

VIEW 710

BELIEVE YOUR EYES

DIGITAL POWER METER, POWERFUL MEASURING INSTRUMENT

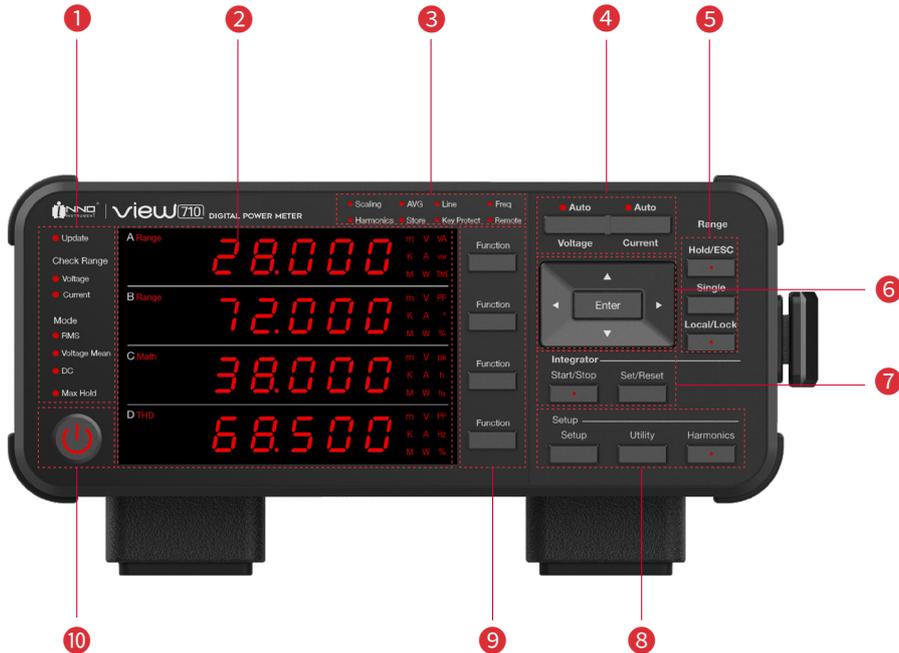
- Max Measuring Accuracy: $\pm (0.1\% \text{ of reading} + 0.05\% \text{ of range})$
- Bandwidth: DC, from 0.1Hz to 100kHz
- Voltage, current wide-range: Direct input (from 6 to 600V; from 5mA to 20A; from 1 to 50A)
- Up to 100 harmonic orders



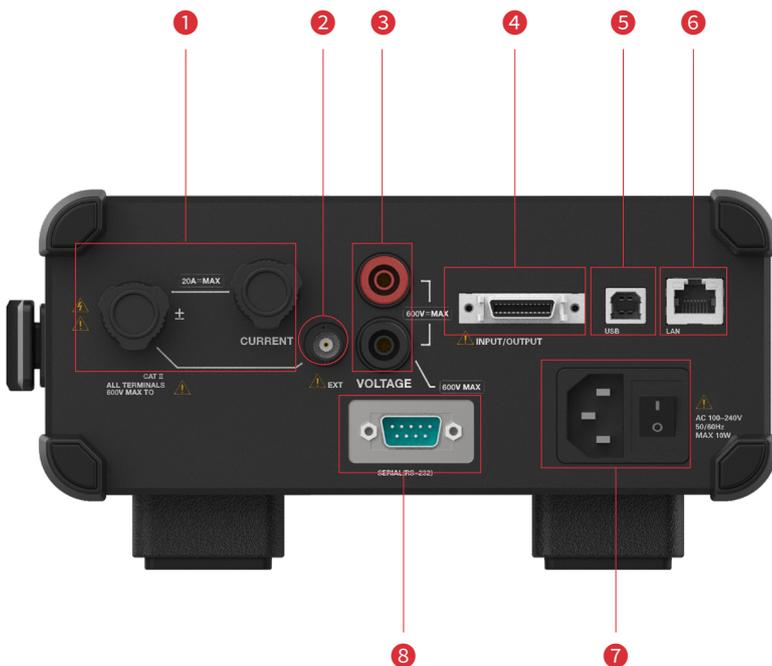
DESCRIPTION

The VIEW710 Digital Power Meter is a powerful instrument for measuring home appliances, OA products (office automation), electrical equipment and devices of process control automation. It is widely used in the areas such as power industry, office or home appliances testing and evaluation, battery drive test and motor efficiency test. This instrument is also equipped with the functions such as recording real time waveform and the waveform data and analyzing the harmonic.

