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, LAN, GPIB) to connect GPM-8310/8213 and PC Software. The following procedure describes an example of RS232 connection with GPM-8310 for your reference.			
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 l Baud Rate field.	key to move curso	r to	
	7.	Use soft keys to se Baud Rate option.	lect and confirm t	he	00
		SYSTEM CONFIG Power On Status Setup Default Brightness 7 Key Sound Off I/O Model R5232 Baud Rate 9600 Terminator CR+LF	5600 19200 38400 57600 115200		000
		Option	9600, 19200, 384 57600,115200	00,	
		Default value	9600		
	8.	Press down arrow l Terminator field.	key to move curso	r to	
	9.	Use soft keys to se Terminator option.	lect and confirm t	he	00
		SYSTEM CONFIG Power On Status Setup Default Brightness 7 Key Sound Off I/O Model R5232 Baud Rate 9600 Terminator CR+LF	CR LF CR-LF		000
		Option	CR, LF, CR+LF		
		Default value	CR+LF		
Connect the RS232 cable	1.	Connect the one er corresponding por (Male) for connect	nd of RS232 cable t on the rear pane ion.	(Female l of GPN) to the 1-8310
		RS232 Female por rear panel of GPM	t on the I-8310	RS232	
:	2.	Connect the other of A) to the correspon	end of the RS232 o Iding port on the l	cable (U host PC.	SB Туре

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	3D Ily GPM-831 2021	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	LabVIE GPM-8310 I (for LabVIEv 2020	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 vou sure vou 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
UBOTAd:	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	1. 2.	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.

Communication	
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.

Connection Set	ting lest Report			
-Temp-	Mada			Austana
- nrc	e moue	A 10-00	A 1/ 107 A 1/	rState rType rCount
	L AC	O AC+DC	VIMEAN	On Off OLinear Exponent 8 0 16 0 32 0 64
Voltage	/ Current / External R	ange		- Ratic
Voltag			Range Skipping Edit	ELVT 1.000 ELCT 1.000 ELSF 1.000
E Auto	● 15V ● 30V	Voltage	• 3000 • 6000	-External-
	0.00	- 00V - 130V	0004	Ext1 Ratio(V/A) 1.000
	SmA ● 20mA	 100mA 0.5A 	2A 10A	Off Ext1 Ext2 Ext2 Ratio(mV/A) 10.000
Auto	10mA • 50mA	🔮 200mA 🛛 🔮 1A	5A 20A	=D/A
	Ext1	1	Ext2	Preconfigured format Rated Integrator (HH/MM/SS)
	② 2.5V ● 5V ●	10V 0 50mV	● 500mV ● 2V	Normal Integrator
Roturn				Сни сна сна сна
- Sync So	surce	-Harmonics-	Auto Zero	VIII - DIAN - VIII - VIII
o v	• I • Off	Ø IEC ● CSA ● O	FF On Off	Display
Crest Fa	ctor-		Max.Hold	Show LCD Screen Display Page
◎ CF3	CF6 CF6A			On Off Heasurement -
Filter-		-Data Update Rate		
	• off	● 0.1s ● 0.5s ●	2s 💿 10s 💿 Auto	
		0 0.255 0 15 0	50 U 200	Default
© On	Off	Time Out	A 10- A 20-	Load
			105 205	
Measure Sy	stem Configuration			
PC Software	Version:1.20210204 / M	Model: GPM-8310 / Cor	n Port: 3 / Baud Rate: 11	5200 / Serial No: GPM831010 / FW Version: V1.03

