

YOKOGAWA

WT230

The Yokogawa WT230 is a compact, high-performance three-phase digital sampling power meter designed for high-accuracy power measurements from DC and 0.5 Hz up to 100 kHz. Featuring a basic accuracy of 0.1%, a large maximum direct current input of 26 A, and a high-speed data update rate of up to 10 readings per second, the WT230 offers outstanding cost performance in a half-rack form factor. It supports various options such as harmonic measurement, D/A outputs, and communication interfaces like GP-IB or RS-232, making it an ideal choice for testing home appliances, motors, and industrial equipment.

SPECIFICATIONS

General

Interfaces	GP-IB (optional), RS-232 (optional)
Display	4-window LED display
Recommended Calibration Cycle	1 year

Physical

Power Supply	100 to 240 VAC, 50/60 Hz, max 40 VA
Operating Temperature	5 to 40 °C °C
Dimensions (W×H×D)	213 mm × 132 mm × 379 mm (W×H×D, excluding projections) mm
Weight	5.0 kg (with 3-element configuration) kg

Measurement Input

Number of Input Elements	2 or 3 elements (configuration dependent)
Wiring System Compatibility	1P2W, 1P3W, 3P3W, 3P4W (configuration dependent)
Measurement Parameters	Voltage, Current, Active Power, Apparent Power, Reactive Power, Power Factor, Phase Angle, Frequency, Active Energy (Integration), Current Integration
Input Type	Floating input, shunt resistance for current

Voltage Ranges

Voltage Range Settings (RMS)	15 V, 30 V, 60 V, 150 V, 300 V, 600 V
Voltage Crest Factor	3 (at rated range input)
Voltage Input Impedance	Approx. 2 MΩ, 13 pF in parallel
Maximum Direct Input Voltage	1000 Vrms

Current Ranges

Direct Current Range Settings (RMS)	0.5 A, 1 A, 2 A, 5 A, 10 A, 20 A
Current Crest Factor	3 (at rated range input)
Maximum Continuous Current Input	26 Arms (assured accuracy)
External Current Sensor Input Ranges	2.5 V, 5.0 V, 10.0 V

Accuracy & Performance

Frequency Range	DC, 0.5 Hz to 100 kHz
Basic Measurement Accuracy	$\pm(0.1\% \text{ of reading} + 0.1\% \text{ of range})$ at 50/60 Hz
DC Measurement Accuracy	$\pm(0.2\% \text{ of reading} + 0.2\% \text{ of range})$
Frequency Measurement Accuracy	$\pm(0.1\% \text{ of reading} + 1 \text{ digit})$
Effective Input Range	1% to 110% of the measurement range

Sampling & Processing

A/D Converter Resolution	16-bit
Sampling Rate	Approx. 51.2 kHz
Data Update Rate Selection	0.1 s, 0.2 s, 0.5 s, 1 s, 2 s, 5 s

Functions & Features

Line Filter Cutoff Frequency	5.5 kHz
Scaling Function Factor (PT/CT/SF)	0.001 to 9999.999
Averaging Selection	Exponential or Moving Average (attenuation constant 8, 16, 32, 64)
Peak Hold Function	Holds maximum value of Voltage and Current
Integration Modes	Standard, Continuous
Integration Time Range	0000h 00m 00s to 10000h 00m 00s
Integration Timer Accuracy	$\pm 0.005\%$ of reading
Harmonic Measurement Option (/G5)	Up to 50th harmonic order, basic frequency 40 Hz to 440 Hz
D/A Output Option (/DA12)	12 channels, ± 5 V full scale output

User Interface

Display Resolution	99999 counts
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General Specifications

Storage Temperature Range	-25 °C to 60 °C
Operating Humidity Range	20% to 80% RH (no condensation)
Storage Humidity Range	20% to 80% RH (no condensation)
Maximum Operating Altitude	2000 m
Insulation Resistance	50 M Ω or more at 500 VDC
Withstand Voltage	1500 Vrms for 1 minute (between power supply and casing)
Safety Standards Compliance	EN61010-1, EN61010-2-031
EMC Standards Compliance	EN55011, EN50082-2
Warm-Up Time	Approx. 30 minutes
Memory Type for Settings	Lithium battery backup (approx. 10 years lifetime at 23°C)

Input Specifications

Current Input Impedance	Approx. 6 m Ω + 0.11 μ H (direct input)
External Current Sensor Input Impedance	Approx. 1 M Ω
Maximum Allowed Input Voltage	1000 Vrms or 1500 Vpeak, whichever is less
Maximum Allowed Input Current	30 Arms or 100 Apeak, whichever is less (for direct input)

Accuracy/Influence

Temperature Coefficient	Add $\pm 0.03\%$ of reading/ $^{\circ}$ C (for 5 $^{\circ}$ C to 18 $^{\circ}$ C and 28 $^{\circ}$ C to 40 $^{\circ}$ C)
Influence of Power Factor	With PF = 0 (at active power): $\pm 0.15\%$ of S (apparent power) at 50/60 Hz
Influence of Common Mode Voltage	$\pm 0.1\%$ of range or less with 600 Vrms applied between input terminal and case (50/60 Hz)

Measurement Functions

Frequency Measurement Channels	2 channels (selectable from voltage or current of any input element)
PT Ratio Range	0.001 to 9999
CT Ratio Range	0.001 to 9999
SF (Scaling Factor) Range	0.001 to 9999
Exponential Average Attenuation Constant	2, 4, 8, 16, 32, 64
Moving Average Number of Samples	8, 16, 32, 64

D/A Output Option (/DA12)

D/A Output Voltage	± 5 V FS (approx. ± 7.5 V maximum) relative to each rated value
D/A Output Resolution	12-bit
D/A Output Update Rate	Same as the main unit data update rate

Harmonic Measurement Option (/G5)

PLL Synchronization Frequency Range	40 Hz to 440 Hz
Maximum Harmonic Analysis Order	50th order

Filters

Frequency Filter Cutoff Frequency	500 Hz
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Control & Interfaces

External Control Signal Input Level	TTL (0 to 5 V)
External Control Inputs	EXT START, EXT STOP, EXT RESET, EXT HOLD, EXT SINGLE

Options

Ethernet Interface Standard (Option /C7)	IEEE 802.3 10BASE-T
Ethernet Protocol (Option /C7)	TCP/IP
GP-IB Interface Standards (Option /C1)	IEEE 488.1-1978, IEEE 488.2-1987
Harmonic Measurement Fundamental Frequency (Option /G5)	40 Hz to 440 Hz
D/A Output Channels (Option /DA12)	12 channels
D/A Output Voltage Range (Option /DA12)	±5 V FS (approx. ±7.5 V max) relative to each rated value
Comparator Output Channels (Option /DA12)	4 channels (high/low limits for up to 2 parameters)
Comparator Output Type (Option /DA12)	Open collector (maximum 24 VDC, 50 mA)

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