

**MODEL 6300 COMPACT POWER METER**

# Everything Required for Power Consumption and Energy-Saving Analysis!!



### 12 kinds of power measurements

Voltage (RMS), Current (RMS), active power, apparent power, reactive power, active energy, apparent energy, \*reactive energy, power factor (cos  $\theta$ ), frequency, demand measurement, current flowing on the neutral line (Only on 3 phase 4 wire measurement)

### Regenerative electric power can be measured

Detection of consumption power and regenerative electric power. Regenerative electric power: This is the electric power which is generated by private power generator, and is supplied to electric power company.

### The electric power and the power factor for each phase can be confirmed

Monitoring of operation for each phase.

### Recording internal can be set between 1 second and 1 hour

1/2/5/10/15/20/30 second/seconds  
1/2/5/10/15/20/30 minute/minutes 1 hour

### Demand measurement

Buzzer sounding and backlight blinking give warning not to exceed the pre-setting demand target value.

### Double power supply system AC line and Alkaline size AA battery LR6 : 6 pcs.

Continuous 7 hours can be measured by using batteries

### Display 3 different data simultaneously on large screen.

### 4 types wiring system

1 phase - 2 wire (1ch), (2ch), (3ch)  
1 phase - 3 wire  
3 phase - 3 wire  
3 phase - 4 wire

### Direct communication with PC by USB connection

### The interface for compact flash card (CF card) is equipped.

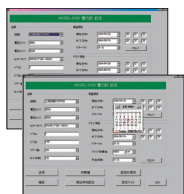
An external memory up to 128MB or less can be used.

### What "Demand Function" is

"DEMAND" is the function to give the alarm when the power consumption nearly exceeds the value during the preset interval. MODEL 6300 will warn by the buzzer sound and by the back light blinking, when the value predicted at the inspection cycle within the interval exceeds the target value.

Demand function is widely used in Japan among different fields such as construction company, factory, building maintenance company, hospital, hotel, etc., who need to consume the large electrical power. For example, 300kW, 500kW or 600kW on an annual basis. Therefore, they naturally need to monitor the total consumption of the power in order to save their power as low as possible. Now, the demand function being provided in our Power Meter MODEL 6300 is quite useful and effective as simplified monitoring system.

## User-Friendly "KEW POWER PLUS" is supplied

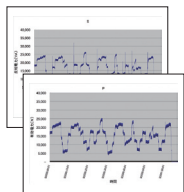


**Simple setting for all functions by clicking.**

**Easy setting for date, month and year with calendar.**



The recorded data can be downloaded with the CSV file, and the data analysis processing including waveform can be done by EXCEL.



### System requirements

PC with CPU : Pentium II 200MHz or higher  
Operating system : Windows 98/Me/2000/XP  
Memory : 32MB or more  
Display : Resolution 800 x 600 dots, 65536 colors or more  
Hard-disk space required : 10MB or more

\*Windows® is a registered trademark of Microsoft in the United States.  
\*Pentium is a registered trademark of Intel in the United States.

MODEL 6300	
Measurements and parameters	Voltage, Current, Active power, Apparent power, Reactive power, Active energy, Apparent energy, *Reactive energy, Power factor (cos θ), Neutral current, Frequency meter.
Wiring connections	1P 2W, 1P 3W, 3P 3W, 3P 4W
Voltage ranges	150.0 / 300.0 / 600.0V AC
Voltage accuracy	±0.3%rdg ±0.2%fs [45~65Hz]
Current ranges	50.00/100.0/200.0/500.0 A AC (with Clamp sensor MODEL 8125)
Current accuracy	±0.3%rdg ±0.2% fs + Clamp sensor accuracy [at 45~65Hz]
Crest factor	Voltage : up to 2.5 Current : up to 3.0 (with 90% fs or less)
Frequency meter range	40~70Hz
Frequency meter accuracy	±3dgt
Active Power accuracy	±0.5%rdg ±0.2%fs + Clamp sensor accuracy [at 45~65Hz]
Accuracy precondition	PF=1 Sine wave 23°C±5°C
Effect of power factor	Active power : ±1.0% rdg cos θ=±0.5 (PF=1)
Effective input range	10~110% of Rating range of V and A
Display range	Voltage : 5~120% of Rating range Current : 1~120% of Rating range
Integration time for recording function	1/2/5/10/15/20/30 Seconds 1/2/5/10/15/20/30/60 Minutes
Display update period	1 second
Operating temperature and humidity ranges	0~+50°C, less than 85% RH (without condensation)
Storage temperature and humidity ranges	-20~+60°C, less than 85% RH (without condensation)
Over load protection	Voltage : 720V AC rms Current : 600A AC rms (with Clamp sensor MODEL 8125)
PC communication Interface	USB
CF card Interface	Compact flash card (Standard type 32/64/128 MB)
Safety standard	IEC61010-1 CAT. III 600V
Power supply	AC Line : 100~240V±10% (50/60Hz) DC Battery 9V : LR6 × 6(Battery life approx. 7h)
Power consumption	10VA (MAX)
Dimension	175(L) × 120(W) × 65(D) mm
Weight	Approx. 800g (including batteries)
Accessories	7141(Test Lead × 4) 7148(USB Cable) 7169(Mains Cord) 9125(Carrying bag) 8305(Compact Flash card 32MB) PC Software(CD) Batteries × 6 Quick manual
Optional	8124/8125/8126/8127/8128(Clamp sensor) 7198(Small clips adaptor) 8306(Compact Flash card 64MB) 8307(Compact Flash card 128MB) 8308(CF Card Reader) 9132(Carry case with magnet)

※ PC Output only

### CF card (operation check has completed)

Supplier	Model	Capacity
SanDisk Corporation	SDCFB-32	32MB
	SDCFB-364	64MB
	SDCFB-128	128MB
Renesas Technology Corporation	HB28B128C8C	128MB
Adtec Co, Ltd.	AD-CFG32	32MB
BUFFALO Inc.	RCF-X32MY	32MB
	RCF-X64MY	64MB
	RCF-X128MY	128MB

Company name and model name are the trademark or the registered trademark.

### Max number of data (reference)

Data saved in:	CF card			Internal memory	
	32MB	64MB	128MB		
Capacity	32MB	64MB	128MB	128kB	
Instantaneous measurement	100,000 data	200,000 data	400,000 data	1,000 data	
Integration / demand measurement interval	1 sec.	7 hours	14 hours	28 hours	4 minutes
	1 min.	18 days	36 days	72 days	4 hours
	30 min.	1 year or more		5 days	

In case that no file exist in the CF card.

## Optional Accessories

### Clamp Sensor Series

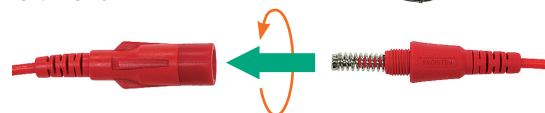
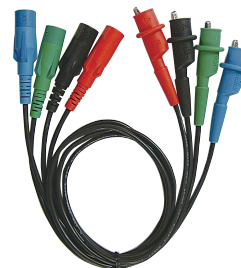


#### MODEL 7198

Small Clips adaptor  
Length : 650mm

Capable to attach to the test lead(MODEL 7141) to have smaller clips.

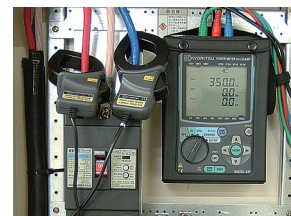
\* Can be connected to the M5 size screw using at the terminals of RCD/ELCB's.



