

VIEW 770

BELIEVE YOUR EYES

POWER ANALYZER PRO , HIGH PRECISION POWER ANALYZER

- Max Measuring Accuracy : $\pm (0.01\% \text{ of reading} + 0.02\% \text{ of range})$
- Bandwidth : DC, from 0.1Hz to 5MHz
- Up to 7channels for power measurement; double channels for motor input
- Multiple options of range and accuracy input for optimal configurations
- Simultaneously and independently analyzing 7-harmonics channel
- Measuring up to 500 harmonic orders
- Instantaneous power measurement
- X-Y Graph Display
- Data update rate up to 10ms 128GB/512GB SSD



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We DESIGN

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Телефон: +7 (499) 685-4444

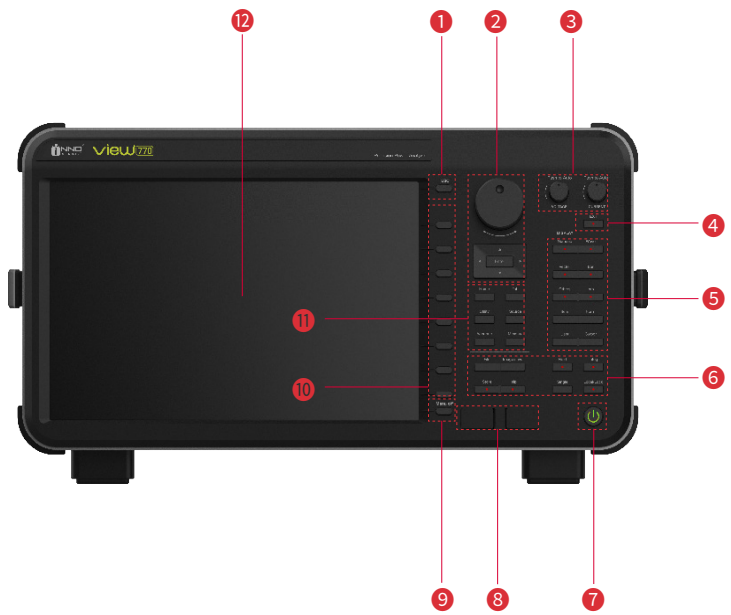
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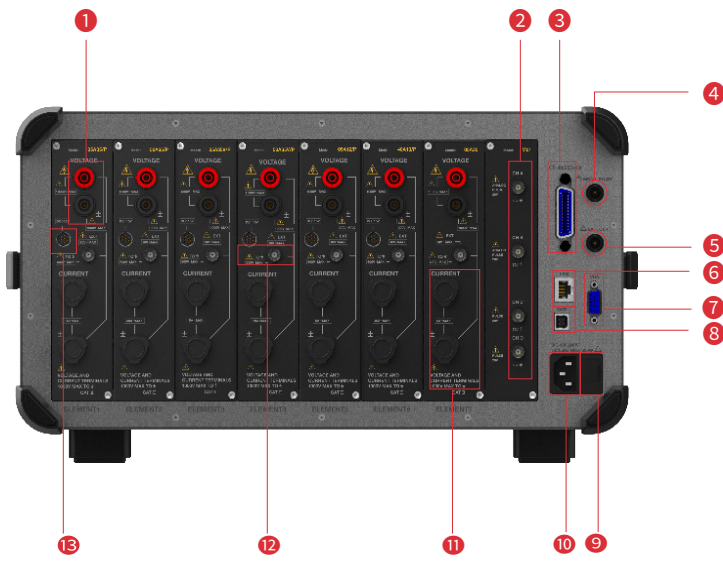
DESCRIPTION

The VIEW770 power analyzer pro is an instrument for measuring such parameters as voltage, current, power and efficiency of the transducer (frequency inverter), motor and converter. This product provides up to 7 power inputs and double motor inputs, characterized by various assembled modes of power board, diversity of options of measurement range and accuracy, widely applied in the areas such as electric vehicle, new energy technology, inverter, motor, battery, lighting, household appliance, and avionics. It has powerful features, including measuring by multi-channel input, sampling in high speed, displaying the measured results in rich display formats such as real-time numeric, waveform, trend, bar graph, and vector and so on. It is also a professional instrument used for effectively measuring and analyzing the systems via some special measurement functions such as harmonics analysis, motor evaluation, voltage fluctuation, flicker measurement, FFT, and so on.

PRODUCT OVERVIEW



- 1 ESC key
- 2 Navigation keys
- 3 Rotary knob (range)
- 4 Sensor key
- 5 Display selection keys
- 6 Function execution keys
- 7 Power switch
- 8 Type A USB port
- 9 Menu off key
- 10 Menu key
- 11 Condition selection keys
- 12 Touch screen



- 1 Voltage input terminal
- 2 (Motor) Torque and Speed signal input connector
- 3 GP-IB / RS-232 connector
- 4 Terminal of master/slave synchronized measurement
- 5 EXT clock input connector
- 6 Ethernet connector
- 7 VGA connector
- 8 Type B USB connector
- 9 Power switch
- 10 Power cord connector
- 11 Current input terminal
- 12 EXT current sensor input terminal
- 13 Power connector of sensor

FUNCTIONS AND ADVANTAGES

Various Types of Input Modules

Various modules with different voltage input ranges, current input ranges and accuracies are compatible with one power analyzer, up to 7 modules available to be installed. Users can select different modules with required technical specifications so as to meet the requirement of the instrument functions to be achieved. New modules are continuously developed.

Sensor Power Supply

This power analyzer is technically equipped with user-friendly Power supply connectors for sensor input, convenient for the users connect the power supply to the sensor directly, getting rid of the traditional connecting methods of power supply units.

User-friendly GUI

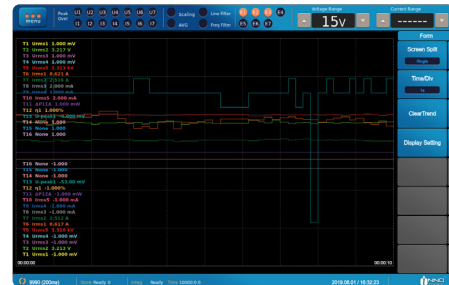
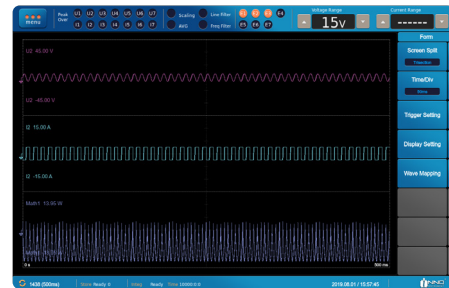
Equipped with high resolution large touch screen (12.1 inches) and with clear functional modules well-designed to suit the intuitive operations, this power analyzer is easily operated by the users. Besides, press-keys, rotary knobs and mouse are available.

What make operations more convenient are the designs including one-button access to the parameters setup menu, various configured parameters displayed on one screen, and simultaneously viewing and setting the parameters.



Powerful Display Function

Large amount of information can be displayed on one large screen of high definition in various formats, such as numeric, waveform, bar, trend and vector.



