

Multi-channel High Precision Power Analyzer ANPA4000(F)

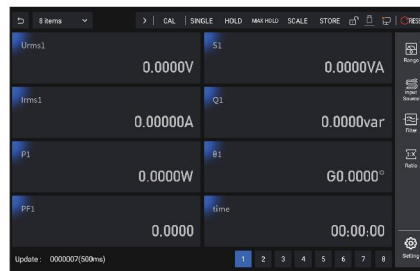


- 8-channel synchronous power analysis
- Accuracy: $0.03\% \times \text{display} + 0.05\% \times \text{range}$
- Sampling rate: 2MS/s
- Maximum voltage 1000V (DC1500V)
- Rich specifications: 30A (standard)/5A, standard BNC interface, optional sensor
- Motor measurement: optional motor measurement channel
- LCD display: full touch screen experience, custom display interface entries, multiple wave displays
- Data storage: custom data storage items, CSV format export, local storage/screenshot saving
- Perfect size Standard 4U height, suitable for integration

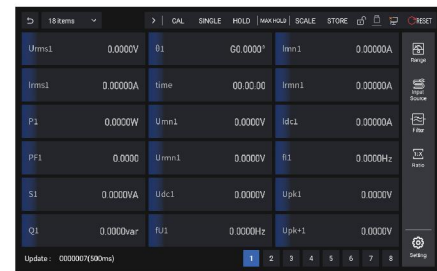
Display interface



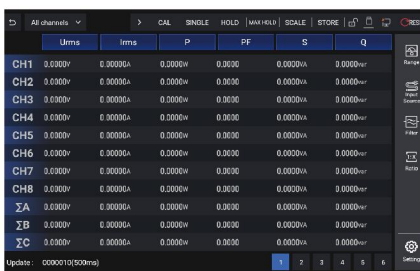
4-item display



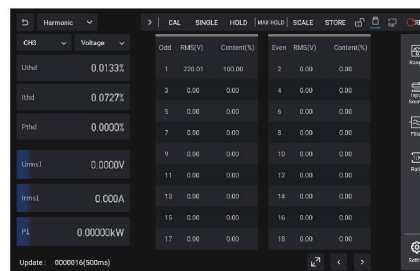
8-item display



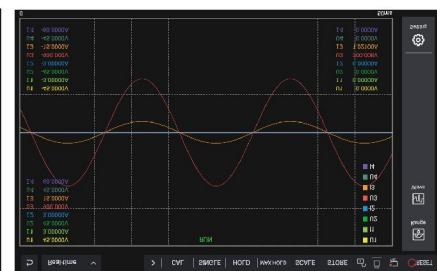
18-item display



Full value display



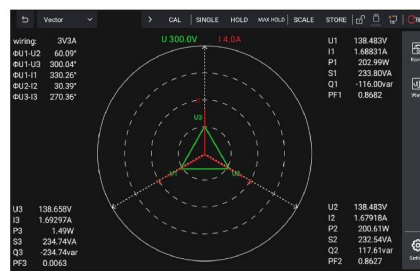
List display



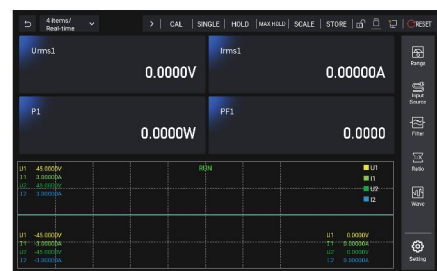
Waveform Display Instantaneous Graph



Waveform Display Trend Graph



Waveform Display Vector Graph



Split screen display

Application

- Motor frame, variable frequency motor power consumption and mechanical efficiency test
- Measurement of electrical performance of electric vehicles, OBC, charging stations
- Renewable energy power, efficiency, and harmonic analysis
- Switching power supply power/harmonic/inrush current analysis.
- Harmonic analysis of power electronics and transformers