#### MODEL 9132

Carry Case with magnet

"It can be fixed to a metal distribution board"



## Set Model

Consists of:

- 6300 × 1
- 7141 (Test Lead : 4pcs) × 1
- 7148 (USB Cable) × 1
- 7169 (Mains Cord) × 1
- 8305 (Compact Flash card 32MB) × 1
- 9125 (Carrying bag) × 1
- PC Software × 1
- Batteries × 6
- Quick manual × 1



Model	Clamp Sensor
MODEL 6300-01	MODEL 8125(φ40 : 500A) × 3
MODEL 6300-02	MODEL 8125(φ40 : 500A) × 2
MODEL 6300-03	MODEL 8124(φ68 : 1000A) × 3
MODEL 6300-04	MODEL 8124(φ68 : 1000A) × 2
MODEL 6300-05	MODEL 8126(φ40 : 200A) × 3
MODEL 6300-06	MODEL 8126(φ40 : 200A) × 2
MODEL 6300-07	MODEL 8127(φ24 : 100A) × 3
MODEL 6300-08	MODEL 8127(φ24 : 100A) × 2
MODEL 6300-09	MODEL 8128(φ24 : 5A) × 3
MODEL 6300-10	MODEL 8128(φ24 : 5A) × 2





Quality and reliability is our tradition

**KYORITSU**

**POWER METER SERIES  
KEW 6310**



# **NEW ARRIVAL!! POWER QUALITY ANALYZER**

**TO CONTROL COMPLETELY POWER QUALITY AND POWER CONSUMPTION (ENERGY)!**



- 12 kinds of Power Measurements for Power Control and Applicable to Power Quality Control including Harmonics Analysis.
- One click easy-to-use operation helps complicated setting and processing of large data through the setting / analyzing software provided as accessory.
- Direct communication with PC via USB cable
- Built-in Input / Output Function of external signal enables the signal transmission to alarms.
- 2-way power supply by AC and Battery, and Nickel hydrogen battery usable with rechargeable function.
- Pull / Insert of CF card possible whenever on recording under the function of memory backup device (1GB usable).
- Can monitor insulation at leakage current by using optional leak clamp sensors.
- Built-in Print Screen Function enables to record display screen (Records 512 screens by using CF card: 1 screen 40KB).
- Can display Waveform and Vector, and can confirm the wiring connection, too.
- Complies fully with International Safety Standards IEC61010-1 CAT.Ⅲ 600V.

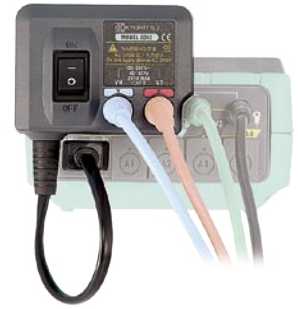
Can Make Measurement Very Easily By One-Touch Key.  
 Abnormal Power Quality Causes Unexpected Troubles  
 And Defective Products.  
 KEW6310 Very Helpful To Find Out Various  
 Troubles And Solution to Energy Saving.

*Power Source can be taken through the measured line by using optional Power Supply Adaptor*

(Refer Page 7)

*2-way power supply system by AC and Battery, and Nickel hydrogen battery usable with rechargeable function (Protect rechargeable circuit with select cover)*

*Can display Waveform and Vector, and can confirm the wiring connection,*



## Power Consumption (Energy) Control

### 12 Kinds of Power Measurements

Voltage, Current, Active power, Reactive power, Apparent power, Power factor, Frequency, Current flowing on the neutral line (Only on 3 phase 4 wire measurement), Active power energy, Reactive power energy, Apparent power energy, Demand measurement (with digital output alarm function available)

### Can Measure Regenerative power under Power Energy Deregulation in Japan.

Can judge either demand or regenerative power. (Regenerative power: Generated by privately owned generators and supplied to power companies.)

Unit	Max	Avg	Min
V	200.5	199.5	200.2
A	436.4	460.7	416.3
P	75.4	73.5	72.0
Q	144.4	146.9	141.9
S	87.5	91.9	83.3
PF	0.962	0.956	0.964
PA	38.5	39.0	38.2
QA	226.9	231.1	224.0
Q	132.4	136.9	127.6
SA	262.7	268.8	255.0
QA	0.864	0.861	0.864
DC1	3.014	3.014	3.014
DC2	3.016	3.016	3.016

#### Instantaneous value measurement / saving

Measures Current / Voltage / Instantaneous averaged value of Power etc. / Maximum value / Minimum value.

Unit	Value
Elapsed Time	0000:03:44
Active	W+ : 28.1124 kWh
	W- : -0.5465 kWh
Apparent	VA+ : 32.9307 kWh
	VA- : -1.2337 kWh
Reactive	VAR+ : 16.5832 kWh
	VAR- : 0.0002 kWh

#### Integration value measurement / saving

Measures Active power energy / Apparent power energy / Reactive power energy.

Unit	Value
Time left	00:00:05
SDH Target	300.0 kWh
SDH Actual	226.9 kWh
SDH Demand	113.5 kWh
SDH Max	313.7 kWh

#### Demand value measurement / saving

Sets Demand target value and measures Demand value from start to stop of measurement. Can warn with digital output terminal when the set value exceeds the target value.

**PRINT SCREEN KEY** Can save LCD's display screen in BMP (Bitmap) file. (Record 512 screens with CF card: One screen 40KB).



**SET UP** Setting of Instrument, Setting of Measurement



# CONSUMPTION (ENERGY) CONTROL BUILT-IN THIS COMPACT MODEL

## Direct Data Transmission to PC via USB

Easy-to-use setting-up and analyzing with KEW PQA MASTER supplied.

### [System requirements]

PC with CPU: Pentium3 500MHz or higher and with operating system of Windows®2000/XP

Memory: 64Mbyte or more

Display: Resolution 800 x 600 dots, 65536 colors or more

Hard-disk: space required 100Mbyte or more

Others: with CD-ROM drive and USB driver

\* Windows® is a registered trademark of Microsoft in the United States.

\* Pentium is registered trademark of Intel in the United States.



## CF Card Interface Loaded

External Memory up to 1GB Available.<sup>\*1</sup>

Recordable Number of Data Point / Approx. Time

Destination to save data	CF Card							Internal Memory
	32MB	64MB	128MB	256MB	512MB	1GB		
Capacity							1.8MB	
Instantaneous Measurement	1sec	16H	1D	2D	4D	8D	20D	8min
	1min	10D	21D	1M	2M	5M	11M	2H
	30min	10M	1Y	over 1Y	over 1Y	over 1Y	over 1Y	2D
Integration Measurement	1sec	6H	12H	1D	2D	4D	8D	2min
	1min	7D	15D	1M	2M	4M	8M	1H
	30min	7M	1Y	over 1Y	over 1Y	over 1Y	over 1Y	1D
DEMAND Measurement	1sec	3H	6H	13H	1D	1D	4D	1min
	1min	6D	12D	24D	1M	3M	6M	1H
	30min	6M	1Y	over 1Y	over 1Y	over 1Y	over 1Y	1D
WAVE Range	1sec	22min	44min	1H	2H	5H	11H	0.1min
	1min	22H	1D	3D	7D	14D	29D	10min
	30min	25D	1M	3M	7M	1Y	over 1Y	5H
Harmonic Analysis	1sec	49min	1H	3H	6H	13H	1D	0.3min
	1min	2D	4D	8D	16D	1M	2M	23min
	30min	2M	4M	8M	1Y	over 1Y	over 1Y	11H
Swell / Dip / Int Measurement	Data	15,400	30,900	61,900	123,900	247,900	484,200	123
	Data	14,100	28,300	56,600	113,200	226,500	442,400	113
Inrush Current Measurement	Data	15,500	31,000	62,100	124,300	248,600	485,600	124
	1sec	16H	1D	2D	4D	8D	20D	8min
Unbalance Ratio	1min	10D	21D	1M	2M	5M	10M	2H
	30min	10M	1Y	over 1Y	over 1Y	over 1Y	over 1Y	2D
	1sec	12H	1D	2D	4D	8D	16D	4min
Capacitance	1min	9D	18D	1M	2M	4M	9M	1H
	30min	9M	1Y	over 1Y	over 1Y	over 1Y	over 1Y	2D
	Max number of file	Measurement data file (CSV) Graphics file (BMP) Setting file (KAS)					512	

CF card	Capacity	32MB	64MB	128MB	256MB	512MB	1GB
SanDisk Corporation	SDCFB-32	SDCFB-64	SDCFB-128	SDCFB-256	SDCFB-512	SDCFB-1	
Adtec Co., Ltd.	AD-CFG32	AD-CFG64	AD-CFG128	AD-CFG256		AD-CFG401G	

\*1 In case that no file exist in the CF card or the Internal memory, where: H=hour(s), D=day(s), M=month(s), Y=year(s)  
\*2 CF Card with more or less capacity other than listed above cannot be used with this instrument.  
\* Company name and model name are the trademark or the registered trademark.  
\* A Compact Flash Card (CF card) may not operate properly even if any of the above are used due to manufacture's specification change, etc. The use of supplied CF Card or optional Kyoritsu CF Card is recommended.

## Designed For Various Wiring Systems

Single Phase 2 wires (4 system load measurement possible),  
Single Phase 3 wires (2 system load measurement possible),  
Three Phase 3 wires (2 system load measurement possible),  
Three Phase 4 wires.

## Power Quality Control

### Can measure up to 63rd Harmonics

Can measure Swells / Dips / Instantaneous Stop, Transients, Inrush current, Unbalanced, and can simulate phase advance condenser, too.

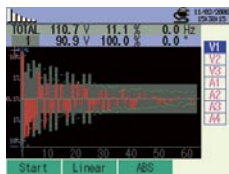
### Wave Range Measurement / Saving

Displays vector / waveform corresponding to voltage and current of each channel.