PRODUCT OVERVIEW



- 1 Status display I
- 2 Data display
- 3 Indicators II
- 4 Range setting
- 5 Other function settings
- 6 Navigation keys
- 7 Integration setup keys
- 8 Setup, utility, Harmonic keys
- 9 Functions selection
- 10 Power switch



- 1 Current input terminal
- 2 EXT current sensor input terminal
- 3 Voltage input terminal
- 4 D/A connector
- 5 Type B USB connector
- 6 Ethernet connector
- 7 Power switch and power cord connector
- 8 GP-IB / RS-232 connector

FUNCTIONS AND ADVANTAGES

Wide-range for Current Measurement

Either large current or low current, ranging from micro-ampere to several tens of amperes can be measured, as well as the current changing greatly in the conditions such as stand-by, booting the digital power meter and normal working. One piece of this device with module required can perform the measurement.

Simultaneously Measuring all Parameters

This digital power meter can measure all DC and AC parameters. It can also measure harmonics and perform integration simultaneously without changing the measurement mode.

Fast Display and Data Update Rate

The fast display and 50ms maximum data update rate of the This digital power meter can offer users a shorter test time in their testing procedures.

Peak Hold Function

The maximum values of RMS/MEAN/DC/PEAK, voltage & current, active power, reactive power and apparent power can be held.

Configuration Parameters Saving and Loading

This instrument can save the configuration parameters which can be fast loaded when in similar measurement conditions next time, reducing the time spent by users for parameter access next time.

D/A Output for Measurement Recording

The D/A option can be used to output the Voltage, Current, Power and other measured data and record them in the data loggers or other devices ($\pm 5VDC$ outputs).

Comparator Function

The measured value is compared with the set value. According to the comparison result, output value is +5, 0 or -5v.

Current Sensor Input

The instrument with expanded range of current measurement is equipped with current clamps or current sensors of voltage output model.

Computation Function

Multiple computations are available on this instrument, including performing computations such as crest factor, four arithmetic operations and average active power.

Data Storage

The measured data can be stored, and internal free memory space is available up to 4GB. And the stored data can be accessed to and analyzed via computer or PC connected instead of being displayed and loaded in the screen of this digital power meter.

INNO PA Viewer Software

The INNO PA Viewer is an software installed in PC available to remotely control the digital power meter connected via a communication interface (network connector or USB connector), and display the results analyzed by the digital power meter in the form of numeric, waveform, trend, vector, and bar graph.



APPLICATIONS

This digital power meter is easy to use, economy and accurate in measurement, widely used in production, testing, evaluation and research & development.

Home appliances and Office equipment

Recently, there are more concerns about energy efficiency, such as reducing the power consumption for the civil electrical appliances (such as air conditioner, washing machine, induction cooker, water heater). The digital power meter can be used to test the power produced by home appliances. One piece of the digital power meter of this series can effectively measure the voltage, current, power, frequency, power factor and THD (Harmonic distortion).