Cycle-by-cycle Measurement

This instrument can use the Cycle-by-cycle measurement method to calculate the voltage, current, power, and other parameters for each cycle of the AC input signal of the synchronization source signal. Up to 3000 cycles of measurement can be achieved. When the measurement of the specified frequency is complete, the results will be displayed in order of measurement cycle. The measured results can be stored in the internal memory.



Auto Range Rapid Change

This instrument has the function of auto range, i.e. automatically changing the range according to the amplitudes of input signals. Traditionally, it costs too much time to change the range step by step, especially when the amplitude of signal changes largely, so that the data are lost without being measured.

When the amplitude of the input signal exceeds the previous one, the previous range can automatically increase to the maximum range and then adjust itself until the range matches with the measured data, shortening the period of switching ranges and reducing the chances of data lost.

Automatic Update Rate (Up to 10ms)

With data update rate at a range between 10ms to 20ms, it is ensure that this power analyzer can perform high precision computation at a high speed. The technology of advanced independent digital filter ensures the stability of the measurement values. It will automatically adjust the data update rate along with the changes of the frequency signal which changes from 0.1Hz, to ensure rapidity and accuracy of the data measurement.

Harmonic Measurement Function

This instrument can simultaneously measure the voltage, basic harmonics, harmonic components and the total harmonic distortion (THD) in the mode of harmonic measurement and up to 500th harmonics can be measured. The Power spectrum and measured data of the harmonic of each order can be displayed on the screen. Harmonic measurement can be performed simultaneously on 7 power channels, and different PLL source can be selected, so that the efficiency of harmonic measurement can be improved in the areas such as inverter, robot, and lighting. Harmonic measurement up to 500th order can be performed on this this power analyzer.



Integration Function

The integration function, including integrated power, integrated current, is used to calculate the electrical energy (Wh) or charge (Ah). There are two integration methods: Bought and Sold (power integration method is used for energy statistics in the grid), and Charge and Discharge (instantaneous power integration method is used for charge statistics in the battery).

Besides, users can enable the function of automatic range before integration starts, so as to greatly reduce the measurement error caused by unstable input signal during long-time integration operating.

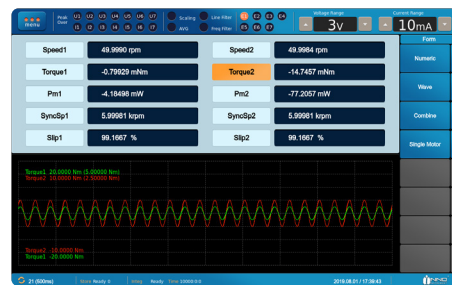
Double-Motor Evaluation

The analog or pulse input signal of the motor can be connected to this power analyzer for measuring the parameters such as the speed/direction, torque, synchronous speed, power, slip, and phase angle, and efficiency, which can be divided into two groups for measurement as well. Double-motor measurement mode is available, which is suitable for the application in electric vehicle.

Single-Motor Mode

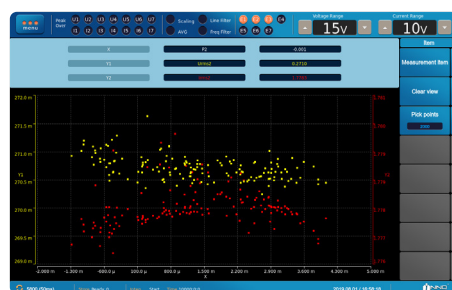


Dual-Motor Mode



X-Y Graph Display Function

Users can view some measurement items from the X-Y Graph. For example, in waveform display, the custom 2-path inputs are respectively shown as X-axis and Y-axis, which can reflect the relative relationship between these 2 inputs, as basic for analyzing these 2 inputs.



Current Phase Calibration

This function is used for calibrating the measurement error caused by the phase difference in the measured circuit to ensure the accuracy of the measurement. The phase calibration function enabled during measurement is used to compensate the phase difference of the current sensor (with resolution of 0.01°), so that the power measurement is more accurate at high frequency or low power factor.

Instantaneous Power Measurement

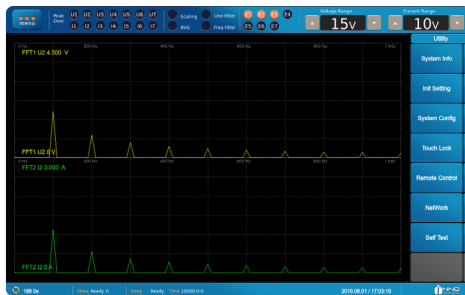
This power analyzer has the function of computing the display waveform to display the waveform of the data after computation completed. For example, the instantaneous power waveform can be obtained and displayed after multiplication performed between the voltage and current of the input signals. The data can be measured as well.



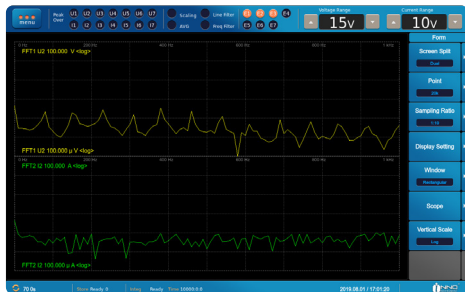
FFT Computation Function

Under FFT function, parameters such as sampling points and sampling ratio can be set, the frequency spectrum of input signal can be analyzed, so that those frequencies not able to be displayed can be viewed in harmonic measurement.

FFT Linear Display



FFT Logarithm Display



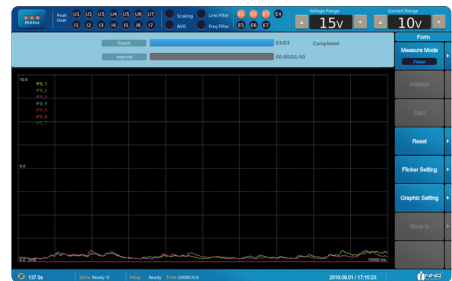
IEC Harmonics and Voltage Flicker

IEC harmonic measurement accords with IEC61000-4-7 standard. The current harmonics containing the inter-harmonics can be measured and displayed. The voltage fluctuation and flicker can be measured, analyzed and judged as per the corresponding IEC standard.

Numeric Display in Flicker Measurement



Flicker ISF Graph Display



Super Storage Capacity and Printer

This power analyzer stores the measured results and displayed formats (such as waveform) regarding voltage, current, power and others at real-time at a fast speed of 100 times per second, for further data analysis; Large capacity memory space inside the instrument. it really meet the storage requirements of high capacity and high efficiency.

Besides, the external printer can be connected to this power analyzer via USB or LAN interface, for printing conveniently in site.

