Test&Measurement





Next generation in precision

WT5000 Precision Power Analyzers New Features



Data streaming

WT5000 /DS option



IEC Harmonic/Voltage Fluctuation and Flicker

WT5000 /G7 option

Precision Making

LF WT5000-01EN

WT5000 /DS option

Waveform data streaming*1

In addition to benefitting from the highly accurate numerical data measured by the WT5000, one can stream to a PC the waveform data with a sample speed of up to 2 MS/s. Voltage and current waveforms as well as the motor signals can be streamed to a PC.

This allows engineers to study the transient behavior simultaneously when measuring efficiency or energy consumption.

Synchronized data

The waveform data is streamed without any gaps, can be combined, and is synchronized with the numerical data. Abnormal findings in numerical data can be directly linked and be evaluated in the waveform data. For example, one can find numeric parameters variation caused by the influence of imposed high frequency noise.

Simple operation and analysis, supported WTViewerE*²

WTViewerE offers control of the WT5000 and makes it simple to record and analyze measurement data.

When the waveform data is recorded by the WTViewerE, it shows the relationship between the numerical data and the corresponding waveform data. When evaluating numerical data in analysis mode, the corresponding part of the streamed waveform data is indicated.

- *1: To stream the waveform data to a PC, it is possible to make use of WTViewerE 761941. This can also be done by making use of dedicated communication commands for programming.
- *2: Previous WTViewerE software versions will be upgraded to support the Data streaming function soon. Trial version of WTViewerE is available until then.



Display examples of WTViewerE



Display examples of WTViewerE

Main specifications

Data Streaming						
Waveform sample rate	10, 20, 50, 100, 200 and 500 kS/s, 1 and 2 MS/s					
Waveform data that can be	streamed All inputs (U, I, N	lotor and AUX)				
Numeric data that can be		(normal data/har		nio dot	0)	
		(normai data/nar		onic uai	aj	
Update rate	1 s (fixed)					
Acquisition interval	1s					
Acquisition time	amount of empty space of the drive. "When sample rate is set at 2 MS/s, data size			Data Siz		
				8.0 MB		
				1 minut	e 480 MB	
	1 hour				- 28.8 GE	
Acquired waveform data	Streamed waveform data 1-second displayed waveform data					
Data format	Streamed waveform data/displayed waveform data: 32-bit single-precision floating-point Numeric data: 32-bit single-precision floating-point					
Maximum waveform trace	count					
	Case of USB 3.0)		Case o	f Gigabit I	Ethernet (VXI-1
	Sample rate (S/s)	Maximum waveform trace count			ole rate S/s)	Maximum waveform trace count
	2 MS	2		2	2 M	2
	1 M	6		1	М	4
	500 k	14		50	00 k	6
	10 k to 200 k	22		10 k t	o 200 k	22
Communication interface	USB 3.0. Ethern	et 1000 Base-T				

*PC System requirements:

Equivalent to Intel Core i5-8250U or higher with 4 GB RAM or more and 1 TB free space on SDD

WT5000 /G7 option

Harmonics regulation test*1*2

Combined with the /G7 option and the Harmonic /Flicker measurement software^{*3}, the WT5000 measured harmonic data can be saved into a PC and judge the level according to IEC regulations. To support large equipment over 16 A/phase (IEC61000-3-12), the CT200 current sensor model can be used.

Voltage fluctuation and Flicker regulation test*1*2

The WT5000 with the /G7 option can measure voltage fluctuation and can conduct a Flicker test, according to IEC61000-3-3 regulations. This option shows a trend of parameters such as dc, dmax and Pinst (instantaneous flicker sensation). In order to capture test results, this option generates a comprehensive test report.



- *1: Supported standards:
 - Harmonics
 - EN61000-3-2, IEC61000-3-2, EN61000-3-12, IEC61000-3-12, JIS C 61000-3-2 • Voltage fluctuation/flicker
 - EN61000-3-3, IEC61000-3-3, EN61000-3-11, IEC61000-3-11
- *2: 30 A/ 5 A High Accuracy Element (760901/760902) are available.
- *3: In order to improve service for users, the Harmonic/Flicker measurement software will be supplied as subscription model in the near future. It can be sold after the preparation is ready. A free trial software will be given until then.
- *4: GP-IB, Ethernet and USB communications are available.

