Error Error Error	0.0000 mW 0.0000 V 0.0000 mA Error Hz Error Error Error	Stop Stop Stop Stop Stop Stop Stop

Graph

Graph

1. Click on the **History Record** tab from the upper-left corner followed by **Graph** tab to enter the Graph history section.



2. Press the **Load** button from the lower section to recall the previous measure result of test report.

	esult Graph	Configuration History Record
Measure	uraph	Power Graph
(W)		
	0	
	Ļ	
	0000:00:01	
	00	(Time)
		Print



3. The loaded measure result will be displayed accordingly. The measured power watt values with W in unit will be illustrated in a chart display in which X axis indicates Time domain whereas Y axis stands for range of measured power watt values.