Industrial equipment and Transportation

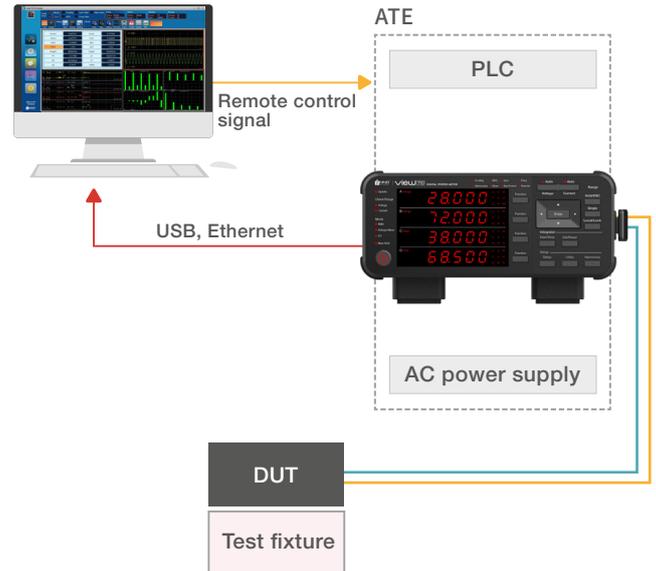
Automotive - Battery or Driven Device Evaluation

This digital power meter can directly measure the high current up to 50A. This provides an economical and accurate method for testing DC driven devices in vehicles without any extra sensors.



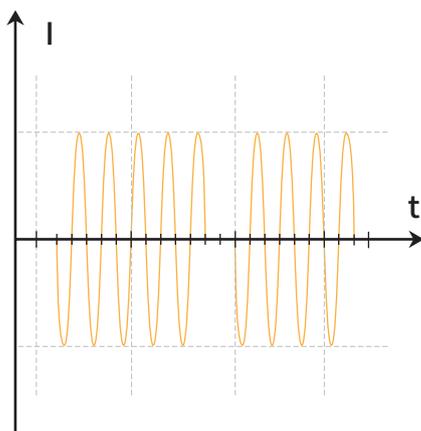
Testing in Production Line

This instrument is so compact in structure to be easily mounted on the shelf for testing during production. Testing platform can be economically set up at a favorable price. The parameters such as voltage, current, frequency, power factor, and harmonics can be measured by this digital power meter, so as to improve testing efficiency.

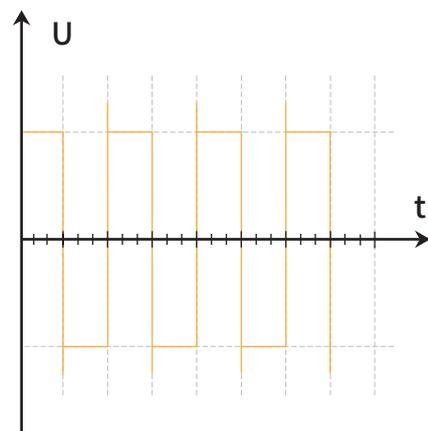


Evaluation Testing of Special Waveform Driven Devices and Distorted Waveforms (including DC Component)

The digital power meter of this series has a broad frequency capability of DC (from 0.1Hz to 100 kHz). It can measure the RMS value of distorted waveforms like square waveforms or special waveform driven devices. The average active power measurement function gives accurate power consumption data for fluctuating power devices such as burst waveform operated devices. Therefore the users can perform accurate distorted waveform measurements without any need to setting special modes.



Inter-harmonics



Square Wave

TECHNICAL SPECIFICATIONS

Input

Item	Specification
Input terminal type	Voltage(U): Plug-in terminal (Safety terminal) Current(A): binding post External current sensor input: Insulated BNC connector
Input format	Voltage: Floating input, resistive potential method Current: Floating input, Shunt input method
Measurement range	Voltage 6V,10V,15V,30V,60V,100V,150V,300V,600V(CF3) 3V,5V,7.5V,15V,30V,50V,75V,150V,300V(CF6)
	Current · Direct input View710-20A105: 5mA,10mA,20mA,50mA,100mA,200mA,500mA,1A,2A,5A,10A,20A(CF3) 2.5mA,5mA,10mA,25mA,50mA,100mA,250mA,500mA,1A,2.5A,5A,10A(CF6) View710-50A105: 1A,2A,5A,10A,20A,50A(CF3) 500mA,1A,2.5A,5A,10A,25A(CF6) · External current sensor input EX1: 2.5V,5V,10V(CF3) 1.25V,2.5V,5V(CF6) EX2: 50mV,100mV,200mV,500mA,1V,2V(CF3) 25mV,50mV,100mV,250mA,500mV,1V(CF6)
Input resistance	Voltage Input resistance:Approximately 2M Ω ;Input capacitance:Approximately 13pF(paralleled with resistance)
	Current · Direct input View710-20A105: When 5mA~200mA,Approximately0.6 Ω ; Approximately 0.1 μ H(resistance in series) When 0.5A~20A,Approximately 8m Ω ; Approximately 0.1 μ H(resistance in series) View710-50A105: When 1A~50A,Approximately5m Ω ; Approximately 0.1 μ H(resistance in series) protection; EX1: Input resistance:Approximately 100K Ω EX2: Input resistance:Approximately 20k Ω
Continuous maximum allowable input	Voltage Peak voltage of 1.5kV or RMS of 1kV, whichever is lower
	Current · Direct input View710-20A105: When 5mA~200mA,with 2.5A continuous overload protection; When 0.5A~20A,with 30A continuous overload protection; View710-50A105: 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