Main specifications

IEC Harmonic mea				
	d the Harmonic/Flicker Measurement Software for WT5000 is required)			
Input element	30 A and 5 A High Accuracy Input Element (760901* and 760902)			
	*Current input is compliant up to 23 Arms for the 1st order.			
Measured source	Select an input element or an $\boldsymbol{\Sigma}$ wiring unit			
Format	PLL synchronization method			
Frequency range	Fundamental frequency of the PLL source is in the range of 45 Hz to 66 Hz.			
PLL source	 Select the voltage or current of each input element (external current sensor range is greater than or equal to 500 mV) or the external clock (fundamental frequency). 			
	 Input level Greater than or equal to 50% of the measurement range rating when the crest factor is 3 Greater than or equal to 100% of the measurement range rating when the crest factor is 6 			
	Be sure to turn the frequency filter ON.			
PLL point	32768			
Window function	Rectangular			

Period of the window No g					
Anti-aliasing filter Set u	ising a line t	filter (Butterwort	h, cutoff	30 kHz: Ed2.0/E2	.0A1, 20kHz: Ed1.
nter-harmonic measureme					
		ction Enable/dis unction (IEC61		C61000-4-7 Ed. : Ed. 1.0)	2.0)
Sample rate (sampling frequ	uency), wi	ndow width, a	ind uppe	er limit of measu	red order*
Fundamentel			Window	w Width against	
Fundamental frequency of the PLL source (Hz)	ample rate (S/s)	Sample rate (S/s)	(Fred	T Data Length quency of the amental Wave)	Upper limit of th Measured orde
IEC61000-4-7	45 to 55	f × 3276.8		10	200
	55 to 66	f × 2730.67	12 170		
Ed. 1.0	45 to 66	f × 2048	-	16	120
The Harmonic/Flicker Measu	rement Soft	ware for WT5000			up to order 40.
		e PLL source			
Accuracy: ±(% of reading +					
Frequency		ge and current			ower
		iding + 0.04% c			g + 0.05% of rang
		iding + 0.05% c			ng + 0.1% of range
		iding + 0.05% c			ng + 0.1% of range
		iding + 0.05% c			ng + 0.1% of range
		iding + 0.05% c			ng + 0.1% of range
$\begin{array}{ c c c c c }\hline 3.3 \text{ kHz} < f \leq 10 \text{ kHz} & \pm(\\\hline & \text{However, all the items below a} \end{array}$		ing + 0.05% of	range)	±(2% of reading	+ 0.1% of range)
 n – mth order of the voltage order and n – mth order of th Accuracy when the crest fac The accuracy guaranteed ra normal measurement. 	he power (or ctor is 6: The ange by freq	nly when applying a same as when	g a single t the range	frequency). is doubled for cres	t factor 3.
 Measured frequency is refer 	rence value				
The /G7 option and the Ha	d Flicker armonic/F F2				5000 is required
The /G7 option and the Ha Flickermeter class Supported Standards Normal Flicker Measuremen	d Flicker armonic/F F2 IEC6100 nt Mode	licker Measu 10-4-15 Ed. 1.1	/Ed. 2.0		'5000 is required
The /G7 option and the Ha Flickermeter class Supported Standards	d Flicker armonic/F F2 IEC6100 nt Mode dc R	licker Measur 10-4-15 Ed. 1.1 elative steady-	/Ed. 2.0 state vol	tage change	5000 is required
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The /G7 option and the Ha lickermeter class Supported Standards Normal Flicker Measuremen	d Flicker armonic/F F2 IEC6100 nt Mode dc R dmax M Tmax T	licker Measur 10-4-15 Ed. 1.1 elative steady- laximum relativ he time during	/Ed. 2.0 state volt e voltage which th	tage change	change during a
The /G7 option and the Ha Flickermeter class Supported Standards Normal Flicker Measuremen	d Flicker armonic/F F2 IEC610C nt Mode dc R dmax M Tmax T vo Pst S	licker Measur 10-4-15 Ed. 1.1 elative steady- laximum relativ he time during bitage fluctuati hort-term flicke	/Ed. 2.0 state volt e voltage which th on perioc er value	tage change e change e relative voltage	change during a
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Model and Suffix code

Model	Suffix Coc	le	Descriptions
WT5000			Precision Power Analyzer
Language	-HC		Chinese/English Menu
Menu	-HE		English Menu
	-HG		German/English Menu
	-HJ		Japanese/English Menu
Power Cord	-B		Indian Standard
	-D		UL/CSA Standard, PSE Compliant
	-F		VDE/Korean Standard
	-H		Chinese Standard
	-N		Brazilian Standard
	-Q		BS Standard
	-R		Australian Standard
	-T		Taiwanese Standard
	-U		IEC Plug Type B
Option	/M1		32 GB Built-in Memory
	/	MTR1	Motor Evaluation 1
		/DA20*	20 CH D/A Output
		/MTR2*	Motor Evaluation 2
		/DS	Data Streaming
		/G7	IEC Harmonic/Flicker Measurement

*When select from these options, please select only one. /MTR2 option requires installation of /MTR1 option.

