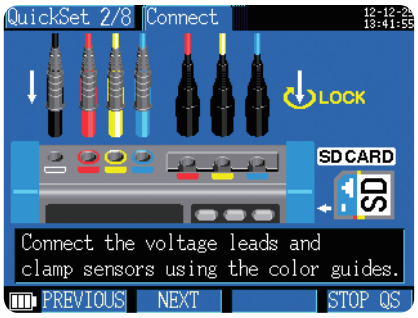
HIOKI

PW3360/20
PW3360/21

Analizzatori di parametri energetici

Audit energetici per ottimizzare l'efficienza di impianti ed utenze industriali.

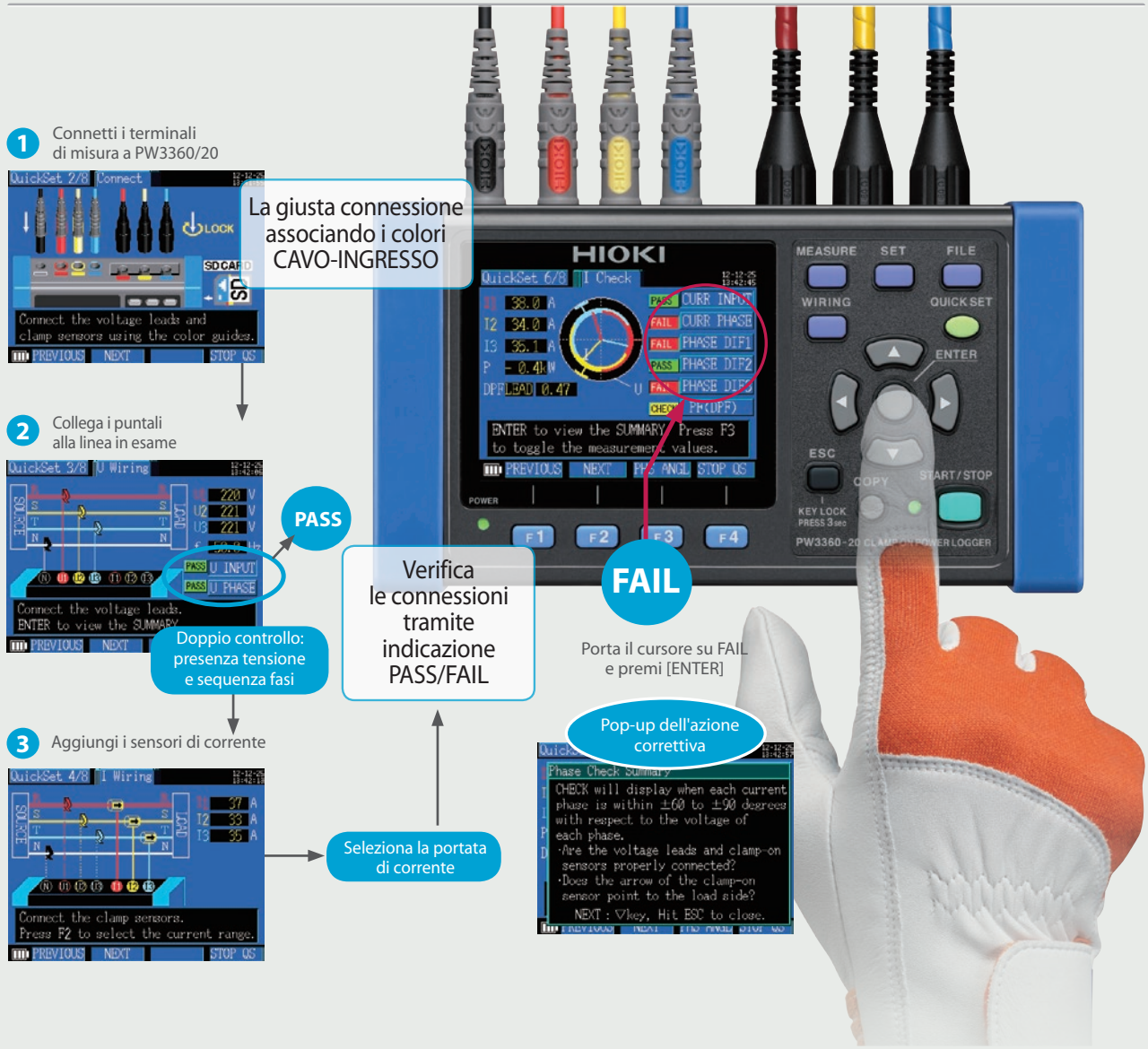
Configurazione istantanea tramite QUICK SET



- **Audit energetici per ottimizzare l'efficienza di impianti ed utenze industriali**
- **Verifica della curva di carico delle linee elettriche**
- **Salvataggio dati su SD card estraibile, con capacità di oltre 1 anno di registrazione**
- **Misura in Bassa Tensione su qualsiasi circuito di misura (monofase a 2/3 fili, trifase a 3/4 fili, ARON)**
- **Campo di misura da 90V a 780V, per tensioni di picco fino a 1400V**
- **Utilizzabile per la verifica dei contatori di energia**

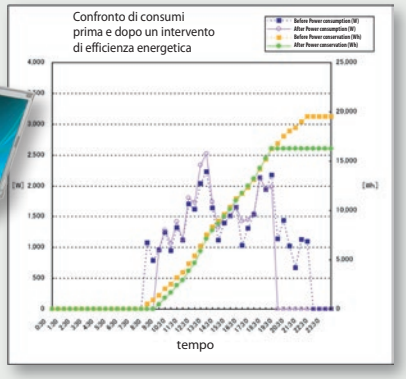
Configurazione Quick Set

Esempio di circuito trifase 4 fili (3P4W) -> semplice come respirare



Crea il tuo grafico per accertare con chiarezza i consumi elettrici

Registra tutti i parametri elettrici con la cadenza temporale che preferisci, poi trasferisci i dati su PC



Utilizza un foglio di calcolo per elaborare grafici di confronto prima-dopo

Adatto per ogni condizione e luogo di misura

...dove non c'è alimentazione di rete La batteria ricaricabile esterna PW9002 permette 8 ore di funzionamento continuo.
L'adattatore PW9003 consente di prelevare alimentazione dai terminali di misura.

Batteria PW9002

...condizioni ambientali estreme È idoneo a temperature di lavoro da -10° a +55°C. Tramite batteria da 0° a +40°C e fino a +50°C in comunicazione LAN.

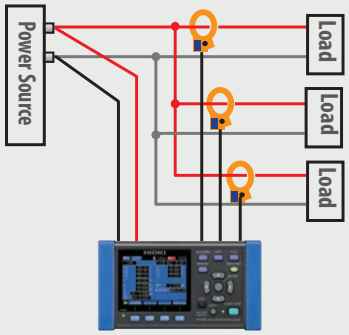
... spazi ristretti

Cavi di tensione con connessione a magnete per collegamento a morsetti di fissaggio
I cavi per la misura di tensione PU/MAG150 permettono una connessione ferma e sicura anche quando i morsetti non sono afferrabili dai terminali a coccodrillo.