INNO PA Viewer Software

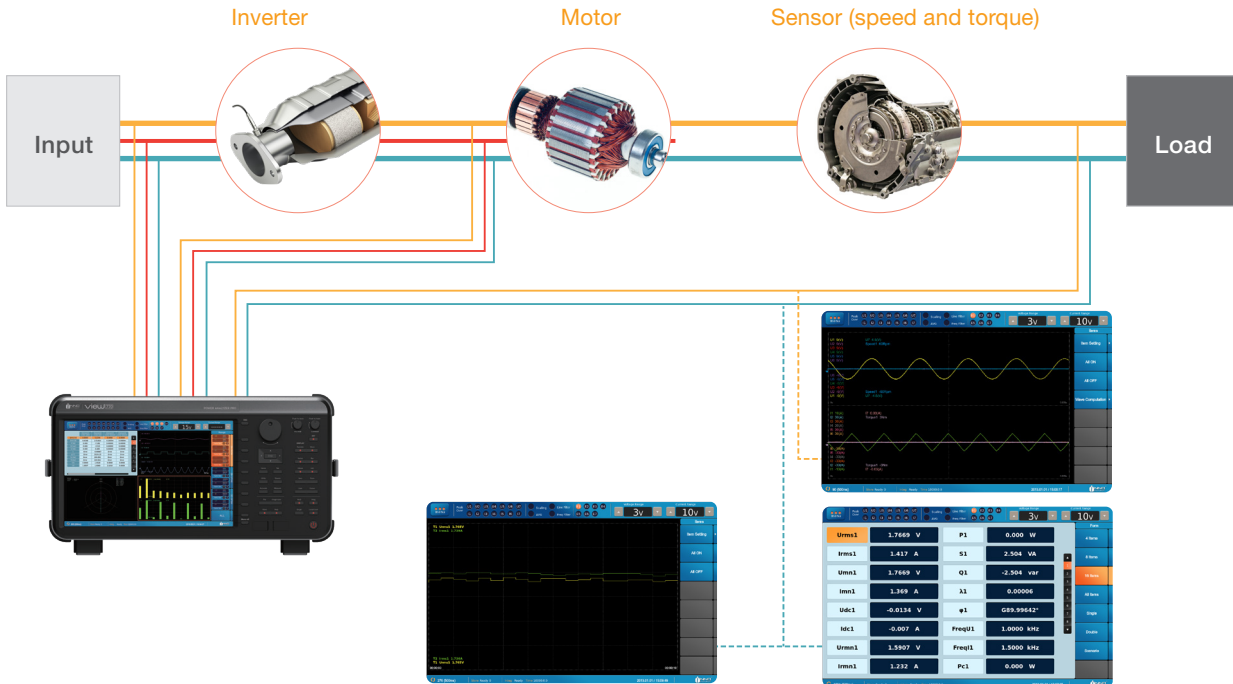
INNO VIEW770 Viewer software is a PC application software. Users can remotely control the instrument from a remote PC, as it can display numeric, waveforms, single and double harmonics, trends, vectors, bar graphs, combinations, IEC harmonics, FFT, Flicker, motor, cycle analysis and XY Graph display, save Raw data on the PC side, save and print IEC harmonic and flicker data reports.



APPLICATIONS

Hybrid Electric Vehicle, Transducer, Variable Frequency Motor

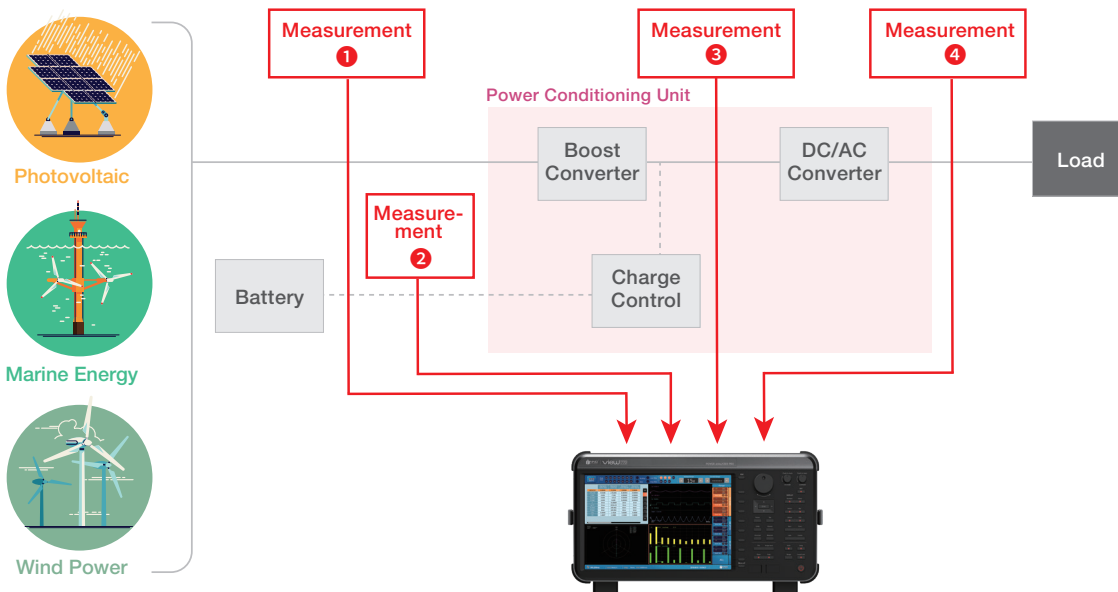
Equipped with 7 measurement channels and double-motor channels, this power analyzer pro VIEW770 can measure and evaluate the voltage, current, power, efficiency of the inverter of the electric vehicle, charger, battery, motor, and so on. Double-motor channels meet the requirement of simultaneously measuring the power and efficiency of the drive motor and dynamotor. Besides, the integration function is available for evaluating the battery charging.



Power Efficiency Assessment: New Energy System

With the progress of new energy used, the power quality is becoming increasingly prominent. This product can be used to effectively monitor and evaluate the power energy problem arising from harmonic or low voltage.

This power analyzer provides 7 elements of power measurement continent for measurement and analysis to the voltage, current, efficiency, harmonics of each node. It also has integration function available for evaluating and analyzing the conditions of Bought/Sold, Charge/Discharge for the system.



Functional Test to Home Appliances

This power analyzer pro of VIEW770 series can simultaneously test up to 7 pieces of appliances (home appliance of single phase) for measuring the voltage, current, power, frequency, power factor and harmonics. Besides, the IEC harmonics and Flicker measurement functions are available for measuring and evaluating the power quality as per IEC standard.