A/D converter	Simultaneous voltage and current input conversion Resolution: 16bit Conversion speed (sampling period): Approximately 10 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 Ipk 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 Ipk of the input signal is less than 300% of the lower range(600% or less for CF6)

Frequency Measurement Function

Item	Specification	
Measured source	Voltage and current frequencies applied to one selected input element can be measured	
Measured	Reciprocal method	
Frequency measuring range	Data Update Interval	Measurement Range
	50ms	45Hz \leq f \leq 100kHz
	0.1s	25Hz \leq f \leq 100kHz
	0.25s	10Hz \leq f \leq 100kHz
	0.5s	5Hz \leq f \leq 100kHz
	1s	2Hz \leq f \leq 100kHz
	2s	1Hz \leq f \leq 100kHz
	5s	0.5Hz \leq f \leq 100kHz
	10s	0.2Hz \leq f \leq 100kHz
	20s	0.1Hz \leq f \leq 100kHz
Auto	0.1Hz \leq f \leq 100kHz	
Frequency accuracy	Requirements: When the input signal level is 30% or more of the measurement range. (60% or more if the crest factor is set to 6) Frequency filter is ON when measuring voltage or current of 200Hz or less Accuracy: \pm (0.06% of reading)	
Minimum frequency resolution	0.0001Hz	

Measurement Accuracy

Conditions: Temperature: 23±5°C; Humidity: 30 to 75%RH; Input waveform: Sine wave; Crest factor: 3; Common-mode voltage: 0V; Scaling function: OFF; Number of displayed digits: 5 digits; Frequency filter: Turn ON to measure voltage or current of 200 Hz or less; After 30 minutes of warm-up time has passed; Zero setting before wiring; Frequency f with unit kHz; within half a year after calibrated.

Format: ± (% of reading + % of range)

Frequency range	Voltage	Current	Active Power
DC	0.1+0.05	0.1+0.05	0.1+0.05
0.1Hz≤f<45Hz	0.1+0.2	0.1+0.2	0.3+0.2
45Hz≤f≤66Hz	0.1+0.05	0.1+0.05	0.1+0.05
66Hz<f≤1kHz	0.1+0.2	0.1+0.2	0.2+0.2
1kHz<f≤10kHz	0.07*f+0.3	0.07*f+0.3	0.09*f+0.3
10kHz<f≤100kHz	0.05*f+0.5	0.05*f+0.5	0.08*f+0.5

Averaging	Exponential average: Select an attenuation constant from the values of 8, 16, 32, and 64 Linear average: Select the number of averages from the values of 8, 16, 32, and 64 Harmonic measurement: Only exponential averaging is available
Data update interval	Select 50ms, 100ms, 250ms, 500ms, 1s, 2s, 5s, 10s, 20s or Auto
Peak measurement	Measure the peak (max/min) value of voltage, current or power from the instantaneous voltage, instantaneous current or instantaneous power that is sampled
Zero-level compensation	Remove the internal offset