Model Suf	fix Code	Descriptions
760901		30 A High Accuracy Element
760902		5 A High Accuracy Element

Standard accessories

WT5000

Power cord, Rubber feet, Cover panel B8216JA 7 sets, User's manual, expanded user's manual, communication interface user's manual, connector (provided only with/DA20)

760901/760902

Safety terminal adapter B9317WB/B9317WC (provided two adapters in a set times input element number) Safety terminal adapter A1650JZ/A1651JZ (provided black/red two adapters in a set, times of 30 A input element number). Safety terminal adapter B8213YA/B8213YB (provided black/red two adapters in a set, times of 5 A input element number)

User's manuals: Start guide (booklet), function/operation, communication manuals (electric file)

Clamp probes and AC/DC current sensors

Model	Product name	Descriptions
720930	Current Clamp Probe	40 Hz to 3.5 kHz, AC50 A
720931	Current Clamp Probe	40 Hz to 3.5 kHz, AC200 A
CT2000A	AC/DC Current Sensor	DC to 40 kHz, ±(0.05% of reading + 30 µA), 3000 Apeak (2000 Arms)
CT1000A	AC/DC Current Sensor	DC to 300 kHz, ±(0.04% of reading + 30 µA), 1500 Apeak (1000 Arms)
CT1000	AC/DC Current Sensor	DC to 300 kHz, ±(0.05% of reading + 30 µA), 1000 Apeak
CT200	AC/DC Current Sensor	DC to 500 kHz, $\pm(0.05\%$ of reading + 30 $\mu\text{A}),$ 200 Apeak
CT60	AC/DC Current Sensor	DC to 800 kHz, $\pm(0.05\%$ of reading + 30 $\mu\text{A}),$ 60 Apeak

Accessory (sold separately)

Model		Product name	Descriptions
366924	<u>A</u> *1	BNC-BNC Cable	1 m
366925	<u>A</u> *1	BNC-BNC Cable	2 m
701901		1:1 Safety BNC Adapter Lead	1000 V CAT II for /MTR1, /MTR2
701902		Safety BNC-BNC Cable	1000 V CAT II, 1 m for /MTR1, /MTR2
701903		Safety BNC-BNC Cable	1000 V CAT II, 2 m for /MTR1, /MTR2
758917		Test Lead Set	A set of 0.75 m long, red and black test leads
758922	A	Small Alligator-clip	Rated at 300 V CAT II two in a set
758923		Safety Terminal Adapter	Two adapters to a set (spring-hold type)
758924		Conversion Adapter	BNC-banana-Jack (female) adapter
758929	A	Large Alligator-clip	Rated at 1000 V CAT II and used in a pair
758931		Safety Terminal Adapter Set	Two adapters to a set (Screw-fastened type), 1.5 mm hex Wrench is attached.

*1: Use these products with low-voltage circuits (42 V or less).

Rack mounting kits

Model	Product name	Descriptions
751542-E4	Rack Mounting Kit	For EIA
751542-J4	Rack Mounting Kit	For JIS

Application software

NOTICE

Model	Product name	Descriptions
761941	WTViewerE	Application Software for WT Series

Additional Option License*

Suffix Code	Descriptions
-DS	Data Streaming
-G7	IEC Harmonic/Flicker Measurement
	-DS

*Separately sold license product (customer-installable).

Yokogawa's Approach to Preserving the Global Environment

- Yokogawa's electrical products are developed and produced in facilities that have received ISO14001 approval.
- In order to protect the global environment, Yokogawa's electrical products are
- designed in accordance with Yokogawa's Environmentally Friendy Product Design Guidelines and Product Design Assessment Criteria.

This is a Class A instrument based on Emission standards EN61326-1 and EN55011 and is designed for an industrial environment.

Operation of this equipment in a residential area may cause radio interference, in which case users will be responsible for any interference which they cause.

 Before operating the product, read the user's manual thoroughly for proper and safe operation

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Any company's names and product names mentioned in this document are trade names,



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