Testing to Aircraft Electrical Power System

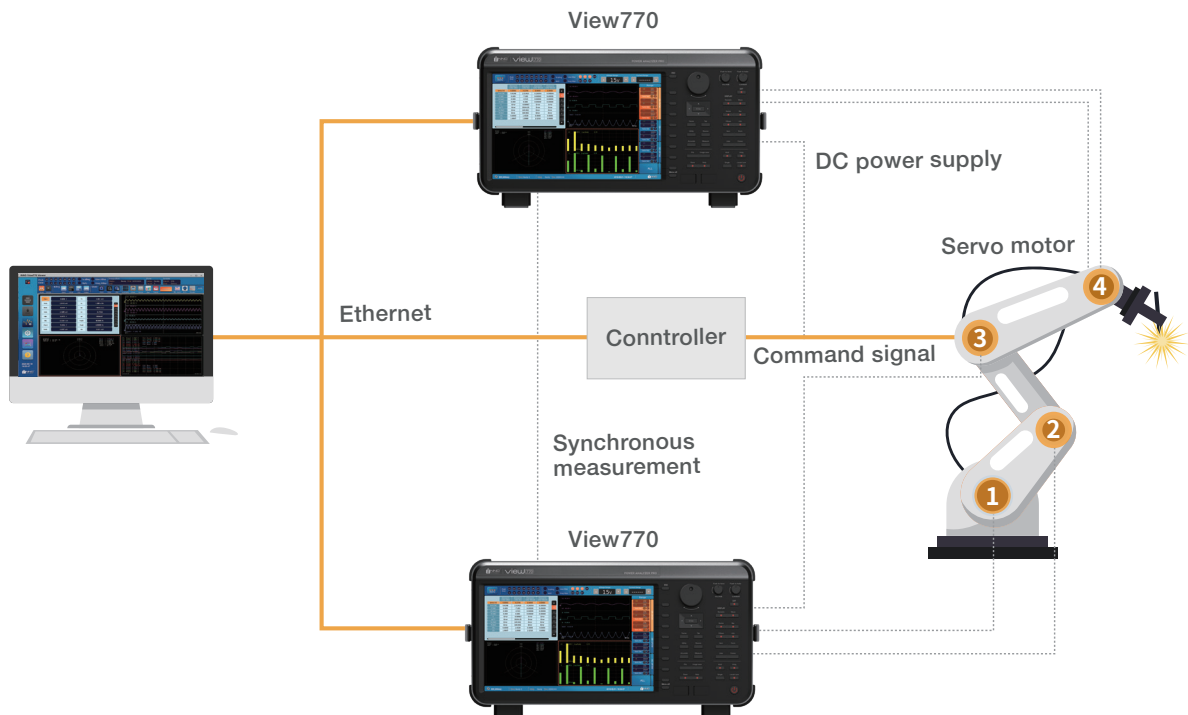
The frequency of the aviation AC power supply system generally are 400Hz or 800Hz, but it is very difficult for a common power analyzer to satisfy the requirement of measuring such frequency, especially measuring the harmonics. With 2Ms/s of sampling rate, this power analyzer can measure the harmonics of order up to 500th to meet the requirement, especially when at a frequency of 400Hz (fundamental harmonics).



Robot Performance Evaluation Test

The core parts of industrial robot are servo motor, reducer and controller. In the running process of the robot, multi-degree of freedom movement can be realized through the drive of servo motor, stable output of large torque can be achieved through the reducer, and multi-axis drive synchronization control can be achieved through the controller. All three are indispensable. Industrial robots are equipped with multiple motors, to evaluate the robot driven by motors, the power consumption of all motors and controllers in various working states should be measured in the whole process. In order to analyze and learn the control process and evaluate the transient characteristics of the robot, it is required to measure the transient voltage, current, power and variation trend, and be able to store the data for analysis.

The sampling rate of VIEW770 power analyzer is up to 2MHz, with waveform calculation function, which can measure instantaneous power and with 128GB capacity storage. At the same time, harmonic analysis of different PLL sources with 7 channels can be carried out and can measure two motors simultaneously. If two sets of VIEW770 are synchronized, the mechanical output parameters of four motors can be measured simultaneously. VIEW770 power analyzer is especially suitable for robot performance evaluation test.



TECHNICAL SPECIFICATIONS

Inputs

Items	Specifications
Input terminal type	Voltage(U): Plug-in terminal (Safety terminal) Current(A): binding post External current sensor input: Insulated BNC connector
Input type	Voltage: Floating input, resistive potential method Current: Floating input, Shunt input method
Measurement range (Voltage)	View770-05A12 / View770-40A13: 15V,30V,60V,100V,150V,300V,600V,1000V(CF3) 7.5V,15V,30V,50V,75V,150V,300V,500V(CF6) View770-05A35 / View770-50A35: 1.5V,3V,6V,10V,15V,30V,60V,100V,150V,300V,600V,1000V(CF3) 750mV,1.5V,3V,5V,7.5V,15V,30V,50V,75V,150V,300V,500V(CF6) View770-05A35V / View770-50A35V: 3V,6V,10V,15V,30V,60V,100V,150V,300V,600V,1000V(CF3) 1500V(CF2) 1.5V,3V,5V,7.5V,15V,30V,50V,75V,150V,300V,500V(CF6),750V(CF4)
Measurement range (Current)	· Direct input View770-05A12: 2mA,5mA,10mA,20mA,50mA,100mA,200mA,500mA,1A,2A,5A(CF3) 1mA,2.5mA,5mA,10mA,25mA,50mA,100mA,250mA,0.5A,1A,2.5A(CF6) View770-05A35 / View770-05A35V: 10mA,20mA,50mA,100mA,200mA,500mA,1A,2A,5A(CF3) 5mA,10mA,25mA,50mA,100mA,250mA,500mA,1A,2.5A(CF6) View770-40A13: 100mA,200mA,500mA,1A,2A,5A,10A,20A,40A(CF3) 50mA,100mA,250mA,500mA,1A,2.5A,5A,10A,20A(CF6) View770-50A35 / View770-50A35V: 1A,2A,5A,10A,20A,50A(CF3) 500mA,1A,2.5A,5A,10A,25A(CF6) · External current sensor input 50mV,100mV,200mV,500mV,1V,2V,5V,10V(CF3) 25mV,50mV,100mV,250mV,500mV,1V,2.5V,5V(CF6)
Input resistance	Voltage View770-05A12 / View770-40A13: Input resistance:Approximately 4M Ω ;Input capacitance:Approximately 10pF(paralleled with resistance) View770-50A35/View770-05A35/View770-50A35V/View770-05A35V: Input resistance:Approximately 2M Ω ;Input capacitance:Approximately 15pF(paralleled with resistance) Current · Direct input View770-05A12/View770-05A35/View770-05A35V: When 2mA-10mA,Approximately 10 Ω When 20mA-200mA,Approximately 1 Ω +Approximately 0.28 μ H(resistance in series) When 0.5A-5A,Approximately 60m Ω +Approximately 0.25 μ H(resistance in series) View770-40A13/View770-50A35/View770-50A35V: When 100mA-1A,Approximately 110m Ω +Approximately 0.1 μ H(resistance in series) When 2A-10A,Approximately 8.5m Ω +Approximately 0.1 μ H(resistance in series)