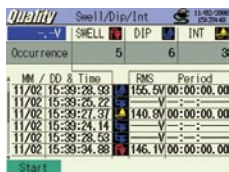
### Harmonics Measurement / Saving

Measures and analyzes harmonics contents of current and voltage of each phase.

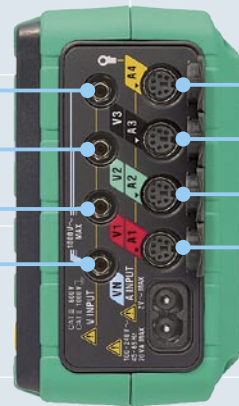


### Quality

Can measure Swells / Dips / Interruptions, Transients, Inrush current, Unbalanced, and can simulate power factor correction with capacitor banks.



### Voltage Input Terminals



### Easy-To-Use Clamp type Setting

(Clamp Sensors: Option)

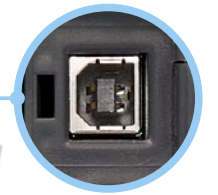


The instrument automatically recognizes clamp sensors connected (Easy-to-use setting).

### Current Input Terminals (With cover)

Can monitor insulation at leakage current by using leakage clamp sensors (Option).

### USB Terminal



### Digital Output Terminal<sup>\*2</sup>

(1ch) \*Open Collector Output (P8)



### Analogue Input Terminal

(2ch : DC 50m/500m/5V)

### CF Card Connector

Can Take Out and Put In CF Card whenever on recording under the function of memory backup device.



\*1 : Downloading data from CF cards needs the optional card reader (8319) or card readers being on sale.  
\*2 : The example of digital output is reference only. Please use the function according to customer's use.

# IMPROVING POWER QUALITY CONTRIBUTES TO IMPROVE PRODUCTS QUALITY /

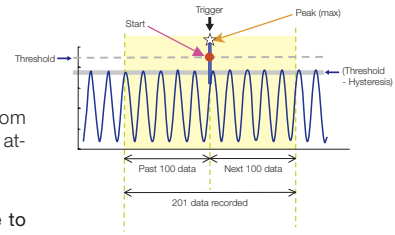
Quality Transient		
146.0Vpeak	Occurrence	132
MM / DD & Time	V peak	
2006/10/12 08:10:10.325	287.1V	
2006/10/12 08:10:22.220	286.9V	
2006/10/12 08:10:33.843	230.1V	
2006/10/12 08:10:34.000	228.1V	
2006/10/12 08:10:44.213	230.2V	
2006/10/12 08:10:45.233	244.8V	

## Transients/Over Voltage (Impulse) QUALITY

- Can Set Detecting Level Value (Threshold Value).
- Easy-to-Use Checking the Occurrence data On The Display.

### Cause of Transients Over Voltage

Arises from defective contact etc. of Breakers, Magnets and Relays. Reaches highest value (peak value) of voltage in a very short time from inputting voltage and this is a unipolar type voltage change (Spike) that attenuates slowly.



### Bad Effect of Transients Over Voltage

Destroys the instrument's power source and causes reset action due to sudden voltage change (Spike).

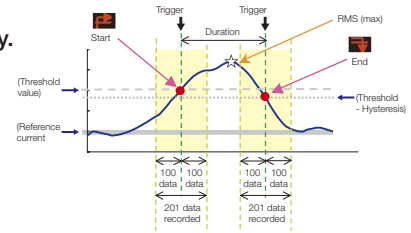
Quality Inrush current		
632.0A	Occurrence	13
MM / DD & Time	RMS	Period
10/12 08:36:14.99	632.2A	00:00:40.62
10/12 08:36:16.71	644.8A	00:00:05.80
10/12 08:36:18.82	647.6A	00:00:02.40
10/12 08:36:20.29	A	-
10/12 08:36:21.70	642.8A	00:00:40.62
10/12 08:36:23.58	A	-
10/12 08:36:25.37	646.9A	00:00:02.40
10/12 08:37:24.00	A	-

## Inrush Current QUALITY

- Can Set Detecting Level Value (Threshold Value).
- Easy-to-Use Confirming the Occurrence data On The Display.

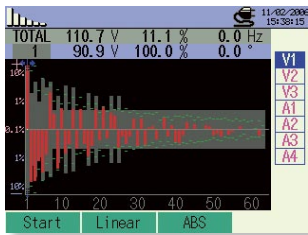
### Cause of Inrush Current

Large current (Surge current) flows transiently at the time of starting of instruments etc. which have built-in motor, incandescent lamp, larger capacity smoothing condenser.



### Bad Effect of Inrush Current

Causes bad effect to power switch's welding, fusing, breaker's trip and converter circuit etc. and also causes unstable power voltage.



## Harmonics Analysis

- Can Measure and Analyze from 1st to 63rd Harmonics.
- Harmonics Contents (THD: Total Harmonics Distortion Display)
- Can Judge Inflow / Outflow.
- Can Set Detecting Level Value (Threshold Value).

### Cause of Harmonics

Control circuits of instruments use inverter circuit (condenser input type converter circuit) and thyristor control circuit (phase control circuit). These circuits cause distortion in the current. The distortion causes harmonics.

### Instruments Causing Harmonics

- Factory / Building
  - Direct current motor power device, electric furnace, inverter appliance, uninterrupter power supply, PC, fluorescent lamp, elevator, air-conditioning equipment etc.
- Residential House
  - Air Conditioner, PC, TV, Washing Machine, Refrigerator, Cleaner, Fluorescent Lamp etc.

### Bad Effect of Harmonics

Causes burning of phase advance condenser and reactor, beat of transformer, wrong way of breaker, flicker of TV image, noise of audio players etc.

Quality Swell/Dip/Int		
100.1V	SWELL	DIP
Occurrence	1	4
MM / DD & Time	RMS	Period
10/12 08:07:50.18	V	-
10/12 08:07:55.98	49.9V	00:00:05.80
10/12 08:08:01.34	V	-
10/12 08:08:42.01	1.2V	00:00:40.62
10/12 08:08:49.15	V	-
10/12 08:08:51.55	200.6V	00:00:02.40

## Swells/Dips/Instantaneous Stop QUALITY

- Can Set Detecting Level Value (Threshold value).
- Easy-to-Use Confirming the Occurrence data such as Swells/Dips/Instantaneous Stop on the Display.

### Cause of Swells (Voltage rise)

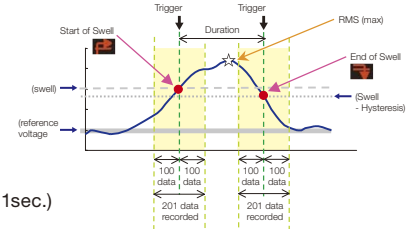
Voltage rises instantaneously by Inrush Current caused at the time of power input of the power line switchgear.

### Cause of Dips (Voltage drop)

Voltage drop happens by Inrush Current caused at the time of starting of load of motors etc.

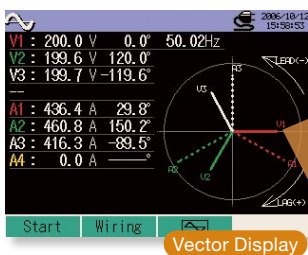
### Cause of Instantaneous Stop

Power supply stops instantaneously due to thunderbolt etc. (Under 1 sec.) (Interruption of Service → Power supply stop more than 1sec.)



### Bad Effect of Swells/Dips/Instantaneous Stop

Stops operation of instruments / welding robots and causes reset of OA appliances like PC.



## Unbalance Rate QUALITY

- One Touch Switch to Vector display and Power display
- Easy-to-Use Confirming Phase angle difference thanks to Vector display

### Cause of Unbalance

Specific Phase gets over loaded due to fluctuation of power line load and unbalanced equipment built. These cause distortion of voltage / current, voltage drop and antiphase voltage.

### Bad Effect of Unbalance

Causes unbalance of voltage / current, uneven turning of motor, antiphase voltage, harmonics etc.