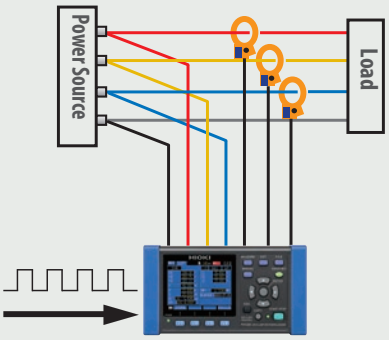
Generalmente compatibili con viti M6

Diagnosi energetiche, controllo delle dispersioni, efficienza elettrica, analisi armonica ... l'importanza delle prestazioni!

Misure in Simultanea
Misura simultanea su 3 circuiti monofase a 2 fili, con neutro comune



Ingresso conta impulsi La funzione di conta impulsi può essere utilizzata per registrare in simultanea dati di potenza consumata e volumi di energia totalizzata.
Si possono quindi esaminare i costi di produzione nonché testare i contatori di energia



ANALISI DELLE DISPERSIONI

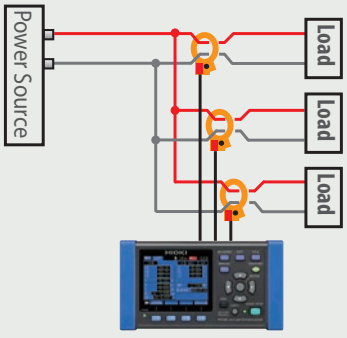
Registratore di dispersioni a 3 canali
Tramite i sensori per correnti differenziali, PW3360/20 si trasforma in un valido aiuto per l'identificazione delle dispersioni in impianto

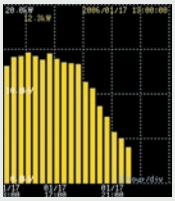
Sensori di correnti differenziali opzionali

9675 Ø 30mm

9657-10 Ø 40mm

La soluzione ideale per rilevare dispersioni intermittenti o discontinue: elaborazione di calcolo ogni 200msec (selezionare la registrazione dei valori MAX-MIN-MED per ogni intervallo temporale)





(Grafico domanda di potenza)

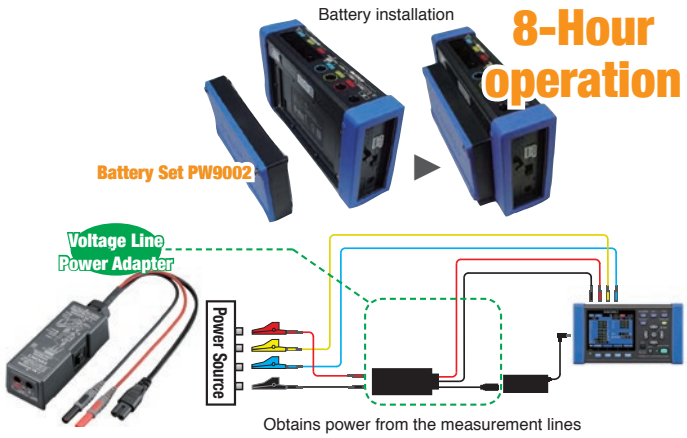
PUNTO DI FORZA

Grafico della domanda e del trend di potenza
La visualizzazione a display dei grafici ad istogramma della domanda di potenza e del trend di energia permette l'indagine in campo delle fluttuazioni di consumo e la diagnosi post efficientamento

Adatto per ogni condizione e luogo di misura

La massima temperatura operativa di lavoro è compresa **tra -10°C e +50°C**.
Utilizzando la batteria opzionale PW9002, il campo di lavoro va da 0°C a +40°C.

Tramite l'accessorio opzionale PW9003 è possibile prelevare la tensione di alimentazione direttamente dai terminali di misura. Tensione nominale fino a 240Vca, temperatura di lavoro da -10°C a +50°C.



PW3360/21: analisi componenti armoniche

Misura e registra le singole componenti armoniche di tensione e corrente fino al 40° ordine, su sistemi a 50/60Hz.

I valori massimi, minimi e medi sono salvati su file in formato binario HRM, in funzione della cadenza di registrazione configurata.

Visualizza il valore RMS, l'ampiezza e l'angolo di fase di ogni componente armonica, in formato istogramma, vettoriale e numerico-tabellare

Istogramma delle armoniche

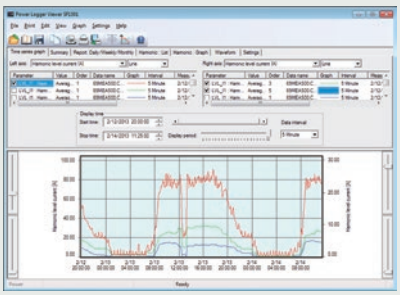
Diagramma vettoriale delle Potenze

SF1001 permette di analizzare i file armonici HRM

Esempio di visualizzazione su SF1001

Trend storico delle armoniche

L'esempio mostra un trend storico delle armoniche di corrente di ordine: fondamentale, terza e quinta armonica.



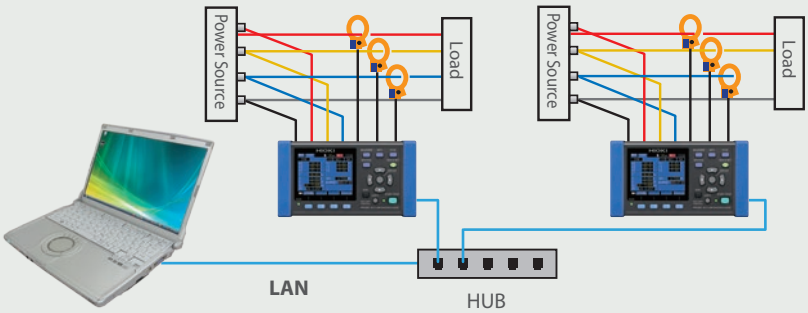
Versioni disponibili (dettaglio accessori alle pagine seguenti)

CODICE	STRUMENTO BASE	ACCESSORI OPZIONALI INCLUSI
PW3360/20	PW3360/20	-
PW3360/20/K61	PW3360/20	Nr. 03 sensori di corrente 9661
PW3360/20/K67	PW3360/20	Nr. 03 sensori di corrente CT9667/03
PW3360/21	PW3360/21	-
PW3360/21/K60S	PW3360/21	Nr. 03 sensori di corrente 9660, software SF1001, SD card Z4001
PW3360/21/K61	PW3360/21	Nr. 03 sensori di corrente 9661
PW3360/21/K61S	PW3360/21	Nr. 03 sensori di corrente 9661, software SF1001, SD card Z4001
PW3360/21/K67	PW3360/21	Nr. 03 sensori di corrente CT9667/03

Gestione delle misure tramite connessione remota ed elaborazione dati

Funzione HTTP server

Monitor Remoto Collega PW3360/2x a PC con un cavo LAN; tramite web-browser (Internet Explorer, Chrome, Firefox, …) avrai una interfaccia di gestione remota totale dello strumento.