Input resistance	When 20A-40A,Approximately 3m Ω +Approximately 0.1 μ H(resistance in series) · External current sensor input Input resistance:Approximately 1M Ω
Continuous maximum allowable input	Voltage View770-05A12/View770-40A13: Peak voltage of 3kV or RMS of 2kV, whichever is lower View770-05A35/View770-50A35: Peak voltage of 3kV or RMS of 1.5kV, whichever is lower View770-05A35V/View770-50A35V: Peak voltage of 3kV or RMS of 1.65kV, whichever is lower Direct · Direct input View770-05A12/View770-05A35/View770-05A35V: When 2mA-10mA,Peak current of 0.2A or RMS of 0.1A, whichever is lower When 20mA-200mA,Peak current of 4A or RMS of 2.5A, whichever is lower When 0.5A-5A,Peak current of 20A or RMS of 12A, whichever is lower View770-40A13/View770-50A35/View770-50A35V: When 100mA-1A,Peak current of 8A or RMS of 4A, whichever is lower When 2A-10A,Peak current of 80A or RMS of 40A, whichever is lower When 20A-40A/50A,Peak current of 100A or RMS of 55A, whichever is lower · External current sensor input Peak value less than or equal to 5 times the range
Continuous maximum common mode voltage (50/60Hz)	Voltage input terminals: 1000Vrms Current input terminals: 1000Vrms External current sensor input connector: 600Vrms
Rated voltage to ground	Voltage input terminals: CATII 1000V Current input terminals: CATII 1000V External current sensor input connector: CATII 1000V
A/D converter	Simultaneous voltage and current input conversion Resolution: 16-bit Conversion speed (sampling period): Approximately 0.5 μ s
Auto range function	Range up(When one of the following conditions is met) · Urms or Irms exceed 110% of the range · Upk or lpk of the input signal exceed 330% of the range(660% for CF6) Range down(When all the following conditions met) · Urms or Irms is less or equal to 30% of the measurement range · Upk or lpk of the input signal is less than 300% of the lower range(600% or less for CF6)
Power supply for sensor (output)	Power supply for sensor (output): Mini DIN 8Pin Output Voltage: \pm 15V DC Max output power: 15W

Technical Specifications of Input Elements

Input element	Range	Bandwidth (Voltage/Current)	Sample rate	Power accuracy ±(% of reading + % of range)
View770-05A12	Voltage: 15~1000V Current: 2m~5A	DC, 0.1Hz~5MHz	2MHz	0.01+0.02
View770-40A13	Voltage: 15~1000V Current: 100m~40A	DC, 0.1Hz~5MHz	2MHz	0.01+0.03
View770-05A35	Voltage: 1.5~1000V Current: 10m~5A	DC, 0.1Hz~5MHz	2MHz	0.03+0.05
View770-50A35	Voltage: 1.5~1000V Current: 1~50A	DC, 0.1Hz~5MHz	2MHz	0.03+0.05
View770-05A35V	Voltage: 3~1500V Current: 10m~5A	DC, 0.1Hz~5MHz	2MHz	0.03+0.05
View770-50A35V	Voltage: 3~1500V Current: 1~50A	DC, 0.1Hz~5MHz	2MHz	0.03+0.05

Measurement Conditions

Items	Specifications
Crest factor	3 or 6
Measurement period	Interval for determining the measurement function and performing calculations The measurement period is set by the zero crossing of the reference signal (When synchronization source is set to be None, measurement period becomes data update interval.) During harmonic measurement, the measurement period starts from the data point where update interval starts to the acquired data points of 1024 or 10240
Synchronization source	U1~U7,I1~I7,EXT CLK,None
Wiring	1P2W (single-phase, two-wire), 1P3W (single-phase, 3-wire), 3P3W (3-phase, 3-wire), 3P4W (3-phase, 4-wire), 3P3W (3V3A) (3-phase, 3-wire, 3-volt/3-amp measurement) However, the number of available wiring systems varies depending on the number of installed input elements
Line filter	OFF,0.1kHz-100kHz(increment: 0.1kHz),300kHz,1Mhz
Frequency filter	OFF,100Hz,1kHz
Scaling	When inputting output from external current sensors, VT, or CT, set the current sensor conversion ratio, VT ratio, CT ratio, and power coefficient in the range from 0.0001 to 99999.9999
Accuracy compensation function	Efficiency compensation: Compensate for the loss caused by the measurement instrument during efficiency computation. Wiring compensation: Compensate for the loss caused by the wiring. Two wattmeter method compensation: Compensate for the power loss due to leakage current

Averaging	Exponential average: Select an attenuation constant from the values of 2~64 Linear average: Select the number of averages from the values of 8~64 Harmonic measurement: Only exponential averaging is available
Data update interval	Select 10ms, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s, 20 s, or AUTO
Hold	Holds the data display, without data update
Single	Executes a single measurement and displays once data update during measurement hold.
Null	Purpose: Compensate for DC offset Target: · Voltage and current of each input element (from U1 to U7, I1 to I7) · Rotation speed and torque
Zero Level compensation	Purpose: to make instrument measurement more accurate Method: Manual, Auto This device automatically performs zero level compensation after manual change of the range and initialization.

Measurement Accuracy

Conditions: Temperature at 23±5°C; Humidity at the range from 30%RH to 75%RH; Inputting sinusoidal wave; When the Power factor(λ) is set as 1, with common mode voltage 0V, crest factor CF3, line filter OFF, frequency filter ON, after 30 minutes preheating; Zero setting before wiring; Frequency f with unit kHz; within half a year after calibrated.

View770-05A12

Accuracy ±(...% of reading+ ...% of range)

Frequency of input signal	Voltage	Current (5A)	Active Power
DC	0.01+0.02	0.01+0.02	0.01+0.02
0.1Hz≤f<30Hz	0.02+0.05	0.02+0.05	0.06+0.1
30Hz≤f<45Hz	0.02+0.05	0.02+0.05	0.05+0.05
45Hz≤f<66Hz	0.01+0.02	0.01+0.02	0.01+0.02
66Hz≤f<1kHz	0.02+0.05	0.02+0.05	0.04+0.05
1kHz≤f<10kHz	0.08+0.05	0.08+0.05	0.12+0.1
10kHz≤f<50kHz	0.25+0.1	0.25+0.1	0.3+0.15
50kHz≤f<100kHz	0.012*f+0.2	0.012*f+0.2	0.014*f+0.3
100kHz≤f<500kHz	0.009*f+0.5	0.009*f+0.5	0.012*f+2
500kHz≤f≤1MHz	(0.022*f-7)+1	(0.022*f-7)+1	(0.048*f-19)+2

View770-40A13

Accuracy ±(...% of reading+ ...% of range)

Frequency of input signal	Voltage	Current (50A/5A)	Active Power
DC	0.01+0.03	0.01+0.03	0.01+0.03
0.1Hz≤f<30Hz	0.03+0.05	0.03+0.05	0.08+0.1
30Hz≤f<45Hz	0.03+0.05	0.03+0.05	0.05+0.05
45Hz≤f<66Hz	0.01+0.03	0.01+0.03	0.01+0.03
66Hz≤f<1kHz	0.03+0.05	0.03+0.05	0.05+0.05
1kHz≤f<10kHz	0.1+0.05	0.1+0.05	0.14+0.1
10kHz≤f<50kHz	0.3+0.1	0.3+0.1	0.4+0.15
50kHz≤f<100kHz	0.012*f+0.2	0.012*f+0.2	0.014*f+0.3
100kHz≤f<500kHz	0.009*f+0.5	0.009*f+0.5	0.012*f+2
500kHz≤f≤1MHz	(0.022*f-7)+1	(0.022*f-7)+1	(0.048*f-19)+2

Note: If the current between 1k~100kHz exceeds 30A, the current and power accuracy are for reference only.