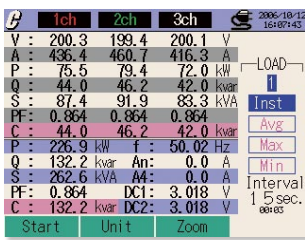
	1ch	2ch	3ch
V	200.5	199.5	200.2
A	436.4	460.7	416.3
P	75.4	79.5	72.0
Q	44.4	46.0	41.9
S	87.5	91.9	83.3
PF	0.862	0.865	0.864
PA	30.5	30.0	30.2
PQ	226.9	kvar	f: 50.02
Q	132.4	kvar	An: 17.6
S	262.7	kVA	A4: 0.0
PF	0.864	DC1: 3.014	V
PA	30.2	deg	DC2: 3.016



# SIMPLE AND EASY-TO-USE SETTING TO POWER CONSUMPTION (ENERGY) CONTROL

## Phase Advance Condenser

QUALITY



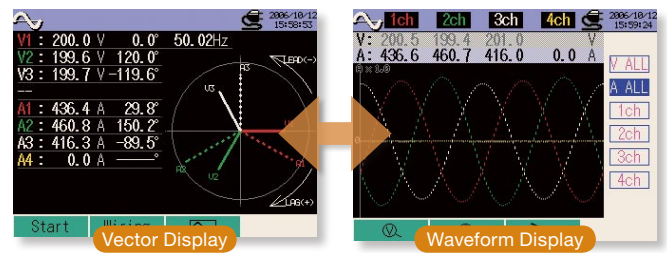
- Selects Best Capacity of Phase Advance Condenser by Referring to Loaded Capacity and Power Factor of Transformer.



Abnormal Power Quality Causes; Power down on On-Line in life lines, Defective products in production lines, Fire and Electric shock affecting damage directly to person. Be sure to monitor power lines to prevent troubles in the power lines.

## Wave Range (Waveform Display)

WAVEFORM



- Check fluctuation of voltage and current simultaneously in each phase.
- Easy-to-Use Switching to Vector display and Waveform display.
- Built-in Function Confirming Wiring Connection

## POWER CONSUMPTION (ENERGY) CONTROL

W Wh DEMAND

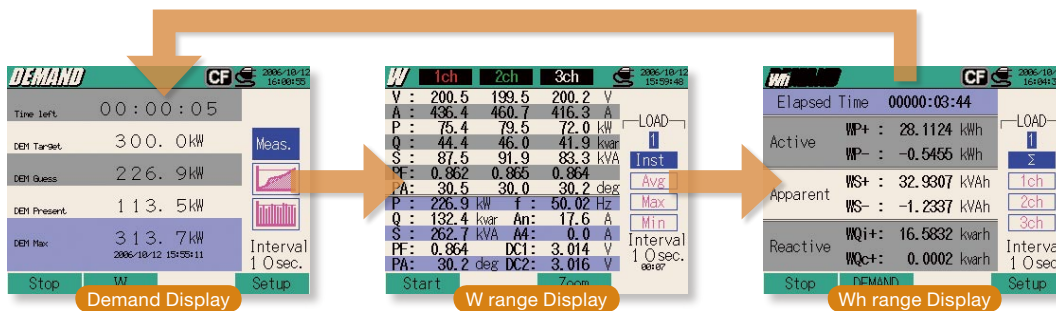
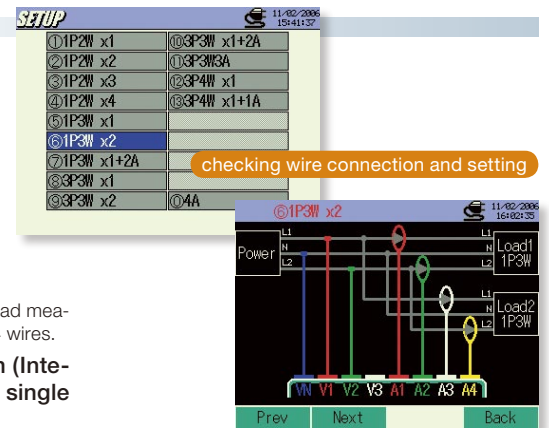
- 12 kinds of Power Measurements

Voltage, Current, Active power, Reactive power, Power factor, Frequency, Current flowing on the neutral line (Only on 3 phase 4 wire measurement), Active power energy, Reactive power energy, Apparent power energy, Demand measurement (with digital output function & buzzer warning)

- Monitors in Leakage Current by Using Leakage Clamp Sensors.
- Easy-to-use Confirming Wire Connection and Setting
- Designed to Various Wiring System

Single Phase 2 Wires (4 system load measurement possible), Single Phase 3 Wires (2 system load measurement possible), Three Phase 3 wires (2 system load measurement possible), Three Phase 4 wires.

- Easy-to-Use One-Touch Switch for Display of W (Instantaneous value) / Wh (Integration power consumption) / Demand and Can down load all these data at single operation.



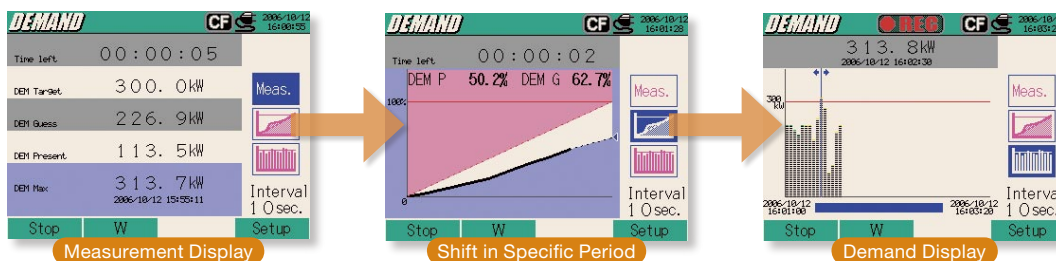
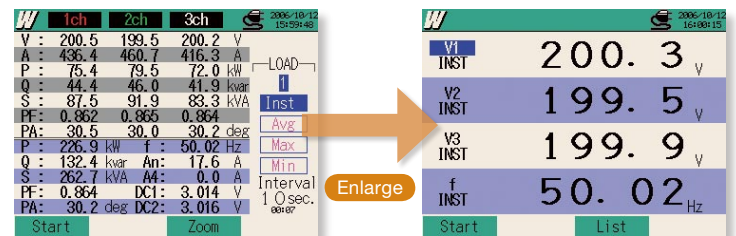
- Monitors Power Consumption and Power Factor in each Phase.

Can recognize working status in each phase.

- Measures Regenerative Power under Power Deregulation (Ex. in Japan).

Can distinguish either Demand or Regenerative power. (Regenerative power: Generated by privately owned generators and supplied to power companies.)

- Enlarged Screen Function (Setting possible at option)
- Visual Function Helps Check Demand Transition.



**SIMPLY CONNECT KEW6310 AND PC VIA USB, THEN ONE CLICK FOR EASY-TO-USE SETTING!  
BUILT-IN NAVIGATION FUNCTION (W / HELP FUNCTION) HELPS YOU WHENEVER YOU NEED.**

## SETTING FUNCTION

Downloaded CSV file data can be processed easily with spreadsheet like Excel etc.

Can go to specific fields anytime by only recalling saved setting if setting of the measurement is saved depending on the specific field.

Checks Wiring Connection on Screen

**EASY-TO-USE CLICK SYSTEM FOR COMPLICATED SETTINGS**

- Eliminates harmonics element by filter
- Recognizes clamp sensors automatically

Records necessary data only

Easy-to-use pre-setting with calendar function

\*The present time synchronizes with PC.

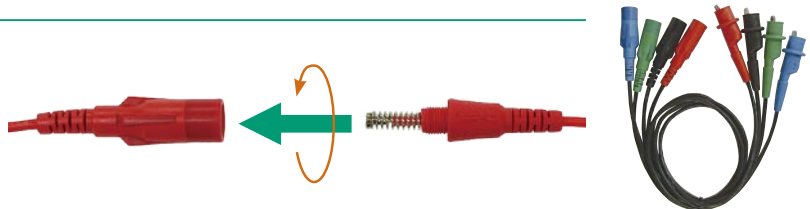
### Options

#### SMALL TYPE SAFETY CLIP

#### MODEL 7198

Length: 650mm

The measuring terminal of voltage test lead (7141) is downsized.  
Can connect it to M5 size screw on breaker terminals.