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

-Measure Mod	de		
DC	AC	AC+DC	V-MEAN
AC+DC	Display all t signal.	the compone	nts of measurement
DC	Display the I	DC part of the	measurement signal.
AC	Display the <i>i</i>	AC part of the	measurement signal.
V-MEAN	Displays the that is calibr same with tl when sine w when DC or	e voltage rectifi rated to RMS v hose obtained vaves are meas distorted wav	ed as a mean value value. The value is from RMS mode sured, 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	rnal Range	e Skipping	Edit	
All Range	•	Voltaç	le Config		
▼ 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		Ū.		
▼ 2.5V		⊽ 5V		⊽ 10V	
Peak Over	Off	•			
		Ext	Config		
All Rang	е		-		
⊽ 50mV	 100mV	⊽ 200mV	⊽ 500mV	⊽ 1V	⊘ 2V
Poak 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	Select sync source from either Voltage or Current.			
	Sync So V	l 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 Fa	© 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 o	n or off line filter corresponding to measurement.			
	Filter- Line-	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							
-State		туре ——		Count			1
💿 On	Off	Linear	💿 Exponent	O 8	16	32	64
l							

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.
Ratio	Turn on or	off VT, CT and SF ratio respectively.
	- Ratio- ✓ VT	1.000 ICT 1.000 ISF 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.
External	Turn on or	off EXT1 and EXT2 sensor input terminal.
	Carternal	Ext1 Ratio(V/A) 1.000 xt1
	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	Integrator Rated Integrator (HH/MM/SS)
CH1 V	CH2 CH3 CH4
Normal	The D/A output parameters for each channel will be changed to the default setting of Normal mode as follows.
Default Va	lue CH1 V CH2 I CH3 P CH4 VHz
Integrator	The D/A output parameters for each channel will be changed to the default setting of Integrator mode as follows.
Default Va	lue 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.
Turn on or GPM-8310 available te	off LCD display on the connected)/8213. Also, when turning on display, it is o designate a specific display page.
- Display Show LCD Sc On	reen Display Page
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
Default	Press the button to restore the settings back to the default settings.
Load	Press the button to recall the previously saved setting file from the directory of C:\PowerMeterSeries\SystemConfiguration.
Save	Press the button to save the setting file with an user-defined filename into the directory of C:\PowerMeterSeries\SystemConfiguration.

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 0.2	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)
۲	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.

Ĩ										
12	List Me	asure Enlarge	Integrator Harm	onics						
	- Lis	t Measure Item1 to	Item8 and Screen S	Synchronize						
	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 A								
		Time								
		WP 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.

٢	leasu	re Result				Graph
Γ	List Me	asure Enlarge	Integrator Harm	onics		✓ Voltage
	Lis	t Measure Item1 to	Item8 and Screen S	Synchronize		Voltage / Current
	Item	Function	Measure	Max	- Itaan	
	1	v	0.0000 V	0.0000 Appi	ritem	
	2	I	0.0000 mA	0.0000 n Plea	ise key in Item	
	3	Р	0.0000 mW	0.0000 m		
	- 4	VA	0.0000 mVA	0.0000 m		OK Cancel
	5	VHz	Error Hz	Error Hz	Elfor H2	
	6	THDV	Error %	Error %	Error %	7
	7	PF	Error	Error	Error	6
	8	VAR	0.0000 mvar	0.0000 mvar	0.0000 mvar	4
	9	IHz	Error Hz	Error Hz	Error Hz	3
	10	v				2
						0
						1 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 Me	asure	Enlarge	Integrator	Harmonic	S			
⊻ Lis	t Meası	ire Item1 to	Item8 and S	creen Syncl	nronize			
Item	Fu	inction	Measu	ire	Max		Min	
1		٧	0.0000	V	0.0000 V		0.0000 V	1
2		1	0.0000	mA	0.0000 mA		0.0000 mA	1
3		Р	0.0000	mW	0.0000 mW		0.0000 m₩	1
4		VA	0.0000	nVA	0.0000 mVA		0.0000 mVA	
5		VHz	Error	lz	Error Hz		Error Hz	
6		THDV	Error	*	Error %		Error %	
7		PF	Erro	r i i i i i i i i i i i i i i i i i i i	Error		Error	1
8		VAR	0.0000 r	nvar	0.0000 mvar		0.0000 mvar	1
9		IHz	Error	łz	Error Hz		Error Hz	1
10	10 THDI		0.0000	V I	0.0000 V		0.0000 V	
					Add Item		Delete Item	

24

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.

