

Precision Power Analyzer

Add Two Options

WT3000

Compliance with the IEC61000-3-3 Standard

Voltage fluctuation/flicker measurement (/FL option)

Detailed Checking of Signal Fluctuations between Cycles

Cycle-by-cycle measurement (/CC option)

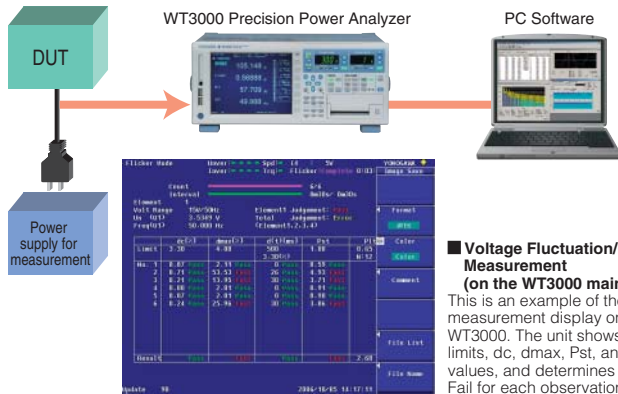


Manufacture and sales of instruments distributed to Europe require harmonic current measurement as well as measurement of voltage fluctuation and flicker to check for standards compliance. In addition to the IEC compliance harmonic measurement function (/G6), the new voltage fluctuation and flicker measurement function (/FL) performs essential IEC standards tests. The WT3000 allows you to perform these standards tests for single-phase to three-phase instruments and determine whether results fall within limit values. Also, a cycle-by-cycle function lets you take measurements of individual cycles in order to check for changes in measured values over short periods of time in greater detail. Equipped with a wide range of power metering functions related to numerical values (such as voltage, current, and power), waveforms, and harmonics, FFT analysis and other operations, the WT3000 allows you to evaluate and check data from a variety of perspectives, making your development work faster and more efficient.

Support for IEC and JIS Standards Testing

IEC61000-3-2Ed2.2:2004, JIS C 61000-3-2:2005
(Advanced Calculation Function /G6 and software for testing standards compliance)
IEC61000-3-3Ed1.1:2002
(Voltage fluctuation/flicker measurement, with the /FL option)

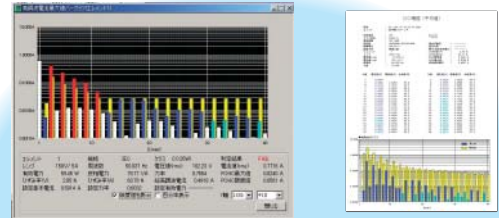
Running on commercial power



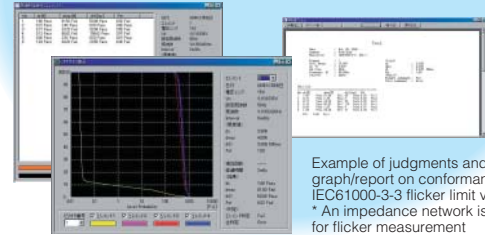
Voltage Fluctuation/Flicker Measurement (on the WT3000 main unit)
This is an example of the flicker measurement display on the WT3000. The unit shows the limits, dc, dmax, Pst, and other values, and determines Pass or Fail for each observation period.

Harmonic/Flicker Measurement Software (Model 761922)

Model 761922 offers support for IEC standards compliance tests of harmonics and voltage fluctuation/flicker in a single program.



Example of judgments and report on conformance to IEC61000-3-2 limit values

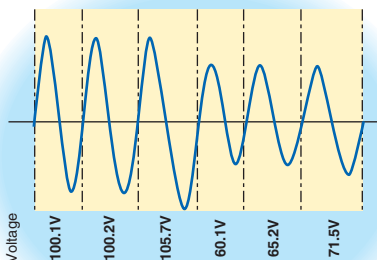


Example of judgments and CPF graph/report on conformance to IEC61000-3-3 flicker limit values
* An impedance network is required for flicker measurement