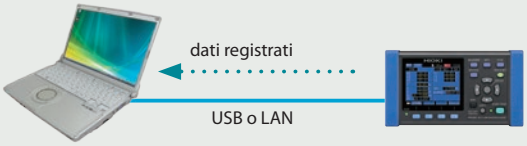


I file salvati nella memoria interna o nella SD card sono accessibili tramite connessione LAN o USB, scaricabili tramite applicativo software in dotazione

Software

APPLICATIVO SETUP AND DOWNLOAD

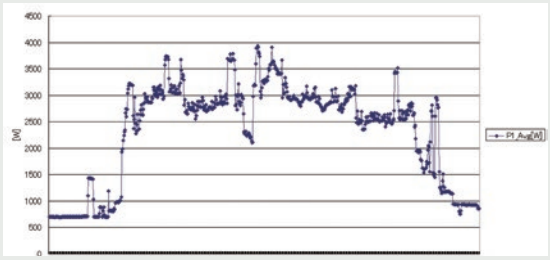
Tramite LAN o USB puoi scaricare i file dalla SD Card o dalla memoria interna di PW3360/2x e gestirne le impostazioni di configurazione.



Elaborazione a PC

APPLICATIVO EXCEL GRAPH CREATOR

Installa PW3360/2x **Excel Graph Creator** per trasformare i file dati CSV in grafici di Excel.



Software di analisi SF1001 (opzionale)

Il software permette elaborazioni grafiche complesse, nonché aggregazione di dati da registrazioni separate e simultanee. Il software associa misure differenti tra loro e le presenta graficamente sotto lo stesso asse dei tempi; in questo modo le analisi comparative sono "un gioco da ragazzi".

Misura e registrazione simultanea di 3 carichi separati

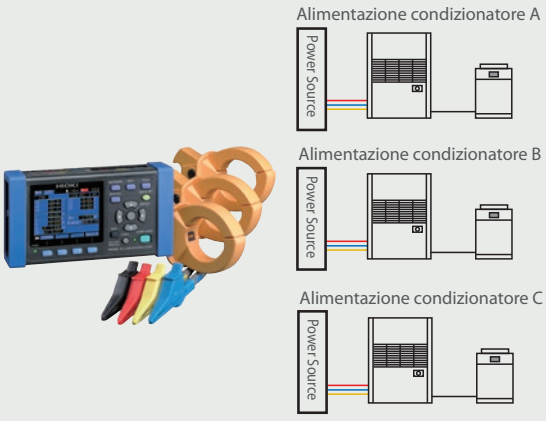


Grafico di potenza con barre sovrapposte L'opzione grafica [Sovrapponi] visualizza i dati di potenza sovrapposti, così da avere una comparazione immediata dei consumi dei diversi carichi monitorati simultaneamente

Specifications

Input specifications

Measurement line type	Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire
Measurement line Frequency	50/ 60 Hz
Number of input channels	Voltage: 3 channels U1 to U3 Current: 3 channels I1 to I3
Voltage range	600 V AC
	Total display area: 5V to 1000 V (less than 5 V displays as 0 V) When RMS voltage is zero, zero is displayed for all orders of harmonic voltage.
	Effective measurement range: 90 V to 780 V, peak: ±1400V
	[OVER] indicates over-range warning
Current ranges	**Load current** CLAMP ON SENSOR 9694 : 500m/1/5/10/50 A CLAMP ON SENSOR 9660 : 5/10/50/100 A CLAMP ON SENSOR 9661 : 5/10/50/100/500 A CLAMP ON SENSOR 9669 : 100/200/1k A AC FLEXIBLE CURRENT SENSOR CT9667-01 : 50/100 /500/1k/5k A AC FLEXIBLE CURRENT SENSOR CT9667-02 : 50/100 /500/1k/5k A AC FLEXIBLE CURRENT SENSOR CT9667-03 : 50/100 /500/1k/5k A **Leakage current** LEAK CLAMP ON SENSOR 9657-10 : 50m/100m/500m/1/5 A LEAK CLAMP ON SENSOR 9675 : 50m/100m/500m/1/5 A
	Total display range: Within 0.4 to 130% of the range (zero is suppressed for less than 0.4%) When RMS current is zero, zero is displayed for all orders of harmonic current.
	Effective measurement range: Within 5 to 110% of the range peak: ±400% of range, however, maximum range is 200%.
	[OVER] indicates over-range warning
Power ranges	300.00 W to 9.0000 MW Depends on voltage/current combination and measured line type (see Measurement Range Configuration Tables)
	Total display range: Within 0 to 130% of the range ("0W" display indicates zero rms voltage and/or current) When RMS voltage and current are zero, zero is displayed for all orders of harmonic active power and harmonic reactive power.
	Effective measurement area: Within 5 to 110% of the range
VT ratio settings	Any (0.01 to 9999.99) Selections (1/60/100/200/300/600/700/1000/2000/2500/5000)
CT ratio settings	Any (0.01 to 9999.99) Selections (1/40/60/80/120/160/200/240/300/400/600/800/1200)
Input methods	Voltage: Insolated inputs (except between U1, U2, U3 and N) Current: Isolated input using a clamp-on sensor
Input resistance	Voltage input part: 3 MΩ ±20% (50/ 60 Hz)
Maximum rated voltage between terminals	Voltage input section: 1000 VAC, 1400 Vpeak Current input section: 1.7 VAC, 2.4 Vpeak
Maximum rated voltage to earth	Voltage input section: 600V Measurement Category Ⅲ 300V Measurement Category Ⅳ Current input section: Depends on clamp sensor in use.

Pulse input

Input specifications	No-voltage contact input (counts when shorted terminals open) Voltage input (Hi: 2 V to 45 V, Lo: 0 V to 0.5 V, counts at Lo to Hi) Maximum rated input between terminals: 45 V DC Maximum rated input to ground: not isolated (GND is equipment common)
Measurement range	0 to 9999 (maximum pulse count per save interval)
Filter	Filter On (for mechanical contacts) 25 Hz or less, and at least 20 ms Hi and Lo pulse width
	Filter Off (for solid-state contacts) 5 kHz or less, and at least 100 µs Hi and Lo pulse width
Scaling	Displays product of pulse count and scaling factor setting Setting ranges: 0.001 to 1.000, and 1.000 to 100.00

Specifications in orange available in Model PW3360-21 only

Measurement items

Voltage	RMS value, fundamental wave value,waveform peak (absolute value), fundamental wave phase angle, frequency (1)
Current	RMS value, fundamental wave value,waveform peak (absolute value), fundamental wave phase angle
Power	Active power, reactive power (with lag/lead display), apparent power, power factor, (with lag/lead display) or displacement power factor (with lag/lead display), active energy (consumption, regeneration, regeneration), reactive energy(lag, lead) Energy cost display (per-kWh price × power consumption)
Demand	Active power demand value (consumption, regeneration), reactive power demand value (lag, lead), active power demand quantity *(consumption, regeneration), reactive power demand quantity *(lag, lead), power factor demand value, pulse input * Only data output to SD card
Harmonic	Harmonic voltage, current, power level, content , phase angle Total harmonic distortion factor (THD-F or THD-R)

Measurement screen

List	Voltage RMS value, current RMS value, frequency, total active power, total reactive power, apparent power, power factor or displacement power factor, active energy (consumption), elapsed time
U/I	Voltage RMS value, voltage fundamental wave value,voltage waveform peak, voltage fundamental wave phase angle, current RMS value, current fundamental wave value, current waveform peak, current fundamental wave phase angle
Power	Per-channel and total active power, apparent power, reactive power,power factor or displacement power factor
Integ	Active energy (consumption, regeneration), reactiv energy (lag,lead), recording start time, recording stop time, elapsed time, energy cost
Demand	Active power demand value (consumption, regeneration), reactive power demand value (lag, lead), power factor demand value, or pulse input Displays the maximum active power demand value and the time at which it occurred (this information is not saved). (data from up to 48 intervals is internally stored, then refreshed oldest-first).
Harmonic	Graph (voltage, current and power levels, content percentage and phase angle) List (voltage, current and power levels, content percentage and phase angle)
Waveform	Displays voltage and current waveform, voltage and current RMS values, and frequency. With a 3P3W3M connection, displays the phase voltage waveform from the virtual neutral point.
Zoom	Enlarged view of 4 user-selected parameters
Trend	For one selected measurement item (except demand and harmonics), displays maximum, average and minimum values, with cursor calculations available (Note: with Trend display, there is no power-off backup function).