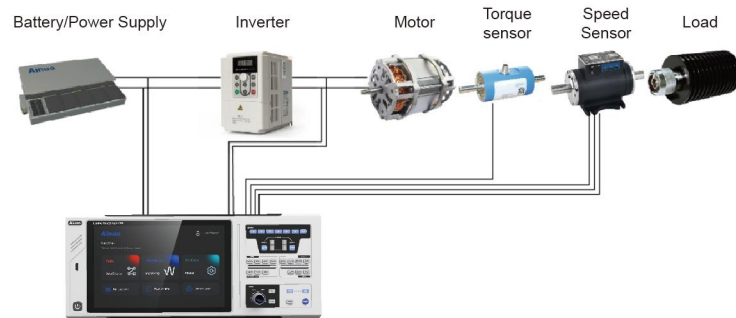


Channel configuration

Wiring	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	Channel 7	Channel 8
Single-phase photovoltaic inverter	1P2W DC	1P2W AC	1P2W DC	1P2W AC	1P2W	1P2W	1P2W	1P2W
Three-phase photovoltaic inverter	3P3W/3V3A/3P4W AC			1P2W DC	3P3W/3V3A/3P4W AC			1P2W DC
Electric vehicle	1P2W	1P2W	1P2W	1P2W	1P2W	1P2W	1P2W	1P2W
Inverter	3P3W/3V3A/3P4W			1P2W	1P2W	1P2W	Torque/speed	
UPS	1P2W Mains input	1P2W Battery	3P3W/3V3A/3P4W Three-phase input			3P3W/3V3A/3P4W Three-phase input		

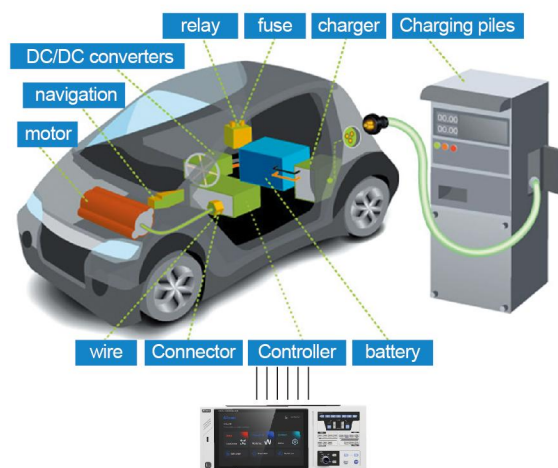
The above specifications are subject to change without prior notice.

Application



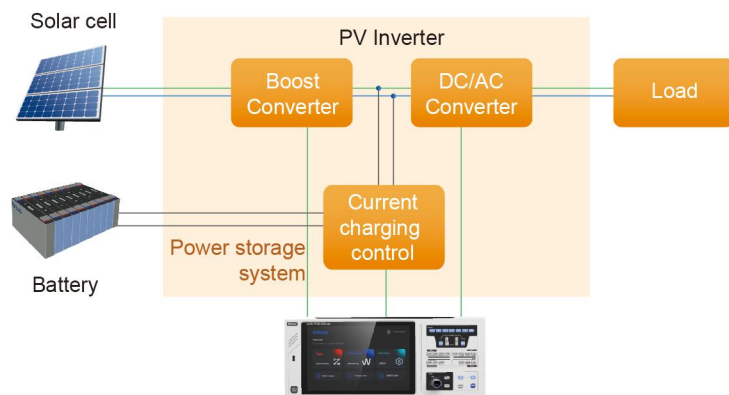
Photovoltaic inverter power measurement

- Comply with GB/T 18488-2024 Drive Motor System for Electric Vehicles
- Up to 4 motors can be measured simultaneously, supporting 500th harmonic and distortion analysis
- Pulse signal and analog signal speed/torque sensors (optional)
- Torque, speed, mechanical power, efficiency, electric phase angle measurement (optional)



Electric vehicle electrical performance measurement

- Up to 8 channels can be measured simultaneously, and multiple parameters can be detected: OBC, charging stations efficiency test, battery charging/discharging performance, power supply conversion performance, motor performance, etc.
- Support high voltage/current measurement, maximum voltage 1000V (DC1500V), maximum current 30A, expandable for larger current sensors
- Accuracy: 0.03% x display + 0.05% x range, power resolution 0.1mW
- Measure signal ripple ratio, three-phase imbalance ratio, power factor, fundamental reactive power etc.