#### CARRYING CASE WITH MAGNET

#### MODEL 9132

Easy-to-use setting with magnet on the steel plate etc. of switch board



#### POWER SUPPLY ADAPTOR

#### MODEL 8312



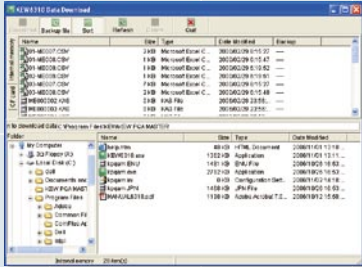
Power source can be taken through the measured line (100~240V)



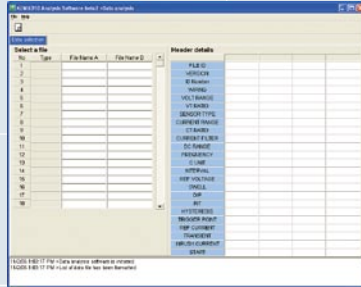


## ANALYSIS FUNCTION

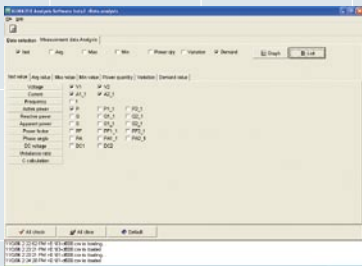
### 1. Open necessary data file



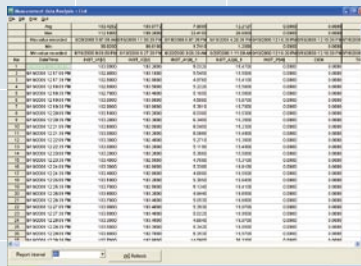
### 2. Start analyzing measured data



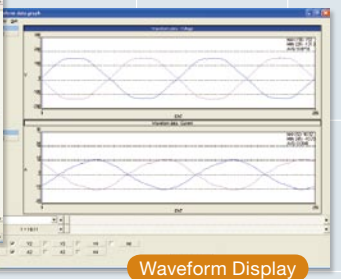
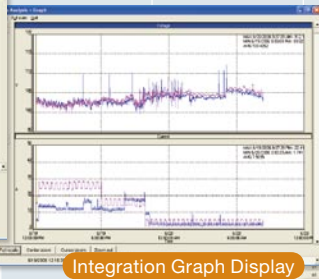
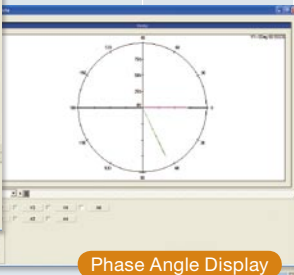
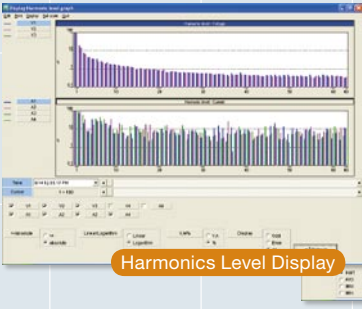
### 3. Select necessary data



### 4. Data List Display



### 5. Graph Display



- Can analyze large recorded data in a simple operation and make report easily.
- Can register, delete, refer, analyze and copy by collective data control.
- Can check real-time data during recording by PC.
- Can process data by taking out necessary part only of original data.
- Can set kinds of line and color in each graph display.
- Spreadsheet Function  
Can display value data like spreadsheet that is displayed in the range of graph when selecting the tab of graph display, harmonics wave time-series display, harmonics wave instantaneous value display. Besides, can use them as text data.
- The data of temperature, illumination etc. can be inserted to the data of 6310 by using analogue terminals. Comparing these measured data with the data of power consumption, the detailed analysis can be possible.

\*The display screen designs and functions are subject to change without prior notice.

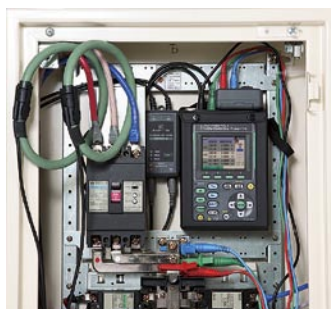
## LOAD CURRENT DETECTING TYPE FLEXIBLE CLAMP SENSOR

### KEW 8129

8129-01 (for 1ch)  
8129-02 (for 2ch)  
8129-03 (for 3ch)

**FLEXIBLE CLAMP SENSOR CAN MEASURE  
UPTO AC3000A HIGH CURRENT**

**NEW**



MAX AC3000A    Ø150    IEC61010    CE

	8129-01 (for 1ch)	8129-02 (for 2ch)	8129-03 (for 3ch)
Conductor size	max. Ø150mm		
Rated current	300/1000/3000A		
Output voltage	300A Range : AC500mV/AC300A (1.67mV/A) 1000A Range : AC500mV/AC1000A (0.5mV/A) 3000A Range : AC500mV/AC3000A (0.167mV/A)		
Accuracy	±1.0%rdg (45~65Hz)		
Phase Shift	within ±1°		
Withstand voltage	AC5350V for 5 seconds		
Cable length	Sensor part : approx. 2m Output cable : approx. 1m		
Output connector	MINI DIN 8PIN		
Operating temperature & humidity ranges	0~50°C, relative humidity 85% or less (no condensation)		
Output impedance	100Ω or less		
Applicable standards	IEC 61010-1, IEC 61010-2-032 CAT.Ⅲ 600V Pollution degree2, IEC 61326		
Dimensions	111(L) × 61(W) × 43(D) mm (except for protrusions)		
Weight	Approx. 410g	Approx. 680g	Approx. 950g
Accessories	Instruction Manual 7199 (Output Cable) × 1 9137 (Carrying Case)	Instruction Manual 7199 (Output Cable) × 2 9137 (Carrying Case)	Instruction Manual 7199 (Output Cable) × 3 9137 (Carrying Case)

## Specifications

### Instantaneous measurement ( Range)

① Voltage Vi [V]	
Range	150/ 300/ 600/ 1000V
Allowable input	10 ~ 110% of each range
Display range	5 ~ 120% of each range
Crest factor	2.5 or less (100% or less of each range)
Accuracy	±0.3%rdg±0.2%f.s. (sine wave, 45 ~ 65Hz)
Instantaneous overload	1200Vrms(1697Vpeak):10 sec

② Current Ai [A]	
Range	8128(50A type) : 1/ 5/ 10/ 20/ 50A 8127(100A type) : 10/ 20/ 50/ 100A 8126(200A type) : 20/ 50/ 100/ 200A 8125(500A type) : 50/ 100/ 200/ 500A 8124(1000A type) : 100/ 200/ 500/ 1000A 8129(3000A type) : 300/ 1000/ 3000A
Allowable input	10 ~ 110% of each range
Display range	1 ~ 120% of each range
Crest factor	3.0 or less (90% or less of each range)
Accuracy	±0.3%rdg±0.2%f.s.+ Accuracy of Clamp sensor (sine wave, 45 ~ 65Hz)
Instantaneous overload	2Vrms(2.828Vpeak): for 10 sec

③ Active power Pi [W]	
Range	Depending on combinations of (V Range) x (A Range)
Accuracy	±0.3%rdg±0.2%f.s.+ Accuracy of Clamp sensor (Power factor 1, Sine wave 45 ~ 65Hz)
Influence of power factor	±1.0%rdg (reading at power factor 0.5 against power factor 1)
Polarity indication	Consumption: + (no mark), Regenerating: -

④ Frequency f [Hz]	
Accuracy	±0.1%rdg±2dgt
Allowable input	10 ~ 110% of each Voltage range (sine wave, 45 ~ 65Hz)
Display range	40.00 ~ 70.00Hz

⑤ Analogue input DCi [V]	
Number of input	2 channel (I = 1, 2)
Range	50m/ 500m/ 5V (selectable at each channel)
Accuracy	±0.5%f.s
Input resistance	approx 225KΩ

⑥ Item and formula	
Apparent power S [VA], Reactive power Q [Var], Power factor PF, Neutral current	

### Integration measurement ( Range)

Active power quantity WP [Wh]	
Display range	0.00Wh ~ 999999GWh (Display digit and unit are unified to the bigger ones of  WS+  or  WS- .)

Apparent power quantity WS [VAh]	
Display range	0.00VAh ~ 999999GVAh (Display digit and unit are unified to the bigger ones of  WS+  or  WS- .)

Reactive power quantity WQ [varh]	
Display range	0.00varh ~ 999999Gvarh (Display digit and unit are unified to the bigger ones of  WS+  or  WS- .)

Elapsed time : time passed from the start of recording	
Display item	hhhhh : mm : ss (Hour : Minute : Second)
Display range	00000:00:00 ~ 99999:59:59

### Demand measurement ( Range)

① Target value (DEM Target)	
Display range	Fixed set value (1.000mW ~ 999.9TW)

② Predictive value (DEM Guess)	
Display range	Same decimal point place and unit to target value

③ Demand value (present value) (SDEM)	
Display range	Same decimal point place and unit to target value

④ Load factor	
Display range	0.00 ~ 9999.99% ("OL" is displayed when exceeding this range.)

### Waveform measurement ( Range)

Displayed data	2 waveforms (256 points)
Scale change	0.1/ 0.2/ 0.5/ 1.0/ 2.0/ 3.0 times of rating

### Harmonic measurement ( Range)

Meas. Method	PLL synchro system
Measuring range	45 ~ 65Hz
Analysis order	1 ~ 63rd
Window width	2 cycles
Window type	Rectangular
Analysis data	512 points
Analyzing rate	approx once / 2 sec
Display item	(1) Voltage per CH / Current, THD, Frequency (2) Voltage/ Rate of content/ Phase angle at each order

### Power quality ( Range)

Swell/ Dip/ Int measurement	
Meas. Method	Calculate RMS values based on an overlapped waveform at every half waveform.