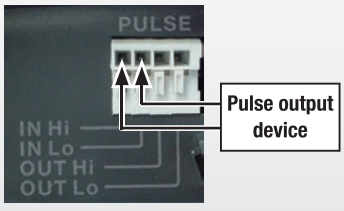
External interfaces Specifications

SD card Interface	Settings data, measurement data, screen data, waveform data
LAN interface	10BASE-T/100BASE-TX IEEE802.3 Compliance - HTTP server function - Download settings and data by communication application program
USB interface	USB Ver 2.0, Windows 8 (32/64bit)/Windows 7 (32/64bit) / Vista (32bit) /XP - When connected to a computer, the SD Card and internal memory are recognized as removable storage devices. - Download settings and data by communication application program

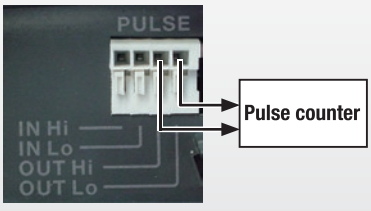
Pulse output

Function	Output pulse rate is proportional to active power consumption (WP+) when measuring integral power consumption
Pulse rate	OFF/1Wh/10Wh/100Wh/1kWh/10kWh/100kWh/1000kWh (Default: 1 kWh)
Pulse width	approx. 100 ms
Output signal	Open-collector 30 V, 5 mA max (photocoupler isolated) Active Low

Pulse input terminals



Pulse output terminals



WIRE SPECIFICATIONS

Electric wires that conform with:
- single line: ϕ0.65 mm (AWG22)
- twisted wire: 0.32 mm^2 (AWG22)
- strand diameter: ϕ0.12 mm or more

Supported electric wires:
- single line: ϕ0.32 mm to ϕ0.65 mm (AWG28 to AWG22)
- twisted wire: 0.08 mm^2 to 0.32 mm^2 (AWG28 to AWG22)
- strand diameter: ϕ0.12 mm or more
- exposed wire length: 8 mm

Specifications in orange available in Model PW3360-21 only

General Specifications

Display device	3.5 inch TFT color LCD (320 × 240 pixel) Japanese, English, Chinese (Simplified, supported from version 2.00) Backlight auto-off function (after 2 minutes) When AUTO OFF is active, the Power LED blinks
Operating environment	Indoors, Pollution degree 2, altitude up to 2000 m (6562-ft.)
Operating temperature and humidity (no condensation)	-10°C to 50°C (14°F to 122°F), 80% RH or less During LAN communication: 0°C to 50°C (32°F to 122°F), 80% RH or less During battery operation: 0°C to 40°C (32°F to 104°F), 80% RH or less During battery charging: 10°C to 40°C (50°F to 104°F), 80% RH or less
Storage temperature and humidity (no condensation)	-20°C to 60°C (-4°F to 140°F), 80% RH or less However, the battery's storage temperature range is -20°C to 30°C (-4°F to 86°F), 80% RH or less
Dielectric strength	4.29 kVrms AC (1 mA sense current) between voltage input terminals and external terminals, 50/ 60 Hz for 60 sec.
Applicable standards	Safety: EN61010, EMC: EN61326, EN61000-3-2, EN61000-3-3
Power supply	•Z1006 AC Adapter (12 V, 1.25 A), Rated supply voltage 100 VAC to 240 VAC, Rated power supply frequency 50/60 Hz •Model 9459 Battery Pack (Ni-MH DC7.2 V 2700 mAh)
Charge function	Charges the battery regardless of whether the instrument is on or off. Charge time: Max. 6 hr. 10 min. (reference value at 23°C)
Maximum rated power	•When the Z1006 AC Adapter is used: 40 VA (including AC adapter), 13 VA (PW3360-20 instrument only) •When the 9459 Battery Pack is used: 3 VA
Continuous battery operation time	Approx. 8 hr. (Continuous, backlight off) (when using the battery pack)
Backup battery life	Clock and settings (Lithium battery), Approx. 10 years @23°C (@73.4°F)
Dimensions	Approx. 180W(7.09") × 100H(3.94") × 48D (1.89") mm (without PW9002) Approx. 180W(7.09") × 100H(3.94") × 68D (2.68") mm (with PW9002)
Mass	Approx. 550g (19.4 oz) (without PW9002), Approx. 830g (29.3 oz) (with PW9002)
Accessories	Voltage Cord L9438-53(1 set), AC Adapter Z1006 (1), USB cable(1), instruction manual (1), measurement guide (1), color spiral tubes (1 set): red, yellow, blue/two each, for color-coding clamp sensors, spiral tubes for grouping clamp sensor cords (5)

Accuracy guarantee period: One year 23°C ±3°C, 80%RH or less, (no condensation)

Measurement Specifications

Connection	Single-phase 2-wire (1P2W, 1P2W × 2 circuits, 1P2W × 3 circuits) Single-phase 3-wire (1P3W, 1P3W+I, 1P3W1U, 1P3W1U+I) Three-phase 3-wire (3P3W2M, 3P3W2M+I, 3P3W3M) Three-phase 4-wire (3P4W), Current only: 1 to 3 channels
Simultaneous power/current measurement modes	1P3W+I: 1 power circuit and 1 current channel 3P3W2M+I: 1 power circuit and 1 current channel
Calculation selection	Power factor, reactive and apparent power: rms calculation/ fundamental wave calculation
Measurement accuracy (50/ 60Hz, power factor = 1)	Voltage: ±0.3% rdg. ±0.1% f.s. Current: ±0.3% rdg. ±0.1% f.s. + clamp sensor accuracy Active power: ±0.3% rdg. ±0.1% f.s. +clamp sensor accuracy Clamp-On Sensor 9661 accuracy: ±0.3% rdg. ±0.01% f.s. (Accuracy depends on clamp sensor. See page 6 for the accuracy of each model, and page 7 for combined accuracy of Model PW3360-20 and each clamp sensor.)
Display update rate	Approx. 0.5 sec (except when accessing SD card or internal memory, or during LAN/USB communication) However, approx. 1 s for power-related values
Measurement method	Digital sampling and zero cross synchronization calculation method Sampling: 10.24 kHz (2048 points) **Calculation processing** 50 Hz: Continuous, gapless measurement at 10 cycles 60 Hz: Continuous, gapless measurement at 12 cycles
A/D converter resolution	16bit