Renewable energy measurement

- GB/T 37409-2019 Testing specifications for photovoltaic grid-connected inverter
- Comply with GB/T 34133-2023 Testing Code for Power Conversion System of Energy Storage System
- Support high voltage/current measurement, maximum voltage 1000V (DC1500V), maximum current 30A, expandable for larger current sensors
- Harmonic measurement and flicker measurement based on standard IEC
- Up to 500th harmonic and distortion analysis
- Simultaneous measurement of bidirectional power for buying and selling electricity

Power supply/UPS power measurement/

- Current: 0~30A/5A.
- Power bandwidth DC, 0.5Hz~1MHz
- Simultaneous measuring input/output (single-phase, three-phase) power, monitoring battery charge/discharge.
- Automatic efficiency calculation

Specifications

Model	ANPA4000(F)	
Current specifications	30A (optional 50A 5A)	
Wiring method	1P3W (single-phase 3-wire), 3P3W (3-phase 3-wire, 2 voltage 2 current), 3V3A (3-phase 3-wire, 3 voltage 3 current), 3P4W (3-phase 4-wire)	
Input impedance of each phase	Voltage: About 10MΩ Direct input of current: 30A: About 10mΩ 5A: About 100mΩ Current sensor input: About 1MΩ	
Sampling rate	2MS/s	
Full scale crest factor	3 or 6	
Rated voltage range(Direct input)	15/30/60/100/150/300/600/1000*[V] (peak factor 3) 7.5/15/30/50/75/150/300/500*[V] (peak factor 6) *The crest factor of 1000V full scale is 1.5	
Rated current range(Direct input)	30A: 1/2/5/10/20/30*[A](peak factor 3) 5A: 100m/200m/500m/1/2/5*[A](peak factor 3) 30A: 500m/1/2.5/5/10/15*[A](peak factor 6) 5A: 50m/100m/250m/0.5/1/2.5*[A](peak factor 6)	
Rated current range(Sensor input)	200m/500m/1/2/5/10 [V] (peak factor 3) 100m/250m/500m/1/2.5/5 [V] (peak factor 6)	
Voltage/Current Precision scope	(1%~110%) × range	
Power factor Range	±(0.0001~1.0000)	
Voltage measurement accuracy	DC 0.5Hzsf<45Hz 45Hzsf≤66Hz 66Hz<f≤1kHz 1kHz<f≤50kHz 50kHz<f≤100kHz 100kHz<f≤500kHz 500kHz<f≤1MHz	±(0.05% × display + 0.05% × range) ± (0.03% × display + 0.05% × range) ± (0.03% × display + 0.05% × range) ±(0.1% × display + 0.1% × range) ±(0.3% × display + 0.1% × range) ±(0.6% × display + 0.2% × range) ±[(0.006 × f)% × display + 0.5% × range] ±[(0.022 × f - 8)% × display + 1% × range]
Current precision	DC 0.5Hzsf<45Hz 45Hzsf≤66Hz 66Hz<f≤1kHz 1kHz<f≤50kHz 50kHz<f≤100kHz 100kHz<f≤500kHz 500kHz<f≤1MHz	±(0.05% × display + 0.05% × range) ±[(0.03% × display + 0.05% × range) + (2μA*)] ±[(0.03% × display + 0.05% × range) + (2μA*)] ±(0.1% × display + 0.1% × range) ±(0.3% × display + 0.1% × range) ±(0.6% × display + 0.2% × range) ±[(0.006 × f)% × display + 0.5% × range] ±[(0.022 × f - 8)% × display + 1% × range]
Active power measurement accuracy	DC 0.5Hzsf<45Hz 45Hzsf≤66Hz 66Hz<f≤1kHz 1kHz<f≤50kHz 50kHz<f≤100kHz 100kHz<f≤500kHz 500kHz<f≤1MHz	±(0.05% × display + 0.05% × range) ±(0.08% × display + 0.1% × range) ±(0.05% × display + 0.05% × range) ±(0.2% × display + 0.1% × range) ±(0.3% × display + 0.2% × range) ±(0.7% × display + 0.3% × range) ±[(0.02 × f)% × display + 1% × range] ±[(0.04 × f)% × display + 3% × range]