List Measure Er	nlarge Integrator	Harmonics		
Mode Manual Standard Continuous	Function Watt Ampere	Set Time (HH/MM	I/SS)] : 10	Start Stop
State:	Reset	0000:00):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
 q: 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.
		15 v Range Aveta Status CT P.J. 15 v Log Data Log Fib Have CT P.J. 15 v Status Status Statu



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-	Auto v Result	Range 5	Auto Muto MAC+DC LI CF3 AVG Update 0.2 MAX Hold	atus FFF HRM_I VT P_V 8 CT P_I 5s SYNC,V SF Integrator	Cog Data Log File Name Log Time(Sec) Start Stop
List Measu	ure Enlarge Ini	tegrator Harmo	nics		Voltage / Current Harmonics
PF: 0.5443	FreqV: 49.985	Hr THOV: 1.4	1 2 Freql: 49.982	Hz THDI: 144.29 \$	Voltage / Current Harmonics Trend
Ordes	Vokage[V]	Hdf(2)	Current[A]	Hdf(2)	Harmonics Voltage
Total	234.81		202.66 m		
1	234.79	99.990	115.59 =	57.038	
2	0.0569	0.024	0.0551 m	0.027	M 160
3	1.4205	0.605	103.96 m	51.299	
4	0.0443	0.019	0.1209 m	0.060	50
5	1.6522	0.764	90.457 m	44,635	
6	0,0329	0.014	0.2793 m	0.138	
7	2,0885	0.889	71.654 m	35.357	Harmonics Current
8	0,0229	0.010	0.4260 m	0.210	
9	0.9727	0.414	50.490 m	24.914	
10	0.0200	0.009	0.5375 m	0.265	(mA) 60
11	0.7395	0.315	29.884 m	14.746	
12	0.0433	0.018	0.5956 m	0.294	
13	0.5323	0.227	11.866 m	5.855	0 1 2 3 4 5 6 7 8 9 10 11 12 13

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.

easure Result Configu Report System	ration fistory Record							-Test Time
Test Report No:	Temp-20211201151650	[Test	Method		^{s،}	op Time (hhhh:r	nm:ss)—	V-Range
Customer		0 A	verage 📀	Sampling	(0 : 20 :		15.
Name:	Appliance Test Co		la suas					
Address:	Taipei, Taiwan		Name		1.00			-I-Range-
			Nome.		Leo			
			Address.		rapel, re			🚽 🔍 m/
Unit Under Test			Date of issue:		2021713	/01		- System Status-
Manufacturer:	Temp		Test Method:		Avera	~		ACHOC LE FE HRM.L P
Description:	Temp USB Charger		Tex Prediod.		Anciu	~		CF3 AVG-8 P_
Model:	Temp-USB		Test Officer					MAX Hold VT CT SF
Serial Number:	Temp-0001	Full Name						
Rated Voltage:	100-240V	-	Tur Humo.					Start
Bated Frequency:	50/60Hz	Item	Function	Max.Limit	unit	Min.Limit	unit	
Documentation ref:		1	Power	0.0000	ww.	0.0000	nWa	Stop
		2	Voltage	0.0000	v	0.0000	v	0100
Test Conditions		3	Current	0.0000	mA.	0.0000	mA	
Time of Test:	2021/12/01-15:16:50	4	Frequency	0.0000	Hz	0.0000	Hz	Save
Test Voltage:	230V j01%	5	Power Factor	0.0000		0.0000		
Test Frequency:	60Hz j01%	6	Voltage Crest Factor	0.0000		0.0000		Clear
Voltage Distortion:	< 2% THC	7	Current Creat Eactor	0.0000		0.0000		Jicar
Voltage Crest Factor:	1.39 < Vot < 1.49		Voltage THD	0.0000	*	0.0000		
Temperature:	23¢KC (03¢KC	- °	Double Internet	0.0000		0.0000		Print
Humidity:	c 75%		Hessit Interval	0.0000		0.0000		
Defa	ult New		Load		Save			Main Test Monitor

Test Report No

Input a tittle name into this field for test report.