Transient measurement	
Meas. Method	Sampling at every 100μs, and calculating the max value at every 2ms Judges the presence of events at every 1s.

Inrush current measurement	
Meas. Method	Calculate RMS values based on an overlapped waveform at every half waveform.

Unbalance ratio measurement	
Save item	(Measurement data at W Range) + (Unbalance ratio)
Measurable wiring configuration	3P3W3A, 3P4Wx1, 3P4Wx1+1A

Capacitance calculation	
Display item	Same to W Range (except for the change from PA to C)
Save item	(Measurement data at W Range) + (calculated capacitance value)

### AC power supply

Voltage range	AC100 ~ 240V±10%
Frequency	45 ~ 65Hz
Power consumption	20VA max

### DC power supply

Type	Dry battery	Rechargeable battery
Rated voltage	Alkaline (LR6)	Ni-MH(HR-15-51)
Current consumption	DC9V (≈1.5Vx6)	DC7.2V (≈1.2Vx6)
Possible measurement time	500mA typ.(@9V)	560mA typ.(@7.2V)
	Backlight ON: 1 hour	Backlight ON: 2 hours
	Backlight OFF: 2 hours	Backlight OFF: 5 hours
	(ref. at 23°C)	(ref. at 23°C after full-charge)

### Digital output function

Output voltage	Open collector output
Max. input	30V/ 50mA/ max. 200mW
Output voltage	Hi Level 4.5~5.0V Lo Level 0~0.5V

### Scaling function

VT ratio	0.01~9999.99(in increments of 0.01)
CT ratio	0.01~9999.99(in increments of 0.01)

### Recording data

Internal memory	
Memory	FLASH memory
PC Card	
Card type	Compact flash card (CF card)
Slot	Type I / II
Format	FAT16
Capacity	32M/ 64M/ 128M/ 256M/ 512M/ 1GB
Max number of file	max 512 files (with name of one-byte 8 characters or less)
Save format	CSV format

### External communication function

Communication method	USB Ver1.1
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### General specification

Indication renewal	every 1 sec
Temperature & humidity range (guaranteed accuracy)	23°C±5°C, Relative humidity 85% or less (no condensation)
Operating Temperature & humidity range	0°C±40°C, Relative humidity 85% or less (no condensation)
Storage Temperature & humidity range	-20°C±60°C, Relative humidity 85% or less (no condensation)
Applicable standards	IEC61010-1, Measurement CAT.Ⅲ 600V Pollution degree 2, IEC 61010-031, IEC61326
Dimension	175(L) x 120(W) x 68(D) mm
Weight	approx 900g (including batteries)
Accessories	7141(Voltage test lead) 7170(Power cord) 7148(USB cable) 9125(Carrying case) Input terminal plate (6-kind) x 1 pce. 8307(Compact flash card 128MB) 8319(Card reader) KEW POA MASTER(software) Cable maker Quick manual Alkaline size AA battery (LR6) x 6 pcs.

Optional	7198(Small type safety clip) 8306(Compact flash card 64MB) 8322(Compact flash card 256MB) 8323(Compact flash card 1GB) 8124, 8125, 8126, 8127, 8128(Load current clamp sensor) 8129(Flexible clamp sensor) 8146, 8147, 8148(Leakage & Load current clamp sensor) 8141, 8142, 8143(Leakage current clamp sensor) 8312(Power supply adopter) 9132(Carrying case (for instrument))
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## Safety Warnings :

Please read the "Safety Warnings" in the instruction manual supplied with the instrument thoroughly and completely for correct use. Failure to follow the safety rules can cause fire, trouble, electrical shock, etc. Therefore, make sure to operate the instrument on a correct power supply and voltage rating marked on each instrument.

For inquires or orders :



**KYORITSU ELECTRICAL INSTRUMENTS WORKS, LTD.**

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Tokyo, 152-0031 Japan  
Phone:81-3-3723-0131  
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Factories:Uwajima & Ehime



ISO 9001 : 2000 , BS EN 9001  
APPROVED BY BVQI



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KEW6310-1E Nov.06 AD

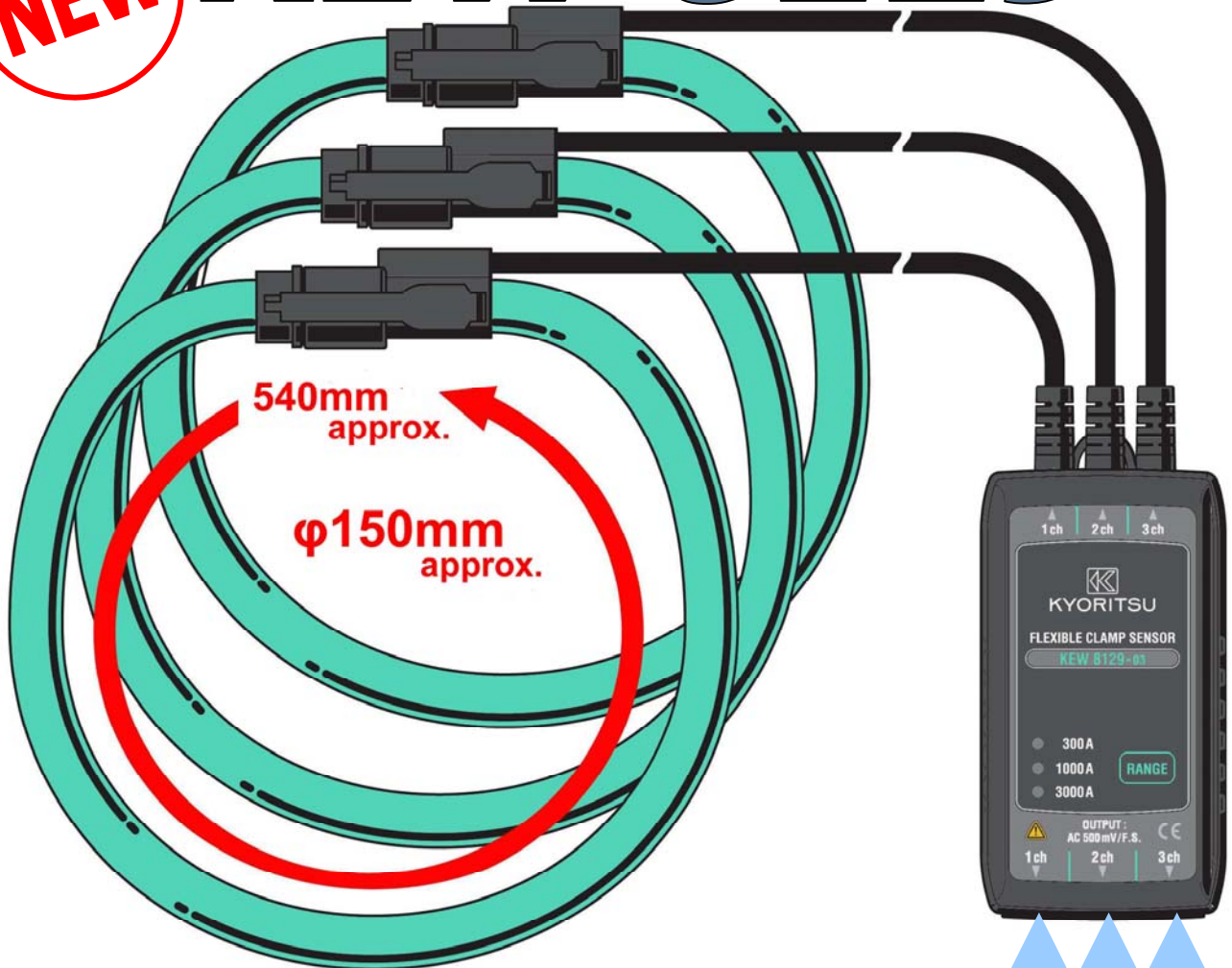


KEW CLAMP SENSOR SERIES

FLEXIBLE

**NEW**

# KEW 8129



*KEW8129-01(1ch)*

*KEW8129-02(2ch)*

*KEW8129-03(3ch)*

- Flexible for various test fields.
- Can measure AC current up to 3000A.
- Flexible and light weight by the air core coil used at the sensor part.
- Measurable conductor size: max  $\phi 150\text{mm}$
- Designed to meet the international safety standard IEC61010-1 CAT III 600V.

\*Power source shall be taken out from the power meter or the logger.