**View770-05A35/View770-50A35/View770-05A35V*/
View770-50A35V***

Accuracy ±(...% of reading+ ...% of range)

Frequency of input signal	Voltage	Current (50A/5A)	Active Power
DC	0.03+0.05	0.03+0.05	0.03+0.05
0.1Hz≤f<30Hz	0.05+0.05	0.05+0.05	0.08+0.1
30Hz≤f<45Hz	0.05+0.05	0.05+0.05	0.08+0.1
45Hz≤f<66Hz	0.03+0.05	0.03+0.05	0.03+0.05
66Hz≤f<1kHz	0.05+0.05	0.05+0.05	0.1+0.05
1kHz≤f<10kHz	0.1+0.08	0.1+0.08	0.2+0.1
10kHz≤f<50kHz	0.3+0.2	0.3+0.2	0.4+0.3
50kHz≤f<100kHz	0.012*f+0.2	0.012*f+0.2	0.014*f+0.3
100kHz≤f<500kHz	0.01*f+0.5	0.01*f+0.5	0.014*f+0.5
500kHz≤f<1MHz	(0.024*f-7)+1	(0.024*f-7)+1	(0.048*f-17)+1

* Voltage and power above 1100V are reference values

The Function of Display

Items	Specifications
Display	12.1-inch TFT color LCD display
Pixels	1280(horizontal)×800(vertical)dots
Display types	Numeric, Waveform, Vector, Bar, Trend, Combination(Multi-panel), X-Y Graph
Touch screen	available

Numerical Display

Items	Specifications
Resolution	6-digit, 5-digit
Display format	Select 4-,8-, 16-, all, harmonic single list, harmonic dual list, scenario(Custom)
Display item	Items that this instrument can measure

Waveform Display

Items	Specifications
Display format	Single, Dual, Triad, Quad, Penta (Fifth), Hexa (Sixth)
Time axis	From 0.05ms to 2s/div; up to 1/10 of the data update interval
Interpolation	ON: Data points are connected with straight lines OFF: Only the data points are displayed
Vertical scaling	Ratio: within the range from 0.1 to 100.0
Vertical position	From 0.00 to ±100.00
Display Items	Voltage and current of each input element(from U1 to U7, from I1 to I7) Speed and torque of the motor(speed1, torque1) Waveform computation(math1, math2)

Vector Display

Items	Specifications
Display modes	Single, dual screen split
Range of U/I scale	From 0.1 to 100
Display items	Display element 1...7, wiring systems (ΣA,ΣB,ΣC), the relationships of phase difference and amplitude (RMS) of the voltage and current fundamental harmonic for each input element in the wiring system

Bar Display

Items	Specifications
Display modes	Single, Dual, Triad
Display Items	U, I, P, S, Q, λ, Φ, ΦU, ΦI, Z, Rs, Xs, Rp, Xp; Each harmonic order

Trend Display

Items	Specification
Display modes	Single, Dual, Trisection, Quartered
Time axis	Values from 1s to 1day
Number of display channels	Up to 16
Display items	All the functions that this instrument can measure

Integration Function

Items	Specifications
Mode	The modes that can be selected include Normal, Continuous, Real Time Normal, and Real Time Continuous
Integration timer	Rang from 00: 00: 01 to 10000: 59: 59
Count over (Conditions of integration stopping)	· If the integration time reaches the maximum integration time, · If the integration value reaches maximum/minimum display integration value
Accuracy	±(power or current accuracy+ timer accuracy)
Timer accuracy	±0.02% of reading

Cursor Function

Items	Specifications
Cursor type	Cursor C1+, cursor C2x
Cursor application	Applied on the waveforms, trends, bars or FFT graphs
Display items for cursor measurement	Waveform display: Y+,Yx,ΔY,X+,Xx,ΔX Trend display: Y+,Yx,ΔY,X+,Xx,ΔX,D+,Dx Bar display: Y+,Yx,ΔY,X+Order,XxOrder FFT function display: Y+,Yx,ΔY,X+,Xx,ΔX

Frequency Measurement Function

Items	Specifications																								
Measured source	The frequencies of voltages and currents for all input elements can be measured simultaneously																								
Measurement method	Reciprocal method																								
Frequency measuring range	<table border="1"> <thead> <tr> <th>Data update rate</th> <th>Measuring range</th> </tr> </thead> <tbody> <tr> <td>10ms</td> <td>$0.25\text{kHz} \leq f \leq 1\text{MHz}$</td> </tr> <tr> <td>50 ms</td> <td>$45 \text{ Hz} \leq f \leq 1 \text{ MHz}$</td> </tr> <tr> <td>100 ms</td> <td>$25 \text{ Hz} \leq f \leq 1 \text{ MHz}$</td> </tr> <tr> <td>200 ms</td> <td>$12.5\text{Hz} \leq f \leq 500\text{kHz}$</td> </tr> <tr> <td>500 ms</td> <td>$5 \text{ Hz} \leq f \leq 200 \text{ kHz}$</td> </tr> <tr> <td>1s</td> <td>$2.5\text{Hz} \leq f \leq 100\text{kHz}$</td> </tr> <tr> <td>2s</td> <td>$1.25\text{Hz} \leq f \leq 50\text{kHz}$</td> </tr> <tr> <td>5s</td> <td>$0.5\text{Hz} \leq f \leq 20\text{kHz}$</td> </tr> <tr> <td>10 s</td> <td>$0.25\text{Hz} \leq f \leq 10\text{kHz}$</td> </tr> <tr> <td>20 s</td> <td>$0.1\text{Hz} \leq f \leq 5 \text{ kHz}$</td> </tr> <tr> <td>AUTO</td> <td>$0.1\text{Hz} \leq f \leq 500\text{kHz}$</td> </tr> </tbody> </table>	Data update rate	Measuring range	10ms	$0.25\text{kHz} \leq f \leq 1\text{MHz}$	50 ms	$45 \text{ Hz} \leq f \leq 1 \text{ MHz}$	100 ms	$25 \text{ Hz} \leq f \leq 1 \text{ MHz}$	200 ms	$12.5\text{Hz} \leq f \leq 500\text{kHz}$	500 ms	$5 \text{ Hz} \leq f \leq 200 \text{ kHz}$	1s	$2.5\text{Hz} \leq f \leq 100\text{kHz}$	2s	$1.25\text{Hz} \leq f \leq 50\text{kHz}$	5s	$0.5\text{Hz} \leq f \leq 20\text{kHz}$	10 s	$0.25\text{Hz} \leq f \leq 10\text{kHz}$	20 s	$0.1\text{Hz} \leq f \leq 5 \text{ kHz}$	AUTO	$0.1\text{Hz} \leq f \leq 500\text{kHz}$
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	The frequency measurement range is subject to the settings of Timeout and synchronization source at auto update interval.																								
Accuracy	Requirements: When the input signal level is 30% or more of the measurement range if the crest factor is set to 3(60% or more if the crest factor is set to 6). Frequency filter is ON when measuring voltage or current of 200Hz or less. $\pm 0.05\%$ of reading																								
Minimum resolution	0.0001Hz																								