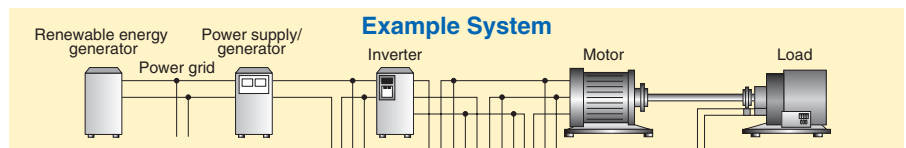
Cycle-by-Cycle Measurement (/CC) Effective for System Interconnection Tests, Motor Evaluation, and Other Tests

With fluctuating data occurring when connecting to interconnected systems, or with motor evaluation*, in certain circumstances you may need to capture rapidly changing phenomena (such as during load fluctuations in a motor). These tasks can be handled effectively with the cycle-by-cycle measurement function. The function takes measurements of parameters such as voltage, current, and active power for each cycle, then lists the data on screen in a time series. Up to 3000 data (measurements of signals from 0.1 Hz to 1000 Hz) can be saved in CSV format.

* Requires the motor version (-MV)

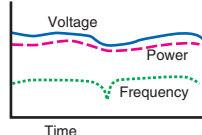


Example of calculation with the cycle-by-cycle function



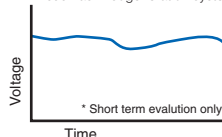
Check Fluctuations When Connecting Systems

○ Check for transient fluctuations during system interconnection



Changes in Power Generation Capacity

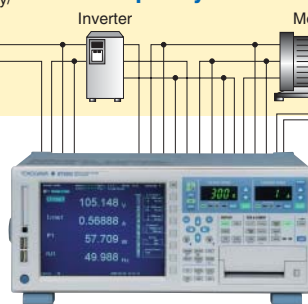
○ Voltage fluctuations caused by inverters such as in cogeneration systems



The WT3000 main unit displays only numerical values.

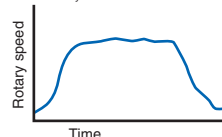
With the WTviewer software (model 760122), values can be displayed in graphs automatically.

Example System



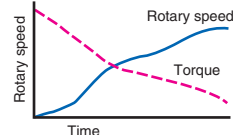
Data Measurements of Individual Motor Revolutions

○ The unit can utilize not only the input interval, but also an external synchronous signal, allowing input of a motor's Z-phase signal for trend-display of average data for every motor revolution.

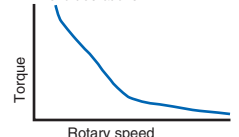


Motor Evaluation

○ Torque and revolution speed fluctuation over short durations



○ Measurement of S-T curves over short durations



Data Acquisition and Trend Display Using PC Software

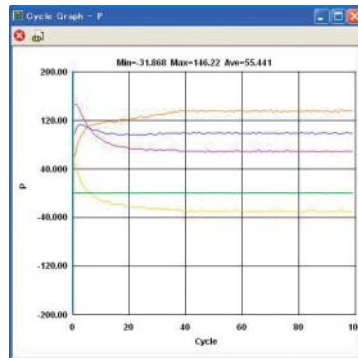
WTViewer (model 760122) can load data from normal measurement, harmonic measurement, wide bandwidth harmonic measurement¹, waveform calculation¹, FFT calculation, and cycle-by-cycle measurement², and then display and/or save that data on the PC. With the cycle-by-cycle measurement function, all data measured on the WT3000 can be automatically displayed in a trend graph and saved to a CSV file, allowing for efficient evaluation of a variety of data types.

1. Requires the /G6 option. 2. Requires the /CC option.

Function	Element1	Element2	Element3	Element4	SigmaA	Other
U	111.108	113.706	115.001	0.00000k	113.272	
I	2.11325	2.17828	2.10870	0.00000	2.13341	
P	0.09776k	0.04846k	0.05888k	-0.0000k	0.14622k	
S	0.23480k	0.24768k	0.24250k	0.0000k	0.41857k	
Q	0.21348k	0.24230k	0.23525k	0.0000k	0.45530k	
PF	0.41637	0.19564	0.24282	0.00000	0.34934	
Freq						4.5476
Speed						0.06653
Torque						0.03245
Pm						201.000

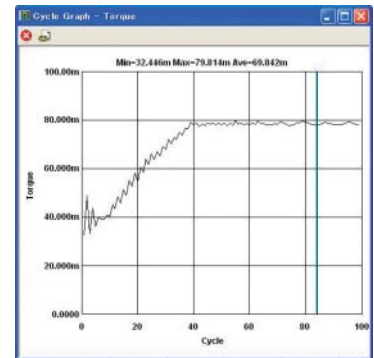
•Numeric List

You can display numeric data by cycle. Numerical data that changes over time can be checked one at a time using the scroll bar.