Use together with  
**KEW5010/5020 or KEW6300**

	8129-01 (for 1ch)	8129-02 (for 2ch)	8129-03 (for 3ch)
<b>Rated Current</b>	300A / 1000A / 3000A		
<b>Output Voltage</b>	300A Range : AC500mV/AC300A (1.67mV/A) 1000A Range : AC500mV/AC1000A (0.5mV/A) 3000A Range : AC500mV/AC3000A (0.167mV/A)		
<b>Measuring Range</b>	300A Range : 30~300Arms (424Apeak) 1000A Range : 100~1000Arms (1414Apeak) 3000A Range : 300~3000Arms (4243Apeak)		
<b>Accuracy (sine wave input)</b>	±1.0%rdg (45~65±Hz)		
<b>Phase Characteristics</b>	Within ±1° 30~300Arms (45~65Hz) 100~1000Arms (45~65Hz) 300~3000Arms (45~65Hz)		
<b>Current consumption (at power supply 3V)</b>	13mA typ.	14mA typ.	15mA typ.
<b>Temperature &amp; Humidity Ranges (guaranteed accuracy)</b>	23°C±5°C, relative humidity 85% or less (no condensation)		
<b>Operating Temperature &amp; Humidity Ranges</b>	0~50°C, relative humidity 85% or less (no condensation)		
<b>Storage Temperature &amp; Humidity Ranges</b>	-20~60°C, relative humidity 85% or less (no condensation)		
<b>Max allowable input</b>	AC3600A continuous (45~65 Hz)		
<b>Output Impedance</b>	100Ω or less		
<b>Environmental Condition</b>	Altitude up to 2000m, in-door use		
<b>Applicable Standards</b>	IEC 61010-1, IEC 61010-2-032 CAT.III 600V Pollution degree 2 EN 61326 (EMC) EN 55022 EN 61000-4-1 (performance criterion B) EN 61000-4-2 (performance criterion B)		
<b>Withstand Voltage</b>	AC5350V (RMS value 50/60Hz) / 5 sec between circuit and sensor		
<b>Insulation Resistance</b>	50MΩ or more / 1000V between circuit and sensor		
<b>Conductor Size</b>	Max φ150mm		
<b>Dimension</b>	111(L) x 61(W) x 43 (D)mm (except for protrusions)		
<b>Cable Length</b>	Sensor side: approx. 2m Output cable: approx. 1m		
<b>Output Terminal</b>	MINI DIN 6PIN		
<b>Weight</b>	approx. 410g	approx. 680g	approx. 950g
<b>Accessories</b>	Instruction Manual 7199 (Output cable) x 1 9137 (Carrying Case)	Instruction Manual 7199 (Output cable) x 2 9137 (Carrying Case)	Instruction Manual 7199 (Output cable) x 3 9137 (Carrying Case)



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# MODEL 5350/5360



**Basic Recorder only (Model 5350 One Channel)  
(Model 5360 Two Channels)**



**Recorder with Module (Model 5351 One Channel)**

## Chart Paper

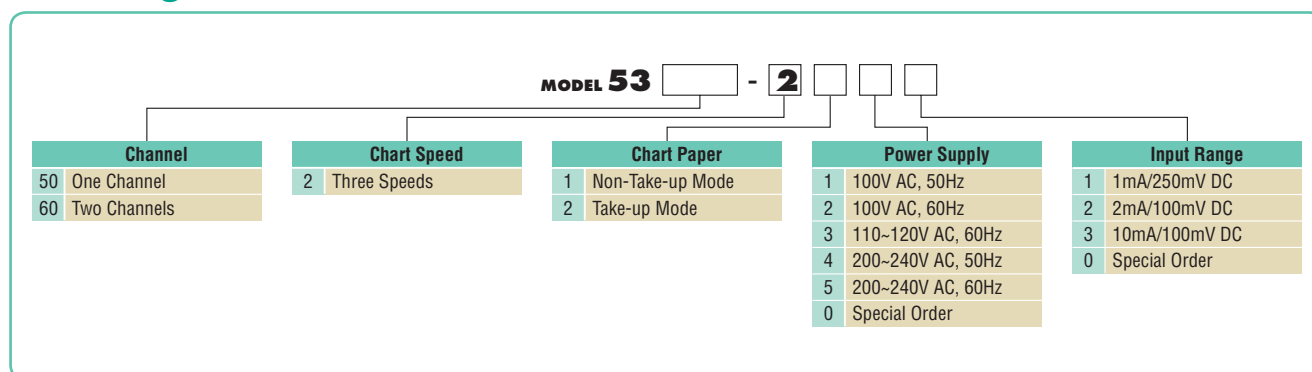
Non-Take-up Mode    No.5350-005(30 divisions)  
Take-up Mode        No.5350-003(50 divisions)

## Scale

No. ST-01



## Ordering Information



Model 5350 series is a DIN size, miniature, low cost chart recorders. It is designed for direct mounting on a switchboard or application as a portable recorder.

In combination with a wide variety of modules, the recorder can be used to monitor temperature, humidity, AC current and AC voltage.

Basic Recorder	Module	Descriptions
Model 5350	+ Model 5307	6-range Temperature Recorder(Pt-100)
Model 5350	+ Model 5308	6-range Temperature Recorder(K type)
Model 5360	+ Model 5321	AC Volt-Amp Recorder

- DIN size 96mm×96mm bezel and 92mm×92mm panel opening.
- Compact and lightweight for easy panel or portable use.
- Dot printing on clean, inkless, pressure sensitive paper.
- Removable chart cassette permits simple loading and unloading of chart paper.
- 50 mm chart width.
- Three chart speeds of 1" (25.4mm), 12" (304.8mm) and 24" (609.6mm) per hour available. The desired speed is selected by pulling out and rotating the switch to the appropriate position.
- Both one channel basic recorder Model 5350 and two channel basic recorder Model 5360 are available.
- Complete with one of the modules listed above, a temperature module, for example, Model 5350 or 5360 basic 1mA/250mV recorder makes a temperature monitor.

## BASIC RECORDERS

### MODEL 5350 (1 Channel) & MODEL 5360 (2 Channels)

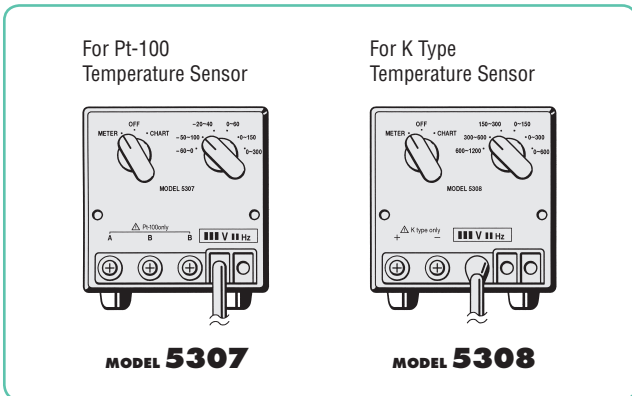
MODEL 5350/5360	
Recordings System	Direct dot printing on pressure sensitive paper
Input Ranges	1mA/250mV DC 2mA/100mV DC 10mA/100mV DC
Meter Scale Accuracy	±2% of full scale value
Chart Speed	Single Speed:1" (25.4mm)per hour Three Speeds:1" (25.4mm)/12" (304.8mm)/24" (609.6mm)per hour
Imprint Rate	60 dots per inch at all speeds (120 dots for channel No.2 of Model 5360 2 channel recorder)
Chart Paper	2.1/2" (63.5mm) × 65.6feet(19m)for non-take-up mode 2.1/2" (63.5mm) × 32.8feet(9.5m)for take-up mode
Chart width	50mm(1.97in)
Scale Length	55.5mm(2.19in)
Operating Temperature Range	-10°C~+50°C
Power Supply	100V 110-120V 200-240V AC 50Hz or 60Hz(specify on order)
Power Consumption	3.5VA
Safety Standard	IEC61010-1 CAT. III 300V Pollution Degree 2
Dimensions	96(W) × 96(H) × 162(D)mm
Weight	880g approx.

# MODEL 5351 ONE CHANNEL 6-RANGE TEMPERATURE RECORDER (MODEL 5350+5307 or 5308)

- Complete with Model 5307 Module for Pt-100 sensor or Model 5308 for Type K sensor.
- External range switch permits temperature measurement and recording in 6-ranges.