Specifications

Model	ANPA4000(F)
Active power measurement accuracy	0.02W-6.6kW/phase @ 220V, PF=0.01-1 (30A board card)
Active power resolution	30A/50A: 1mW; 5A:0.1mW
Frequency range	DC, 0.5Hz ~1MHz
Frequency measurement accuracy	±0.06% x display
Harmonic measurement	110Hz ~ 2.6kHz, up to 500th harmonic content, total distortion
Electric energy measurement range	0-99999MWh (resolution: 1mWh/0.01mAh)
Electric energy measurement accuracy	±0.2% * display
Power meter	9999 hours 59 minutes 59 seconds
Filter function	Frequency filtering is available in 500Hz, 10kHz, 100kHz, and 1MHz options.Line filtering 100~10kHz (step 100Hz), 50kHz, 100kHz optional
Voltage/current ratio	1.00 ~ 50000.00
External input ratio	0.10~100.00
Data update cycle	10m / 20m / 50m / 100m / 200m / 500m / 1 / 2 / 5 / 10[s]
Control interface	Test cycle synchronization interface (compatible with trigger lock), standard: RS-232, LAN; Optional RS-485
Protocol	MODBUS\TCP MODBUS\SCPI
Outline dimension	426 (W) x 175 (H) x 462 (D) mm
Size of the opening	426 (W) x 175 (H)
Foot height	17.5 mm
Machine weight	About 20kg
Power consumption of whole machine	66W

Type	Motor board	
Input Interface	Insulation BNC	
Input resistance	About 1MΩ	
Input channel	Single motor(speed: Pulse)	
	ChA(Torque)	Analog/pulse input
	ChB(SpeedA)	Pulse phase-A (rotation speed)
	ChC(SpeedB)	Pulse phase-B (steering)
	ChD(SpeedZ)	Pulse phase-Z (electrical angle reference)
	Single motor(speed: analog)	
	ChA(Torque)	Analog/pulse input
	ChB()	
	ChC(Speed)	Analog/pulse input
	ChD()	
	Dual-motor	
	ChA(Torque)	Analog/pulse input
	ChB(Speed)	Pulse input
	ChC(Torque)	Analog/pulse input
	ChD(Speed)	Pulse input
Input type	Analog input	
	Rated range	1/2/5/10/20*[V]
	Range	(1%~110%) * range
	Maximum allowable input	22V
	Sampling rate	About 200KS/s
	measurement accuracy	±(0.05% * display + 0.05% * range)
	Pulse input	
	Rated range	10V
	Amplitude range	±12Vpeak
	Detection level - H	≥2V
	Detection level - L	≤0.8V
	Pulse width	≥500ns
	Frequency range	2 Hz ~ 1 MHz
	measurement accuracy	±(0.05% * display + 0.001Hz)

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[Conditions]

Temperature: 23±5℃, humidity: 30%~75%RH, input wave: Sine wave, common-mode voltage: 0V, Line filter: OFF, Frequency filter: OFF, Power factor λ: 1, peak factor: 3. After preheating. After zeroing or changing the range in wiring state.

The f in the measurement accuracy formula is the frequency in kHz.

When the data update rate is 10ms, 20ms, 50ms, 100ms, all accuracies are increased by 0.03% x display.

Impact due to change to Temp. after resetting or changing the scale:

Plus 0.02% x scale/℃ for voltage DC accuracy, 500μA/℃ for current DC accuracy, 50μV/℃ for external sensor DC accuracy, product of voltage impact and current impact for power DC accuracy.