Measurement Conditions

Item	Specification
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)
Measurement mode	Select RMS(the true RMS value of voltage and current), DC (simple average of voltage and current), MEAN (The rectified mean value calibrated to the RMS value of the voltage)
Measurement synchronization	Select voltage, current or None
Scaling	Set the current sensor transformation ratio, VT ratio, CT ratio, and power factor when applying the external current sensor, VT, or CT output to the instrument Selectable range: 0.001 to 9999
Line Filter	Select OFF or ON(cutoff frequency of 500Hz)
Frequency Filter	Select OFF or ON(cutoff frequency of 500Hz)

Display

Item	Specification
Display Type	7-segment LED
Displayed Items	Simultaneously display 4 items
Unit Symbols	m, k, M, V, A, W, VA, var, °, Hz, h±, TIME, %
Response Time	At maximum, 2 times the data update rate The time it takes to reach the accuracy of the final value when the displayed value changed from 0 to 100% or 100 to 0% of the rated range
Hold	Hold the displayed value
Single update	Update the displayed value once each time the SINGLE key is pressed during Hold

Harmonic Measurement

Item	Specification			
Frequency Range	Fundamental frequency of the PLL source is in the range of 8 Hz to 1.5 kHz PLL source: voltage and current of each input element			
Sample rate, window width, and upper limit of harmonic analysis	FFT Data Length 1024, Data Update Interval 50ms, 100ms, 250ms			
	Fundamental Frequency	Window Width	Upper Limit of Harmonic Analysis	
	20Hz-40Hz	1	100	
	40Hz-440Hz	2	100	
	440Hz-1kHz	10	50	
	1kHz-1.5kHz	16	40	
	FFT Data Length 10240, Data Update Interval 500ms, 1s, 2s, 5s, 10s, 20s			
	Fundamental Frequency	Window Width	Upper Limit of Harmonic Analysis	
	8Hz-40Hz	1	100	
	40Hz-440Hz	2	100	
440Hz-1kHz	10	50		
1kHz-1.5kHz	16	40		
Accuracy: ±(...% of reading+ ...% of range)	Add the following accuracy to the accuracy at normal measurement When the line filter is off:			
	Frequency	Voltage	Current	Active Power
	8Hz≤f<45Hz	0.15+0.1	0.15+0.1	0.35+0.2
	45Hz≤f≤440Hz	0.15+0.1	0.15+0.1	0.25+0.2
	440Hz<f≤1kHz	0.2+0.1	0.2+0.1	0.3+0.2
	1kHz<f≤1.5kHz	0.5+0.3	0.5+0.3	1.4+0.3

Hardware Interface

Item	Specification
D/A Terminal	±5V; approximately ±7.5V(maximum); TTL level

D/A Connector

Item	Specification
Output Voltage	±5V full scale(approximately ±7.5V maximum) against each rated values
Number of Output Channels	4 outputs
Output Items	U, I, P, S, Q, λ, Ø, fu, fl, Upk, lpk, WP, WP±, q, q±, MATH
Accuracy	±(accuracy of each measurement item+0.2% of full scale)(FS=5V)
Minimum load	100kΩ
Update Interval	Same as the data update interval; When update interval is set to AUTO, data update interval equals to signal period(more than 100ms)
Temperature coefficient	±0.05%/°C of full scale
D/A conversion resolution	16bit

Integration

Item	Specification
Mode	Manual, Normal, Continuous(Repeat)
Timer	Automatically stop integration by setting a timer Selectable range: 00:00:00 ~ 10000:0:0 (0 Hour 00Minute 00 Second: Manual mode for integration)
Count over	If the integration time reaches the maximum integration time If the integration value reaches maximum/minimum display integration value
Accuracy	Fix range: ±(Power accuracy (or current accuracy)+0.1% of reading)(fixed range) Auto range: The measurement will not be performed during range change The first measured value will be added after range changed and during the period when measurement is not performed
Timer accuracy	±0.02%