	Test Report No: Temp-20211201151650
Customer	Name: Inputs name of customer
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
	Manufacturer: Temp Description: Temp USB Charper
	Model: Temp-USB
	Serial Number: Temp-1001 Rated Voltage: 100-240V
	Rated Frequency: 50/60Hz Documentation ref:
Test Conditions	 Time of Test: Designates test date and time
lest conditions	 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 Conditions
	Time of Test: 2021/12/01-15:16:50 Test Voltage: 230V i012
	Test Frequency: 60Hz j01%
	Voltage Distortion: < 2% THC
	Voltage Crest Factor: 1.39 × Vef × 1.49 Temperature: 230×C ±0.38×C
	Humidity: C75%

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.						
		Test Method Stop Time (hhhh:mm:ss)						
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 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 unit: Sets unit of lower limit for each test function Unit: Sets unit of lower limit for each test function Unit: Sets unit of lower limit for each test function Unit: Sets unit of lower limit for each test function Unit: Sets unit of lower limit for each test function Unit: Sets unit of lower limit for each test function Imit for each test function Unit: Sets unit of lower limit for each test function Imit for each test function <						

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.
	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.
	V-Range 15 v 1-Range 5 mA System Status AC+DC LF FF HRMJ P_V CF3 AVG-8 P_I Update 0.25s sync.v MAX Hold VT CT SF
General Function Buttons in Test	 Start: Clicks the button to initiate test report measurement
Report	 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 report file in PDF format.
	 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.

ltem	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 Crest 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 2	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.

Measure P Measure	Result Graph	Configuration History Record	Test Time 00000:00: 41
	27.3	Power Graph	V-Range
(W)	26.9		
	26.8		1 Range
	26.7-		
	26.6		- 🗌 🔾 m
	26.5		- Sentern Statut-
	26.4		AC+DC LT IT HRMJ
	26.3		CF3 AVG-8
	26.1		Update 0.25s SYNC V
	26		
	25.9		Start
	25.8		
	25.7		01
	25.6		Stop
	25.5		
	25.4		Save
	25.31		
	25.1		
	25		Clear
	10-	10 11 10 10 10 10 10 10 10 10 10 10 10 1	8
	00.		Drint
			§ Print
		(Time)	
			Main Test Monitor

History Record

Measure

Measure

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

Measure Resu	t Configuration History R	ecord						
Measure Graph								
Test Repo	t No:						*	
Custom	er			Issuer				
Name				Name:				
Addres	е. —			Address:				
				Date of issue:				
Unit Under	Test			Reference Instrument				
Manufact	ner:							
Descripti	on:			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							
/	Current Crest Factor							
8	Voltage THD							
, s	Hesult Interval							
	Print		Lo	ad	Clear			

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

Measure Result Configuration History Record									
Measure Gra	ph								
Test Report No:								*	
Custom	er				Issuer				
Name:					Name:				
Addres	s:				Address:				
					Date of issue:				
Unit Under	Test				Reference Instrumen				
Manufacturer:					Manufacturer:				
Descripti	on:				Description:			-	
Item		Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status	
1		Power							
2		Voltage							
3		Current							
4		Frequency							
5	Р	ower Factor							
6	Voltage Crest Factor								
	Current Crest Factor								
	Voltage THD								
9		isuit interval							
		Print		Lo	ad	Clear	r]		



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.