The Function of Cycle-by-Cycle Measurement

Items	Specification
Measurement Items	Power: Urms,Irms(True rms voltage, True rms current) Urmn,Irmn(Rectified mean voltage or current) Umn,Imn(Rectified mean voltage or current calibrated to the rms value) Udc,Idc(Simple voltage or current average) Uac,Iac(AC current or voltage component) U+Peak,U-Peak,I+Peak,I-Peak(Peak value) CfU,CfI(Crest factor) P(Active power) Q(Reactive power) S(Apparent power) Phi(Phase difference) λ(Power factor) Pc(Corrected power) Motor: Speed 1(Rotational speed 1) Torque 1(Torque 1) Pm 1(Mechanical power 1) Synchronous source: Freq(Frequency)
Synchronous source	U1~U7,I1~I7,EXT CLK
Frequency range of the synchronous source	0.1Hz~1kHz(EXT CLK) 1Hz~1kHz(U1~U7,I1~I7)
Cycle counts	From 10 to 3000
Time out	From 0 to 3600s(when“0”is selected,it defaults to be time-out after 24 hours)

Motor Evaluation Function

Items	Specifications
Input terminal	Single-motor: torque, speed (Phase A, Phase B, Phase Z) Double-motor: torque 1/2, speed 1/2
Input resistance	Approximately 1MΩ
Input connector type	Insulated BNC
Analog Input	Fixed Range: 1V, 2V, 5V, 10V, 20V
	Auto range: ON, OFF
	Input range: $\pm 110\%$ of measuring range
	Cutoff frequency: OFF, 100Hz, 1kHz
	Sampling rate: Approximately 200 kS/s
	Resolution: 16-bit
	Synchronous source: U1~U7,I1~I7,EXT CLK,None
	Accuracy: $\pm(0.03\%$ of ready + 0.05% of range)
	Temperature coefficient: $\pm 0.03\%$ of range /°C
Pulse Input	Frequency measurement range: 2Hz-2MHz
	Maximum common mode voltage: $\pm 42 \text{ Vpeak}$
	Accuracy: $\pm [(0.05+f/500)\%$ of reading $\pm 1\text{mHz}]$
	Detection level: H level: Approximately 2V or more L level: Approximately 0.8V or less
	Pulse width: 250ns or more

Save Function

Items	Specifications
Naming files	By date, serial number, or user-defined
Format of file save	csv, ssf
Media of file storage	Internal SSD drive or external USB
Properties of internal disk	SSD,128/512GB
File conversion	Manual or Auto (save as csv file)
Types of file storage	Numeric, Waveform, Numeric + Waveform
Number of storages	Within the range from 1 to 9999999
Storage interval	0 second-10000 hour 59 minute 59 second When it is set to be 0: 0: 0, same as Data Update Interval
Max storage duration	It depends on the number of storages and the media.

Image Save Function

Items	Specifications
Naming file	File named by serial number, date, or user-defined
Format of image save	PNG,BMP,JPG

Harmonic Measurement Function

Items	Specifications			
Measured source	All installed elements			
Method	PLL synchronization method			
PLL source	U1~U7,I1~I7,EXT CLK			
Frequency range	Fundamental frequency of the PLL source is in the range of 0.1 Hz to 2.6 kHz.			
Sample rate, window width, and upper limit of the measured order	FFT: 1024 points(Data update interval 50ms, 100ms, or 200ms)			
	Fundamental frequency	Window width	Upper limit of measured order	
			U, I, P, φ, φU, φI	Other measured values
	15Hz - 40Hz	1	500	500
	40Hz - 440Hz	2	500	500
	440Hz - 1.1kHz	10	500	500
	1.1kHz - 2.6kHz	25	500	500
	2.6kHz - 4.8kHz	50	250	250
	4.8kHz - 10.5kHz	50	100	100
	10.5kHz - 20.5kHz	50	50	50
	20.5kHz - 34kHz	50	25	25
	34kHz - 99.9kHz	50	10	10
	The maximum measured order is 100 at a dataupdate rate of 50 ms			
	FFT: 10240 points(data update interval 500ms, 1 s, 2 s, 5 s, 10 s, 20 s)			
	Fundamental frequency	Window width	Upper limit of measured order	
			U, I, P, φ, φU, φI	Other measured value
	0.5Hz - 40Hz	1	500	500
	40Hz - 440Hz	2	500	500
	440Hz - 1.1kHz	10	500	500
	1.1kHz - 2.6kHz	25	300	300
2.6kHz - 4.8kHz	50	200	200	
4.8kHz - 9kHz	50	100	100	
9kHz - 20kHz	50	50	50	
20kHz - 50kHz	50	20	20	
50kHz - 99.9kHz	50	10	10	
Accuracy: ±(...% of reading+ ...% of range)	Add the following accuracy to the accuracy at normal measurement. When the line filter is off: View770-40A13/ View770-05A12:			
	Frequency	Voltage/Current	Active Power	
	0.5Hz ≤ f < 30Hz	0.01 + 0.015	0.02 + 0.04	
	30Hz ≤ f < 45Hz	0.01 + 0.015	0.02 + 0.04	
	45Hz ≤ f < 66Hz	0.01 + 0.015	0.02 + 0.03	
	66Hz ≤ f < 1kHz	0.01 + 0.015	0.02 + 0.04	
	1kHz ≤ f < 10kHz	0.01 + 0.015	0.02 + 0.04	
	10kHz ≤ f < 50kHz	0.05 + 0.05	0.1 + 0.15	

Accuracy: ±(...% of reading+ ...% of range)	50kHz ≤ f < 100kHz	0.1 + 0.1	0.2 + 0.2
	100kHz ≤ f < 500kHz	0.1 + 0.25	0.1 + 0.8
	500kHz ≤ f ≤ 1MHz	0.35 + 1.5	0.5 + 3
	View770-05A35/ View770 7-50A35/View7707-05A35V/View7707-50A35V:		
	Frequency	Voltage/Current	Active Power
	0.5Hz ≤ f < 30Hz	0.01 + 0.02	0.02 + 0.05
	30Hz ≤ f < 45Hz	0.01 + 0.02	0.02 + 0.05
	45Hz ≤ f < 66Hz	0.01 + 0.02	0.02 + 0.05
	66Hz ≤ f < 1kHz	0.01 + 0.02	0.02 + 0.05
	1kHz ≤ f < 10kHz	0.01 + 0.02	0.02 + 0.05
10kHz ≤ f < 50kHz	0.05 + 0.08	0.1 + 0.2	
50kHz ≤ f < 100kHz	0.1 + 0.15	0.2 + 0.3	
100kHz ≤ f < 500kHz	0.1 + 0.3	0.1 + 1	
500kHz ≤ f ≤ 1MHz	0.4 + 1.5	0.5 + 3.5	

Waveform Computation Function

Items	Specifications
User-defined expressions	Math1,Math2
Computed waveform	U1...U7, I1...I7, speed, torque
Operators	Four arithmetic operations:(+),(-),(*),(/) Absolute value(ABS) Square(SQR) Square root(SQRT) Natural logarithm(LN) Common logarithm(LOG10) Exponent(EXP) Negative (NEG) Average(AVG2, AVG 4, AVG 8, AVG 16, AVG 32, AVG 64)
Constants	K1~K8