Recording Specifications

Save destination	SD Card, internal memory (capacity: approx. 320 KB)
Save interval time	1/2/5/10/15/30 seconds, 1/2/5/10/15/20/30/60 minutes * Available storage time is displayed on PW3360-20's setting screen
Save items	**Measurement save**: Average only / all (average, maximum, minimum) **Harmonic data save**: Binary format (average, maximum and minimum) **Screen save**: ON/OFF Saves the displayed screen as a BMP at a fixed interval. (The minimum interval time for saving screen copies is 5 min. If the setting is less than 5 min., screen copies will be saved every 5 min.) **Waveform save**: Stores binary waveform data (with shortest interval 1 minute). When set to less than 1 minute, waveforms are saved once every minute
Recording start methods	Interval time, manual, or at specified time
Recording stop methods	Manual, or at specified time (up to one year)

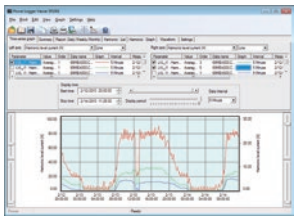
Harmonic Specifications (PW3360-21 only)

Standard	IEC61000-4-7:2002 compliant, but without interharmonics
Window width	10 cycles at 50 Hz, and 12 cycles at 60 Hz (with interpolation)
Points per window	Rectangular, 2048 points
Analysis orders	Up to the 40th order
THD calculation selection	THD-F/THD-R
Analysis items	Harmonic level: Voltage, current and power levels for each harmonic (U12 and I12 obtained by calculation of the third channel in 3P3W2M wiring are not displayed. Phase voltage is used for 3P3W3M wiring.) Harmonic content: Voltage, current and power contents for each harmonic Harmonic phase angle: Voltage, current and power phase angles for each harmonic Total harmonic distortion factor: Voltage and current (THD-F or THD-R)
Measurement accuracy	Harmonic level 1st to 15th orders : ±5% rdg. ±0.2% f.s. 16th to 20th orders : ±10% rdg. ±0.2% f.s. 21st to 40th orders : ±20% rdg. ±0.3% f.s. For voltage and current, add accuracy of clamp sensor. Harmonic power phase angle 1st to 3rd orders : ±3°+clamp sensor accuracy 4th to 40th orders : ±0.1°×k±3°+clamp sensor accuracy For each harmonic order at 6 V, harmonic current level is regulated at 1% f.s. Total harmonic distortion factor: Accuracy unspecified

POWER LOGGER VIEWER SF1001 Specifications

General Specifications

Supported models	PW3360-20, PW3360-21
Supported computer operating systems	Windows 8 (32/64bit) Windows 7 SP1 or later (32/64bit) Windows Vista SP2 or later (32bit) Windows XP SP3 or later (32bit)



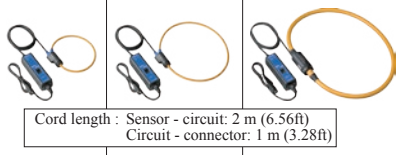
Functions Specifications

Trend graph display function	**Display items:** Voltage, current, active power, reactive power, apparent power, power factor, frequency, integrated active power, integrated reactive power, demand volume, demand value, voltage disequilibrium factor, pulse, harmonics (level, content, phase angle, total value, THD)
	Stacked bar graph display: Up to 16 types of data series can be displayed in an overlay graph
	Cursor measurements: Measurement values can be displayed by the cursor
Summary display function	Displayed items are the same as for the trend Graph Display
	Daily, weekly and monthly report displays: Accumulates and displays daily, weekly and monthly reports over specified period.
	Load factor calculation display: Calculates and displays load factor and demand factor results with daily, weekly and monthly reports
	Time span aggregation: Aggregates data into up to four specified time spans
Waveform display	Displays waveform data at specified date and time
Harmonic display	**List display:** Displays a list of harmonic data at specified date and time
	Graph display: Displays a bar graph of harmonic data at specified date and time
	Cursor calculation: Calculates measurement data at cursors in waveform and graph displays
Copy function	Captures any display image to the clipboard
Print function	Preview and print content shown on the trend graph, report, harmonic graph and settings displays.
	Comment entry (Text comments can be entered in any printout)
	Header/Footer settings: Sets the header and footer for each printout
	Printing support: Any color or monochrome printing supported by the operating system
Report printing	Print (static) contents over a specific time period
	Output contents: Standard or selected output items
	Available output items: Trend graph, summary, daily report, harmonic list, harmonic graph, waveform
	Report creation method: Standard print
	Report output settings: Save/load report output settings

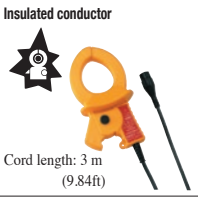
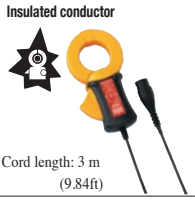
CLAMP ON SENSOR

		9694	9660	9661	9669
Appearance		 Cord length: 3 m (9.84ft)	 Cord length: 3 m (9.84ft)	 Cord length: 3 m (9.84ft)	 Cord length: 3 m (9.84ft)
Measurable conductor diameter		ϕ15mm (0.59")	ϕ15mm (0.59")	ϕ46mm (0.81")	ϕ55mm (2.17"), 80 (3.15")×20 (0.79")mm
Primary current rating		5A AC	100A AC	500A AC	1000A AC
Accuracy	Amplitude (45 to 66 Hz)	±0.3% rdg. ±0.02% f.s.	±0.3% rdg. ±0.02% f.s.	±0.3% rdg. ±0.01% f.s.	±1.0% rdg. ±0.01% f.s.
	Phase (45 Hz to 5 kHz)	Within ±2°	Within ±1°	Within ±0.5°	Within ±1°
Frequency characteristic 40Hz to 5kHz (deviation from accuracy)		Within ±1.0%			Within ±2.0%
Effect of external magnetic field (with a magnetic field of 400 A/ m AC)		Equivalent to 0.1 A or less			Equivalent to 1 A or less
Effect of conductor position		Within ±0.5%			Within ±1.5%
Maximum rated voltage to earth		CAT Ⅲ 300Vrms	CAT Ⅲ 300Vrms	CAT Ⅲ 600Vrms	CAT Ⅲ 600Vrms
Maximum input (45 to 66Hz)		50 A continuous	130 A continuous	550 A continuous	1000 A continuous
Dimensions		46W (1.81") × 135H (5.31") × 21D (0.83") mm	46W (1.81") × 135H (5.31") × 21D (0.83") mm	77W (3.03") × 151H (5.94") × 42D(1.65") mm	99.5W (3.92") × 188H (7.40") × 42D (1.65") mm
Mass		230g (8.1 oz)	230g (8.1 oz)	380g (13.4 oz)	590g (20.8 oz)

AC FLEXIBLE CURRENT SENSOR

		CT9667-01	CT9667-02	CT9667-03
Appearance		 Cord length : Sensor - circuit: 2 m (6.56ft) Circuit - connector: 1 m (3.28ft)		
Measurable conductor diameter		ϕ100 mm (3.94")	ϕ180 mm (7.09")	ϕ254 mm (10.00")
Primary current rating		500A AC/5,000A AC		
Accuracy (45 to 66Hz)	Amplitude	±2.0% rdg. ±0.3% f.s.		
	Phase	Within ±1°		
Frequency characteristic 10Hz to 20kHz (deviation from accuracy)		Within ±3 dB		
Effect of external magnetic field (with a magnetic field of 400 A/ m AC)		1.5% / f.s. or less.		
Effect of conductor position		Within ±3.0%		
Maximum rated voltage to earth		CAT Ⅲ 1000Vrms, CAT Ⅳ 600Vrms		
Maximum input (45 to 66Hz)		10000 A continuous		
Dimensions	Circuit box	35W (1.38") × 120H (4.74") × 34D (1.34") mm		
	Sensor cable diameter	φ7.4 mm(0.29")		φ13 mm(0.51")
Mass		280g (9.9 oz.)		470g (16.6 oz.)
Power supply		LR06 alkaline battery × 2 (continuous operation max. 7 days) or AC ADAPTER 9445-02/9445-03 (optional)		