Measure Result	t Config	uration History R	lecord						
Measure Gra	ph								
Documentatio	on Ref:							^	
Test Conditions				Test Summary					
Time of Te	est:	20	21/12/02-11:06:54		Average Power: 0.0000 mW				
Test Volta	ge:		230V jÓ1%		Power Limit:	0.0000 n	0.0000 mW <power<0.0000 mw<="" td=""></power<0.0000>		
Test Freque	ency:		60Hz jÓ1%		Test Period:	0000:00:54			
Voltage Disto	ortion:		< 2% THC		Test Method:	Average			
Voltage Crest Factor:		1.39 < Vcf < 1.49		Test Status:	Stop				
Temperature:		23eXC j03eXC							
Humidity:		< 75%							
Item		Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status	
1		Power	0.0000 mW	0.0000 mW	0.0000 mW	0.0000 mW	0.0000 mW	Stop	
2		Voltage	0.0000 V	0.0000 V	0.0000 V	0.0000 V	0.0000 V	Stop	
3		Current	0.0000 mA	0.0000 mA	0.0000 mA	0.0000 mA	0.0000 mA	Stop	
4	Frequency		0.0000 Hz	0.0000 Hz	0.0000 Hz	Error Hz	Error Hz	Stop	
5	F	ower Factor	0.0000	0.0000	0.0000	Error	Error	Stop	
6	Volta	ige Crest Factor	0.0000	0.0000	0.0000	Error	Error	Stop	
7	Curre	ent Crest Factor	0.0000	0.0000	0.0000	Error	Error	Stop	
8	١	oltage THD	0.0000 %	0.0000 %	0.00 %	Error %	Error %	Stop	
9	R	esult Interval	0.0000 S	0.0000 S	0.0930 S	0.1100 S	0.0930 S	Stop	
		Print		Loa	d)	Clea	r		

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.

Measure Result Configuration History Record									
Measure Graph									
Documentation Ref:								*	
Test Condi	tions				Test Summary				
Time of T	Time of Test:		21/12/02-11:06:54		Average Power:	0.0000 mW			
Test Volta	ge:		230V j01%		Power Limit:	0.0000 mW <power<0.0000 mw<="" td=""></power<0.0000>			
Test Frequ	ency:		60Hz jÓ1%		Test Period:	0000:00:54			
Voltage Dist	ortion:		< 2% THC		Test Method:	Average			
Voltage Crest	Factor:	1	1.39 < Vcf < 1.49		Test Status:	Stop			
Temperature:		23eXC i03eXC							
Humidity	Humidity:		< 75%						
								-	
Item		Function	Max.Limit	Min.Limit	Average	Maximum	Minimum	Status	
1		Power	0.0000 m₩	0.0000 m₩	0.0000 mW	0.0000 mW	0.0000 mW	Stop	
2		Voltage	0.0000 V	0.0000 V	0.0000 V	0.0000 V	0.0000 V	Stop	
3		Current	0.0000 mA	0.0000 mA	0.0000 mA	0.0000 mA	0.0000 mA	Stop	
4	Frequency		0.0000 Hz	0.0000 Hz	0.0000 Hz	Error Hz	Error Hz	Stop	
5	Power Factor		0.0000	0.0000	0.0000	Error	Error	Stop	
6	Volt	age Crest Factor	0.0000	0.0000	0.0000	Error	Error	Stop	
7	Current Crest Factor		0.0000	0.0000	0.0000	Error	Error	Stop	
8		Voltage THD	0.0000 %	0.0000 %	0.00 %	Error %	Error %	Stop	
9	R	lesult Interval	0.0000 S	0.0000 S	0.0930 S	0.1100 S	0.0930 S	Stop	
		Print		Loa	ad	Clea	r		

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.

Measure R	lesult	onfiguration History Record						
Measure	Graph							
		Power Graph						
(W)								
	0-							
	-							
	0:00							
	000	(Time)						
(ime)								
		Print Clear						



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.