•Power Trends

The power value P and three-phase power values from each element can be displayed. You can check for changes in power between individual cycles.



•Torque Trends

You can check for changes in torque value between individual cycles, and check the stability of a motor when starting or when running at constant rpm.

Specifications

■ Flicker measurement (/FL Optional)

Measured voltages/frequencies	230V/50Hz, 120V/60Hz
Measured input	Voltage (current measurement not available)
Measured elements	All installed elements (up to 4)
Normal voltage fluctuation/flicker measurement modes	
Manual switching dmax measurement mode	
Accuracy	dc, dmax: ±4% (when dmax = 4%) Pst: ±5% (when Pst = 1)

Conditions for the above accuracies

- Ambient temperature : 23 ±1°C, Line filter OFF
- Input voltage range/voltage range : 220-250 V/300 V range (at 50 Hz), 110-130 V/150 V range (at 60 Hz)

Note : Voltage fluctuation/flicker measurement available with either the WT3000 main unit alone, or the WT3000 main unit + 761922 software. Using the model 761922 software, a function is available that allows you to display trend graphs, CPF graphs, or reports of the dc, dmax, and IFS (instantaneous flicker sensation) values other than those of the judgment results.

■ Cycle-by-cycle measurement (/CC optional)

Sync source	Select an external source of U1, I1, U2, I2, U3, I3, U4, or I4. (the above parameters are measured continuously for each cycle of the one sync source signal)
Number of measurements	10-3000
Timeout time	None, 1-3600 seconds (set in units of seconds)
Sync source frequency range	1 Hz to 1000 Hz (for U and I) 0.1 Hz to 1000Hz (for external sync source)
Accuracy	U, I, P: Add [(0.3+2*f) % of reading+ ((0.05+0.05*f) % of range)] to the accuracy for normal measurement. For external sensor input, Add (100+100*f) uV to the accuracy. Freq Add [(0.3+2*f)% of reading to the accuracy for normal measurement. *f is kHz

■ Application Software

Model	Product	Description
760122	WTViewer Software	Data acquisition software (numeric, waveform, harmonic and cycle-by-cycle data)
761922	Harmonic/Flicker Measurement Software	Standards-Compliant Measurements

■ WT3000 Precision Power Analyzer

Model	Suffix Codes	Description
760301		WT3000 1 input element model
760302		WT3000 2 input elements model
760303		WT3000 3 input elements model
760304		WT3000 4 input elements model
Element	-01 -02 -03 -04	Select when you selected 760301 model Select when you selected 760302 model Select when you selected 760303 model Select when you selected 760304 model
Version	-SV -MV	Standard Version Motor Version
Power cord	-D -F -R -Q -H	UL/CSA standard VDE standard AS standard BS standard GB standard
Options	/G6 /B5 /DT /FQ /DA /V1 /C2 Select /C12 one /C5 /C7 /FL /CC	Advanced calculation Measurement Built-in Printer Delta Calculation Add-on Frequency Measurement 20ch D/A output VGA Output Serial (RS-232) Interface USB port (PC) USB port (Peripheral) Ethernet function Voltage Fluctuation / Flicker Measurement Cycle by Cycle Measurement

Note: Adding input modules after initial product delivery will require rework at the factory. Please choose your models and configurations carefully, and inquire with your sales representative if you have any questions.

■ Standard accessories

Power cord, Spare power fuse, Rubber feet, current input protective cover, User's manual, expanded user's manual, communication interface user's manual, printer roll paper(provided only with /B5), connector (provided only with /DA) Safety terminal adapter 758931(provided two adapters in a set times input element number)

* Cable B9284LK (light blue) for external current sensor input is sold separately. Safety terminal adapter 758931 is included with the WT3000. Other cables and adapters must be purchased by the user.

Safety terminal adapter 758931



Note



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

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