CLAMP ON LEAK SENSOR (Leakage Current Measurement Only)

		9657-10	9675
Appearance		 Insulated conductor Cord length: 3 m (9.84ft)	 Insulated conductor Cord length: 3 m (9.84ft)
Measurable conductor diameter		ϕ40mm (1.57")	ϕ30mm (1.18")
Primary current rating		10A AC*	10A AC*
Accuracy	Amplitude (45 to 66 Hz)	±1.0% rdg. ±0.05% f.s.	±1.0% rdg. ±0.005% f.s.
	Phase angle (@50 or 60 Hz)	Within ±3°	Within ±5°
Frequency characteristic 40Hz to 5kHz (deviation from accuracy)		Within ±5%	Within ±5%
Effect of external magnetic field (with a magnetic field of 400 A/ m AC)		7.5 mA max.	7.5 mA max.
Effect of conductor position		Within ±0.1%	Within ±0.1%
Measurable conductor		Insulated conductor	Insulated conductor
Maximum input (45 to 66Hz)		30 A continuous	10 A continuous
Dimensions		74W(2.91") × 145H(5.71") × 42D(1.65")	60W(2.36") × 112.5H(4.43") × 23.6D(0.95")
Mass		380g (13.4 oz)	160g (5.6 oz)
Notes		Not used for power measurements	

* Maximum AC measurement range with PW3360-20 is 5A.

Available Recording Time

PW3360-20 and PW3360-21 with Z4001 2-GB SD card, measuring 3P3W2M wiring

Saved Items: ALL data (Saves all data: average, maximum, and minimum values)
Screen save: OFF Waveform save: OFF

Interval time	Save Time	
	PW3360-20 PW3360-21 (Saving of harmonic data: OFF)	PW3360-21 (Saving of harmonic data: ON)
1 seconds	15.9 days	24.7 hours
2 seconds	31.9 days	2.1 days
5 seconds	79.7 days	5.1 days
10 seconds	159 days	10.3 days
15 seconds	242 days	15.4 days

Interval time	Save Time	
	PW3360-20 PW3360-21 (Saving of harmonic data: OFF)	PW3360-21 (Saving of harmonic data: ON)
30s	1 year	30.8 days
1 minutes	1 year	61.7 days
2 minutes	1 year	123 days
5 minutes	1 year	308 days
More than 10 minites	1 year	1 year

The maximum recording time based on the settings can be confirmed right on the Settings screen.

In any case, the maximum file size for measurement data is about 200 MB. When this is exceeded, a new file is created and saving continues.
<NOTE>
Regardless of the settings, the maximum save time of the PW3360-20, PW3360-21 is one year.

Measurement Range Configurations

Voltage \ Current	Connection	CLAMP ON SENSOR 9694 (CAT Ⅲ 300V) *1				
		500.00 mA	1.0000 A	5.0000 A	10.000 A	50.000 A
600.00 V	1P2W	300.00 W	600.00 W	3.0000 kW	6.0000 kW	30.000 kW
	1P3W 1P3W1U 3P3W2M 3P3W3M	600.00 W	1.2000 kW	6.0000 kW	12.000 kW	60.000 kW
	3P4W	900.00 W	1.8000 kW	9.0000 kW	18.000 kW	90.000 kW

*1. For the 9694 sensor, the range of guaranteed accuracy is from 500 mA to 5 A.

Voltage \ Current	Connection	CLAMP ON SENSOR 9660 *2 CLAMP ON SENSOR 9661				
		5.0000 A	10.000 A	50.000 A	100.00 A	500.00 A
600.00 V	1P2W	3.0000 kW	6.0000 kW	30.000 kW	60.000 kW	300.00 kW
	1P3W 1P3W1U 3P3W2M 3P3W3M	6.0000 kW	12.000 kW	60.000 kW	120.00 kW	600.00 kW
	3P4W	9.0000 kW	18.000 kW	90.000 kW	180.00 kW	900.00 kW

*2. For the 9660 the range of guaranteed accuracy is from 5 A to 100 A, and for the 9661, from 5 A to 500 A.

Voltage \ Current	Connection	CLAMP ON SENSOR 9669		
		100.00 A	200.00 A	1.0000 kA
600.00 V	1P2W	60.000 kW	120.00 kW	600.00 kW
	1P3W 1P3W1U 3P3W2M 3P3W3M	120.00 kW	240.00 kW	1.2000 MW
	3P4W	180.00 kW	360.00 kW	1.8000 MW

Voltage \ Current	Connection	AC FLEXIBLE CURRENT SENSOR CT9667-01, -02, -03				
		500A range		500/5000A range	5000A range	
		50.000A	100.00A	500.00A	1.0000kA	5.0000kA
600.00V	1P2W	30.000kW	60.000kW	300.00kW	600.00kW	3.0000MW
	1P3W 1P3W1U 3P3W2M 3P3W3M	60.000kW	120.00kW	600.00kW	1.2000MW	6.0000MW
	3P4W	90.000kW	180.00kW	900.00kW	1.8000MW	9.0000MW

Leak current: CLAMP ON LEAK SENSOR 9657-10, 9675	
Range	50.000 mA/100.00 mA/500.00 mA/1.0000 A/5.0000 A

Total display range

Voltage is displayed from 5 V to 1000 V, with less than 5 V displayed as 0 V.
Current is displayed from 0.4% to 130% of the selected range, with less than 0.4% displayed as 0 A
Power is displayed from 0 to 130% of full scale, with 0 W displayed when voltage or current is zero.

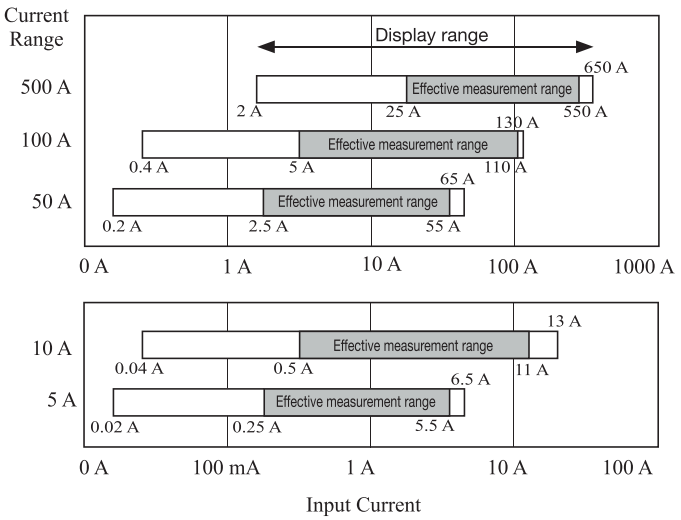
The range configurations for apparent power (S) and reactive power (Q) are the same, with units of [VA] and [var], respectively.