	MODEL 5307	MODEL 5308
Input Ranges	(for Pt-100 Temp. probe) -60°C~0°C      0°C~+60°C -50°C~+100°C    0°C~+150°C -20°C~+40°C      0°C~+300°C	(for Type K Temp. probe) +600°C~+1200°C    0°C~+150°C +300°C~+600°C    0°C~+300°C +150°C~+300°C    0°C~+600°C
Accuracy	±3% of full scale	±4% of full scale
Dimensions	82(W) × 82(H) × 48(D)mm(module only)	
Weight	300g approx.(module only)	

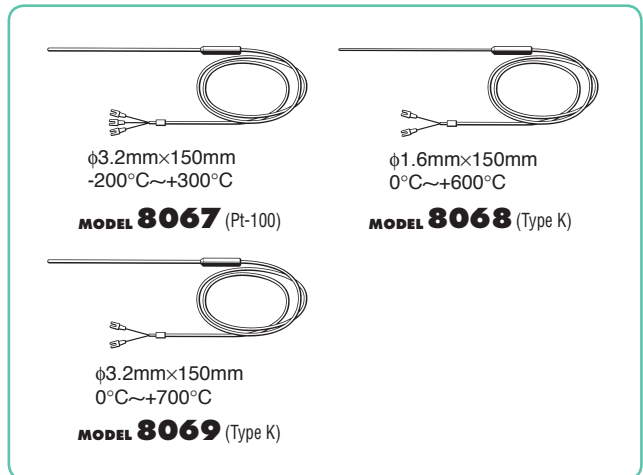
## Back of module case



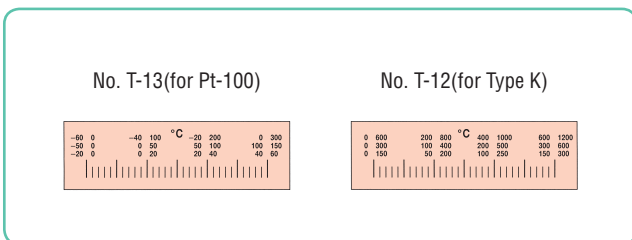
## Chart Paper

Non-Take-up Mode    No.5350-005(30 divisions)  
Take-up Mode        No.5350-008(30 divisions)

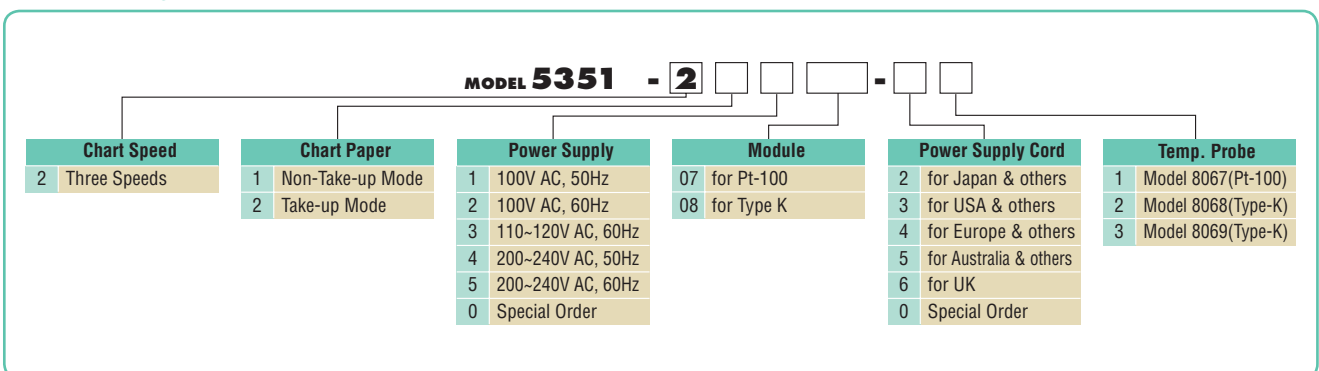
## Temperature Sensors (Optional)



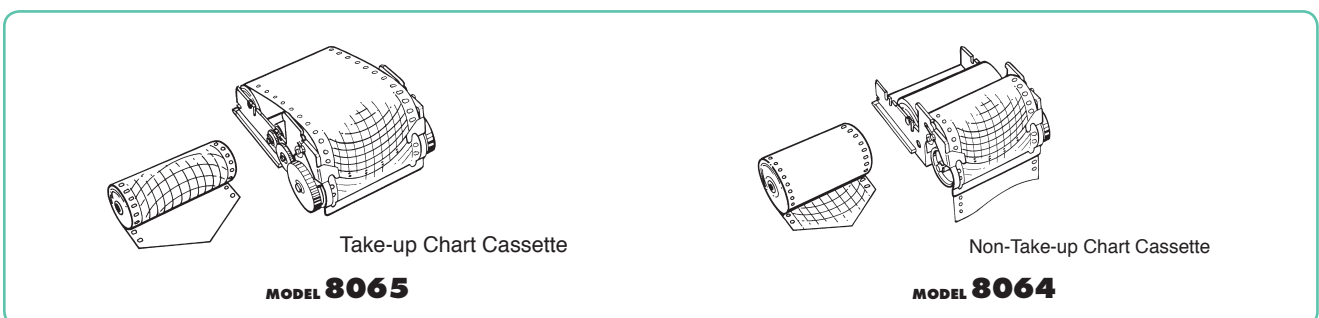
## Scale



## Ordering Information



## Chart Cassettes





# MODEL 5361 TWO CHANNEL AC VOLT/AMP RECORDER (MODEL 5360+5321)

- Complete with Model 5321 module to measure and record AC voltage and AC current.
- Range Switch selects 150V, 300V or 600V input voltage.
- Basic recorder and input are isolated by internal circuitry(500V AC max. withstand voltage for voltage input only).
- Three clamp adaptors are available for different application needs.
- Single dot for voltage and two dots for currents are imprinted alternately.

MODEL 5361		
Input Ranges	AC Voltage	150/300/600V AC
	AC Current	6/15/60/150/300A AC(using MODEL 8101 AC clamp adaptor)
		15/30/150/300/1500A AC(using MODEL 8103 AC clamp adaptor) 30/150/300/1500/3000A AC(using MODEL 8104 AC clamp adaptor)
Accuracy	±3% of full scale value	
Dimensions	82(W)× 82(H) × 49.2(D)mm(module only)	
Weight	340g approx.(module only)	

## Optional Accessories Clamp Adaptors

### MODEL 8103

Φ60    MAX 1500A    FS-150mV



MODEL 8103	
Measuring Range	15/30/150/300/1500A AC
Output Voltage	150mV AC/full scale value
Accuracy	±2% of Output
Load Resistance	>100kΩ
Conductor Size	φ60mm max.
Frequency Response	45-65Hz
Withstand Voltage	2200V AC for 1 minute
Dimensions	242(L) × 119(W) × 34(D)mm
Weight	500g approx.

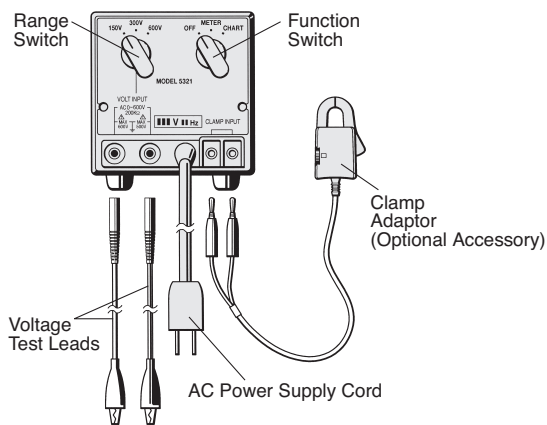
### MODEL 8104

Φ100    MAX 3000A    FS-150mV



MODEL 8104	
Measuring Range	30/150/300/1500/3000A AC
Output Voltage	150mV AC/full scale value
Accuracy	±2% of Output
Load Resistance	>100kΩ
Conductor Size	φ100mm max.
Frequency Response	45-65Hz
Withstand Voltage	2200V AC for 1 minute
Dimensions	317(L) × 150(W) × 34(D)mm
Weight	950g approx.

## Optional Diagram

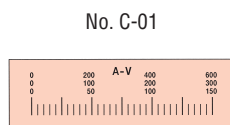


MODEL 5321

## Chart Paper

Non-Take-up Mode    No.5350-005  
 (30 divisions)  
 Take-up Mode    No.5350-008  
 (30 divisions)

## Scale



## Carrying Case (Optional)



MODEL 9047

## Ordering Information

MODEL 5361 - 2 [ ] [ ] 21 - [ ] [ ]

Chart Speed	Chart Paper	Power Supply	Power Supply Cord	Clamp Adaptor
2 Three Speeds	1 Non-Take-up Mode	1 100V AC, 50Hz	2 for Japan & others	2 Model 8103
	2 Take-up Mode	2 100V AC, 60Hz	3 for USA & others	3 Model 8104
		3 110-120V AC, 60Hz	4 for Europe & others	
		4 200-240V AC, 50Hz	5 for Australia & others	
		5 200-240V AC, 60Hz	6 for UK	
		0 Special Order	0 Special Order	