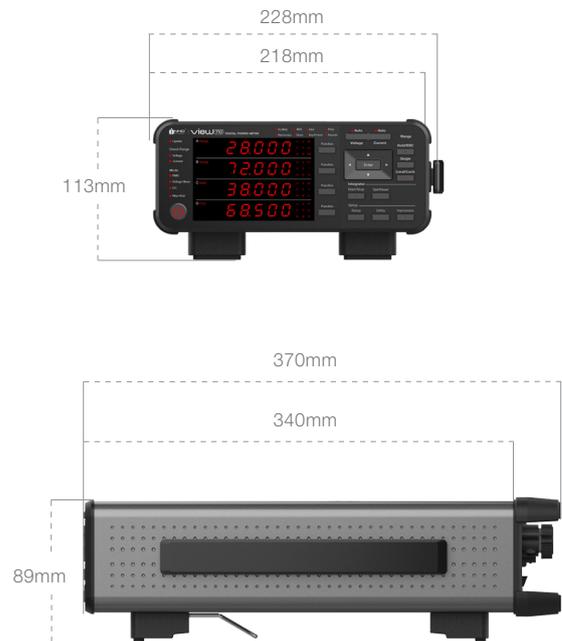
General Specification

Items	Specifications
External dimensions	228mm*370mm*113mm
Rated supply voltage	From 100 to 240 VAC
Permitted supply range voltage	From 90 to 264 VAC
Rated supply frequency	50/60Hz
Permitted supply voltage frequency range	From 48 to 63 Hz
Max. power consumption	30VA
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	Approximately 4kg
Battery backup	Setup parameters are backed up with a lithium battery.

Communication Interfaces

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; 100BASE-TX, 10BASE-T
GP-IB Interface	Confirms to IEEE Standard 488-1978 (JIS C 1901-1987); Confirms to the IEEE Standard 488.2-1992
RS-232 Interface	9-pin, D-Sub (plug); Conforms to EIA-574, standard of 9-pin EIA-232(RS-232)

Measurement Conditions



ACCESSORIES

Current Sensor of SHT Series

Model Item	VIEW110	VIEW120	VIEW130	VIEW140
DC	0-60A	0-200A	0-600A	0-1000A
AC	60Apeak	200Apeak	600Apeak	1000Apeak
Accuracy	$\pm(0.05\% \text{ of rdg} + 15\mu\text{A})$			
Measuring bandwidth	DC-500kHz	DC-300kHz	DC-200kHz	DC-150kHz
Ratio K_N	1: 600	1: 1000	1: 1500	1: 2000
Resistance R_m	0--25 Ω	0--25 Ω	0--12 Ω	0 -- 4 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	$\pm 12\text{V} \sim \pm 15\text{V}$	$\pm 12\text{V} \sim \pm 15\text{V}$	$\pm 15\text{V} \sim \pm 24\text{V}$	$\pm 15\text{V} \sim \pm 24\text{V}$

Boxes

Name	Single-phase Junction Box
Model	PG01A
Sample	
Usage	It is used for single phase circuit connection to measure power parameters conveniently via digital power meter

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 (with input module)	View710 (with 20A105)	Digital power meter with input module (20A, 600V, 0.1%+0.05%)
	View710 (with 50A105)	Digital power meter with input module (50A, 600V, 0.1%+0.05%)
Function Module (Option)	/DA4	D/A output
	/EX1	External current sensor 2.5V-10V (or /EX2)
	/EX2	External current sensor 50mV-2V (or /EX1)
	/HA	Harmonic measurement
Communication Interface (Option)	/IG	GP-IB, replace RS-232
Accessory mounted on the support (Option)	PAA1004	Used when the instrument mounted on the support
	PAA2004	Used when the instrument mounted on the support(two instruments)

! The Information on this catalog is subject to change without prior notice.



You dream,
we DESIGN

Copyright © 2021 INNO Instrument Inc. All rights reserved.
E-22F, 30, Songdomirae-ro, Yeonsu-gu, Incheon 21990,
Republic of Korea
tel 82-32-837-5600 fax 82-32-837-5601

Printed in Korea

Homepage
www.innoinstrument.com

Please visit us on Facebook
www.facebook.com/innoinstrument