When VT and CT ratios are set, the range configuration is the product (VT ratio × CT ratio).

Effective measurement range

For voltage, 90 to 780 V, with max. 1400 V peak.
For current, 5% to 110% of the selected range with peak ±400% of range, but maximum range is ±200%.
For power, 5% to 110% of the selected range.
For frequency, 45 to 66 Hz.

Current Display and Effective Measurement Ranges (typical)



Measurement accuracy

Voltage	±0.3% rdg. ±0.1% f.s.
Current	±0.3% rdg. ±0.1% f.s. + clamp sensor accuracy
Active power	±0.3% rdg. ±0.1% f.s. + clamp sensor accuracy (power factor = 1)

Combined accuracy of PW3360-20 + clamp sensors

Range	9694
50.000 A	—
10.000 A	—
5.0000 A	±0.6% rdg. ±0.12% f.s.
1.0000 A	±0.6% rdg. ±0.2% f.s.
500.00 mA	±0.6% rdg. ±0.3% f.s.

Range	9660	9661
500.00 A	—	±0.6% rdg. ±0.11% f.s.
100.00 A	±0.6% rdg. ±0.12% f.s.	±0.6% rdg. ±0.15% f.s.
50.000 A	±0.6% rdg. ±0.14% f.s.	±0.6% rdg. ±0.2% f.s.
10.000 A	±0.6% rdg. ±0.3% f.s.	±0.6% rdg. ±0.6% f.s.
5.0000 A	±0.6% rdg. ±0.5% f.s.	±0.6% rdg. ±1.1% f.s.

Range	9669
1.0000 kA	±1.3% rdg. ±0.11% f.s.
200.00 A	±1.3% rdg. ±0.15% f.s.
100.00 A	±1.3% rdg. ±0.2% f.s.

Range	CT9667-01/-02/-03 5000A range	CT9667-01/-02/-03 500A range
5.0000kA	±2.3% rdg. ±0.4% f.s.	—
1.0000kA	±2.3% rdg. ±1.6% f.s.	—
500.00A	±2.3% rdg. ±3.1% f.s.	±2.3% rdg. ±0.4% f.s.
100.00A	—	±2.3% rdg. ±1.6% f.s.
50.000A	—	±2.3% rdg. ±3.1% f.s.

Conditions of guaranteed accuracy	After 30 minute warm-up, with 50/60 Hz sine wave input
Temperature and humidity for guaranteed accuracy	23°C ±5°C (73 ± 9°F), 80%RH or less (applies to all specifications unless otherwise noted)
Display area of guaranteed accuracy	Effective measurement range

Real-time clock accuracy	Within ±0.3 sec/day (with power on, within specified operating temperature and humidity ranges)
Temperature characteristic	Within ±0.1% f.s./ °C (except 23 ±5°C)
Effect of common mode voltage	Within ±0.2% f.s. (600 V AC, 50/60 Hz, between voltage input terminal and case)
Effect of external magnetic field	Within ±1.5% f.s. (in a magnetic field of 400 A/m rms AC, 50/60 Hz)
Effect of phase	Phase accuracy ±1.3° equivalent (with 50/60 Hz f.s. input)

Apparent power	±1 dgt. for the calculation obtained from each measurement value
Reactive power	Fundamental waveform calculations ±0.3% rdg. ±0.1% f.s. + clamp-on sensor accuracy (w/power factor = 1)
	Rms calculations From each measurement applied to calculation ±1 dgt.
Energy	Active and reactive power measurement accuracies ±1 dgt.
Power factor	From each measurement applied to calculation ±1 dgt.
Frequency	±0.5% rdg. (with 90 to 780 V sine wave input)
Demand value	Active and reactive power measurement accuracies ±1 dgt.
Demand quantity	Active and reactive power measurement accuracies ±1 dgt.
Pulse input	±1 dgt. for the calculation obtained from each measurement value
Frequency characteristic	At 50/60 Hz fundamental waveform frequency, up to 1 kHz, ±3% rdg. ±0.2% f.s. up to 3kHz, ±10% rdg. ±0.2% f.s. For current and active power, add clamp-on sensor accuracy. Note: only for 3P3W3M wiring, add ±0.5% rdg.

Accessori in dotazione al solo analizzatore PW3360/2x

Cavi di tensione 9438-53L (1 kit), Alimentatore Z1006 (1), cavo USB (1), software applicativo Excel Graph Creator, software applicativo Setup & Download, manuale d'uso, guida rapida, clip colorate per identificare i sensori di corrente.

Alimentatore Z1006

Cavi di tensione 9438/53L

lunghezza cavo 3metri

1 cavo per ogni colore
nero, rosso, giallo blu

Per misure di corrente e potenza è necessario abbinare i sensori di corrente.

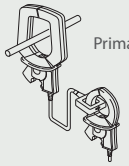
Accessori opzionali

SENSORI DI CORRENTE (per misure di assorbimento)

9694	sensore di corrente 5A Ø15mm (per secondari di TA)
9660	sensore di corrente 100A Ø15mm
9661	sensore di corrente 500A Ø46mm
9669	sensore di corrente 1000A Ø55mm (barra 80x20mm)
CT9667/01	sensore di corrente flessibile 500/5000A Ø100mm
CT9667/02	sensore di corrente flessibile 500/5000A Ø180mm
CT9667/03	sensore di corrente flessibile 500/5000A Ø254mm

9290-10 RIDUTTORE PER ALTE CORRENTI

MAX. 1500A CA (1000A continuativi)



Primario 1000A

Secondario100A

CAT Ⅱ 600V

Lunghezza cavo 3metri
Sezione del conduttore Ø 55 mm
Barra: 80 x 20 mm
Rapporto: 10:1

SENSORI PER CORRENTI DIFFERENZIALI (per dispersioni)

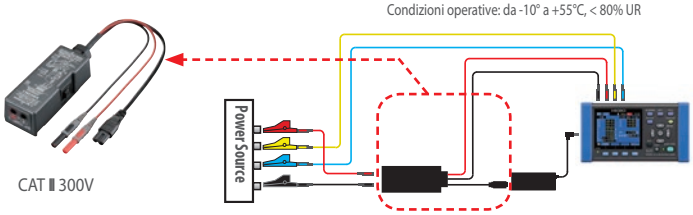
9657/10	sensore per dispersioni Ø 40mm, fino a 30A
9675	sensore per dispersioni Ø 30mm, fino a 10A

PW9003 ADATTATORE PER ALIMENTAZIONE DA MISURA

(alimentazione dai terminali di misura)

Tensione nominale 240 Vca

Condizioni operative: da -10° a +55°C, < 80% UR



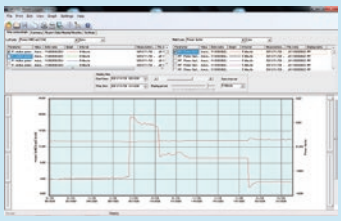
CAT Ⅲ 300V

Z4001 SD CARD 2GB

Registra fino ad un anno di dati con intervallo 1 minuto

C1005 CUSTODIA SAGOMATA

SF1001 SOFTWARE DI ANALISI



9459 BATTERIA

PW9002 KIT BATTERIA + VANO PORTA BATTERIA

PU/MAG150 CAVI DI TENSIONE CON MAGNETE

φ7mm

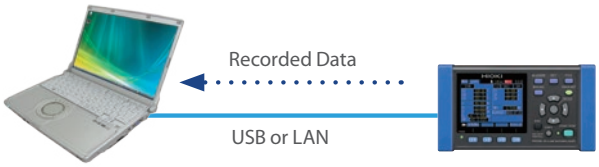
generalmente compatibile con viti M6

9642 CAVO LAN

Software di Setup, Download e Creazione Grafici

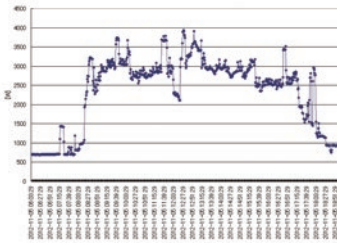
In dotazione con PW3360/20, PW3360/21 e PW3365/20

Applicativo Setup & Download
Tramite LAN o USB puoi scaricare i file dalla SC card o dalla memoria interna di PW336x/2x e gestirne le impostazioni di configurazione.