The Function of Raw Data Save

Items	Specifications
Raw data storage	Sample the raw data at high speed
Storage interval	Update rate at 10ms: storage interval is 100ms Update rate > 10ms: storage interval is 1s
Data storage capacity	128GB/512GB
File format	MAT file
Sampling rate	2MS/s

Printer Function

Items	Specifications
Printer mode	Manual, Auto
Auto printer mode	Timer, Integration Synchronous, Event
Connections to printer	LAN,USB

External Hardware Interfaces

Items	Specifications
External Clock Input	BNC connector; TTL level; Square waveform with a duty ratio of 50%.
Master-slave Synchronization Port	BNC connector; TTL level
Type A USB Interface	Conforms to USB Rev.2.0; 5 V; 500 mA (Power supply)

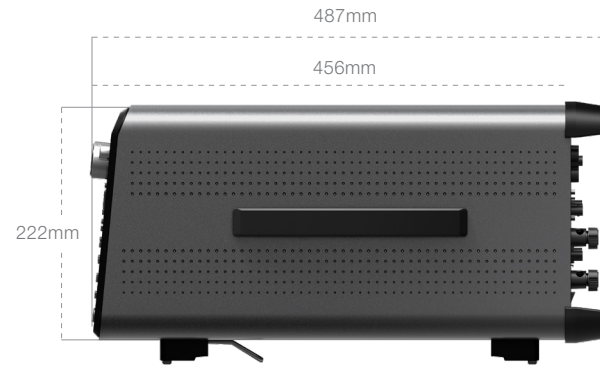
Communication Interface

Items	Specifications
Type B USB Interface	Conforms to the USB Rev.2.0; USBTMC-USB488(USB Test and Measurement Class Ver.1.0)
Ethernet Interface	RJ-45 connector; Conforms to IEEE802.3; Ethernet 1000BASE-T, 100BASE-TX, 10BASE-T
RS-232 Interface	9-pin, D-Sub (plug); Conforms to EIA-574, standard of 9-pin EIA-232(RS-232)
GP-IB Interface	Conforms to IEEE 488-1978 (JIS C 1901-1987), and IEEE St'd 488.2-1992

General Specifications

Items	Specifications
Dimensions	487mm*457mm*249mm
Rated power supply voltage	From 100 to 240V AC
Allowable power supply voltage fluctuation range	From 85 to 264V AC
Rated power supply frequency	50/60Hz
Allowable power supply frequency fluctuation range	From 48 to 63Hz
Maximum power consumption	300VA(When using 7 ×15W Current Sensor Power rating)
Warm-up time	Approximately 30 minutes
Operation environment	Temperature: 5°C ~ 40°C Humidity: from 20% to 80%RH(no condensation)
Operating altitude	2000m or less
Applicable environment	Indoors
Storage environment	Temperature: -25°C ~ 60°C Humidity: from 20% to 80%RH(no condensation)
Weight	About 19kg

Dimensions of the Instrument






ACCESSORIES

VIEW Series Current Sensor

Item \ Model	VIEW110	VIEW120	VIEW130	VIEW140
DC	0-60A	0-200A	0-600A	0-1000A
AC	60Apeak	200Apeak	600Apeak	1000Apeak
Accuracy	$\pm(0.01\% \text{ of rdg} + 10\mu\text{A})$	$\pm(0.008\% \text{ of rdg} + 10\mu\text{A})$	$\pm(0.008\% \text{ of rdg} + 10\mu\text{A})$	$\pm(0.008\% \text{ of rdg} + 10\mu\text{A})$
Measuring bandwidth	DC-800kHz	DC-500kHz	DC-300kHz	DC-300kHz
Ratio K_N	1: 600	1: 1000	1: 1500	1: 2000
Resistance R_m	0--25 Ω	0--25 Ω	0--12 Ω	0 -- 3 Ω
Aperture	\varnothing 28mm	\varnothing 28mm	\varnothing 30.9mm	\varnothing 30.9mm
Connector	D-Sub 9 pin	D-Sub 9 pin	D-Sub 9 pin	D-Sub 9 pin
Supply	\pm 12V~ \pm 15V	\pm 12V~ \pm 15V	\pm 15V~ \pm 24V	\pm 15V~ \pm 24V

Boxes

Name	Single-phase Junction Box	Three-phase Junction Box	Accessories for EXT Sensor Connection
Model	PG01A	PG02A	PG03A
Sample			
Usage	It is used for single phase circuit connection to measure power parameters conveniently via power analyzer	It is used for three- phase circuit connection to measure power parameters conveniently via power analyzer (The length of the line is about 2m)	It is used for connecting with external current sensor (/P option necessary)

Connectors and Cables

Name	Model	Sample	Specification
Fork terminal adapter	PAC-1001		Used when attaching banana plug to binding post. Specification: 1000V, CAT II, 20A Color: red, black
BNC Conversion adapter	PAC-1002		Connector: Conversion between safety BNC and banana jack Specification: 600V, CAT III
Safety adapter	PAC-1003		Connector: Safety connector; Solder can be used for tightening the test cables. Specification: 600V, CAT II, 20A Color: red, black
Safety adapter	PAC-1004		Connector: safety connector, spring-hold type Specification: 600V, CAT II, 10A Color: red, black
Safety clamp	PAC-1005		Connector: hook shape connector Specification: 1000V, CAT III, 4A Color: red, black
Large alligator adapter	PAC-1006		Connector: safety connector Specification: 600V, CAT IV, 19A Color: red, black
Small alligator adapter	PAC-1007		Connector: safety connector Specification: 300V, CAT II, 15A Color: red, black
Measurement lead	PAL-1001		Connector: safety connector Specification: 1000V, CAT II, 32A , 600V, CAT III Color: red, black
Safety BNC cable	PAL-1002		Connector: BNC connector Specification: 1000V, CAT II, 600V, CATIII Color: black
External sensor Cable	PAL-1003		Connector: one BNC safety connector Specification: 300V, CAT II, 2A Color: black

Models and Codes

Name	Model	Descriptions
Instrument	View770	Power analyze pro(Includes host power line)
Instrument option	/HF	IEC harmonic, flicker
	/WA	Waveform computation; X-Y graph display
	/MS	512GB SSD
	/IG	GPIB, Replace RS-232
Input Modules (Each module has 1 pair of PAL-1001 test lines as standard configuration)	View770-05A12	5A, 1000V, 0.01%+0.02%
	View770-40A13	40A, 1000V, 0.01%+0.03%
	View770-05A35	5A, 1000V, 0.03%+0.05%
	View770-50A35	50A, 1000V, 0.03%+0.05%
	View770-05A35V	5A, 1500V, 0.03%+0.05%
	View770-50A35V	50A, 1500V, 0.03%+0.05%
	View770-MA2	Motor Function Option Board
Input Module(option)	/P	Power supply for Current sensor (PG03A included)
Rack mounting (option)	PAA1001	Used when the instrument mounted on the support

4TECT

ООО «4TECT»

Телефон: +7 (499) 685-4444

info@4test.ru

www.4test.ru

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