Download e conversione grafica semplice e veloce

Indication example



Applicativo Excel Graph Creator

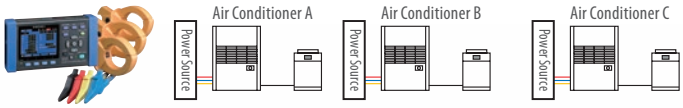
Installa l'applicativo PW336x/2x Excel Graph Creator per generare in automatico i grafici di excel direttamente dal file CSV salvato.

Software di analisi SF1001

Software professionale di elaborazione grafica e tabellare (opzionale)

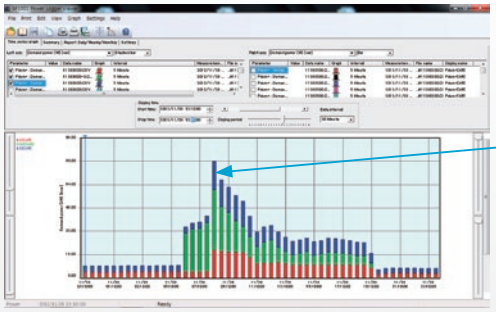
I file salvati su SD card o in memoria interna possono essere trasferiti a PC per visualizzazioni più dettagliate, analisi ed aggregazione di dati.
I parametri elettrici di consumo e lo stato operativo delle apparecchiature possono essere visualizzati sullo stesso asse dei tempi, in associazione con le caratteristiche dei dispositivi in esame e i dettagli della loro gestione energetica.

Misura e registrazione simultanea di 3 diversi carichi



- Visualizzazione grafica del trend di consumo
- Forme d'onda e componenti armoniche
- Stampa e creazione di report di prova

Grafico a istogrammi sovrapposti



La funzione [Stacked display] permette di impilare le barre di consumo per una rapida e veloce comparazione dei consumi

CARATTERISTICHE GENERALI	
Modelli compatibili	PW3360/20 - PW3360/21 - PW3365/20 - 3169/2x
Sistemi Operativi compatibili	Windows 8 (32/64bit) Windows 7 (32/64bit) Windows Vista SP2 o superiore (32bit) Windows XP SP3 o superiore (32bit)
CARATTERISTICHE FUNZIONALI	
Funzione di visualizzazione del trend grafico	**Grandezze visualizzabili:** Tensione, Corrente, Potenza Attiva, Potenza Reattiva, Potenza Apparente, Fattore di Potenza, Frequenza, Energia Attiva, Energia Reattiva, Volume della Domanda di Potenza, Valore della Domanda di Potenza, Fattore di Squilibrio della Tensione
	Funzione di sovrapposizione in "pila": impilamento fino a 16 tipi di serie di dati su grafico unico
	Cursori di misura: I valori di misura possono essere ricercati e visualizzati tramite cursore
Funzione di visualizzazione delle sommatorie	Stesse grandezze indicate per il Trend grafico
	Report giornalieri, settimanale, mensile: Ogni report temporale può contenere dati individuali e dati accumulati per le varie utenze
	Calcolo del fattore di carico: Calcolo e visualizzazione del fattore di carico determinato dai vari report temporali
	Aggregazione dati in periodi temporali: Aggregazione dati su fino a 4 specifici e diversi periodi temporali
Funzione di copia	Cattura e copia delle immagini negli appunti del PC
Funzione di stampa	Anteprima e stampa di quanto contenuto nel trend grafico, nel report e delle impostazioni di misura
	Area dei commenti (testo a digitazione libera)
	Intestazione e piè di pagina:
	configurazione per ogni stampa
	Layout di stampa: stampa a colori e/o bianco/nero secondo le funzioni del Sistema Operativo
Stampa dei Report	Stampa di un determinato intervallo di tempo
	Dati in uscita: Standard o le voci selezionate
	Funzioni disponibili: grafico del trend, sommario, report giornaliero
	Metodo di creazione del report: stampa standard
	Impostazioni del report: Salva/richiama le impostazioni di stampa dei report

I modelli proposti

Registratori Parametri di Rete e Armoniche

	PW3365/20	PW3360/21	PW3360/20	3169	CIR/e3	PV329	C80/FLX45
Sensori di tensione senza contatto metallico	•						
Canali di misura V e I	3 e 3	3 e 3	3 e 3	4 e 4	4 e 3	1 e 1	3 e 1
Misura di tensione	fino a 520V	fino a 1000V	fino a 1000V	fino a 600V	fino a 690V	fino a 1000V	fino a 500V
Misura di corrente	fino a 5000A	fino a 5000A	fino a 5000A	fino a 5000A	fino a 20KA	fino a 600A	fino a 10kA
Parametri elettrici di rete	•	•	•	•	•	•	•
Dati energetici e curva di carico	•	•	•	•	•		
Distorsione armonica totale THD%		•	•	•	•	•	•
Analisi componenti armoniche V e I		• (fino a 40° ordine)		• (fino a 40° ordine)	• (fino a 25° ordine)	• (fino a 25° ordine)	
Corrente di spunto dei motori				•		•	
Campionamento	61.44kHz	61.44kHz	61.44kHz	61.4kHz	61.4kHz	3/secondo	1/secondo
Cadenza di registrazione	da 1 sec a 60 min	da 1 sec a 60 min	da 1 sec a 60 min	da 20 msec a 60 min	da 1 min a 120 min		da 1 min a 90 min
Memorizzazione dati	SD Card 2GB	SD Card 2GB	SD Card 2GB	SD Card 512GB	SD Card 2GB		33 gruppi
Visualizzazione forme d'onda				•	• (su PC)		
Visualizzazione a istogramma	•	•	•	•	• (su PC)		
Interfacce	USB, LAN, SD-CARD	USB, LAN, SD-CARD	USB, LAN, SD-CARD	CF Card, RS232	CF Card, RS232		
Alimentazione	Rete + Batterie ricaricabili	Rete + Batterie ricaricabili	Rete + Batterie ricaricabili	Rete	Rete	Batterie	Batterie
Categoria di installazione	CAT IV - 300V CAT III - 600V	CAT IV - 300V CAT III - 600V	CAT IV - 300V CAT III - 600V	CAT III - 600V	CAT III - 300V	CAT IV - 600V CAT III - 1000V	CAT III - 600V