Quality and reliability is our tradition

KYORITSU

LOGGER SERIES
KEW LOGGER 5010 / 5020

ISO 9001 : 2000 , BS EN 9001
APPROVED BY BVQI

3 channel Data Logger for multiple parameter recording

Advanced KEW Logger Series

TRUE RMS CE

- **Load/Leakage Current recording and Power Quality analysis.** (only on KEW 5020)
  (Power Quality: Reference voltage, Swell, Dip, Short power Interruptions)
- **The recorded data is downloadable onto a PC via USB cable.**
- **Variation of the measured voltage and current data can be confirmed simultaneously on the PC display monitor.**
  (only on KEW 5020)
- **LED flickers when the preset current / voltage value is exceeded.**
  (Available for Trigger / Capture Recording, Power Quality Analysis modes)
- **Supplied with the user friendly software "KEW LOG Soft 2". This permits editing, analysis and graphical display of data.**
- **Simplified Power Integration.**
  (The "KEW LOG Soft 2" uses current and voltage recorded to calculate the integral power consumption)
- **Various measurements are available with 4 recording modes:**
  Normal, Trigger, Capture, Power Quality Analysis (only on KEW5020)
- **60,000 data points can be recorded when using 1 channel.**
- **Continuous measuring time :**
  Approx. 10 days (Alkaline Battery)
- **Lowpass Filter will filter out the in higher frequency harmonics.**

3 channel inputs for the simultaneous recording of Leakage Current, Load Current and Voltage

The logger can be fixed to a metal distribution board via the magnet on it's rear side

Large capacity for storing 60,000 data points

60,000 data points can be recorded when 1ch is used, and when all the three channels are used, 20,000 data points per channel can be recorded.

Max. number of recorded data

Using all 3 channels	Using 2 channels	Using only 1 channel
20,000 data	40,000 data	60,000 data

Max. recording duration

Recording interval	Using all 3 channels	Using 2 channels	Using only 1 channel
1 sec.	5:33:20	8:20:00	16:40:00
2 sec.	11:06:40	16:40:00	1 day / 9:20:00
5 sec.	1 day / 3:46:40	1 day / 17:40:00	1 day / 11:20:00
10 sec.	2 days / 7:33:20	3 days / 11:20:00	6 days / 22:40:00
15 sec.	3 days / 11:20:00	5 days / 5:00:00	10 days / 10:00:00
20 sec.	4 days / 15:06:40	6 days / 22:40:00	13 days / 21:20:00
30 sec.	6 days / 22:40:00	10 days / 10:00:00	20 days / 20:00:00
1 min.	13 days / 21:20:00	20 days / 20:00:00	41 days / 16:00:00
2 min.	27 days / 18:40:00	41 days / 16:00:00	83 days / 8:00:00
5 min.	69 days / 10:40:00	104 days / 4:00:00	208 days / 8:00:00
10 min.	138 days / 21:20:00	208 days / 8:00:00	416 days / 16:00:00
15 min.	208 days / 8:00:00	260 days / 10:00:00	520 days / 0:00:00
20 min.	277 days / 18:40:00	416 days / 16:00:00	833 days / 8:00:00
30 min.	416 days / 16:00:00	625 days / 0:00:00	1250 days / 0:00:00
60 min.	833 days / 8:00:00	1250 days / 8:00:00	2500 days / 0:00:00

* Max recording time is dependent on battery life (approx 10-days with Alkaline battery) Use of optional AC Adopter is recommended for long time recording.

The logger can take external DC input via an AC/DC adaptor (Model 8320), ideal for long recording times.

LED flickers
when the preset current/voltage is exceeded

Various measurements are available with 4 recording modes

Normal recording mode
NORM
For monitoring power line status or an intermittent leakage.

Trigger recording mode
TRIG
For observing an irregular operation of an ELCB/RCD, an irregular current / voltage.

Capture recording mode
CAP
For observing waveforms easily.

Power Quality Analysis Mode
PQA
For monitoring and observing voltage fluctuations.

Various clamp sensors are available

Voltage sensor with a built-in-differential amplifier (KEW 8309: option) can measure the floating voltage (=phase to phase voltage ungrounded)

Non Volatile Memory

Recorded data will be retained even if the batteries are exhausted or replaced due to the presence of a nonvolatile memory (guaranteed for 10 years)

Battery power indicator

Indicates battery voltage in 4-levels.
(It is possible to use the logger for a further approx 24 hours even after the warning symbol is flashing.)

The clamp sensor and / or voltage sensors can be connected to any of the 3 channels

* The logger unit automatically identifies the sensors connected.

Recorded data can be directly transferred to PC via USB cable

The user friendly PC software "KEW LOG Soft 2" is supplied

【System requirements】

PC with CPU: Pentium2 500MHz or higher and with operating system of Windows®98/Me/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 drive

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

Via the software the following parameters can be set: time/date, recording intervals, the start of recording, recording methods, name of monitoring site and comments

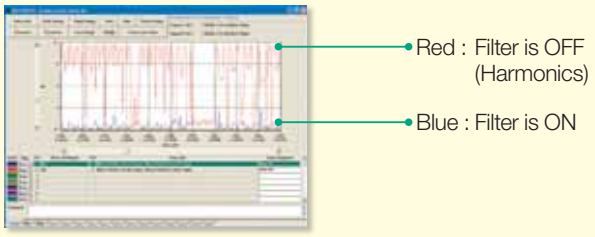
Selection of One-time mode or Endless mode

One-time on:
Recording will stop when memory is used up.

One-time off:
Overwrite the old data, and store the latest data.

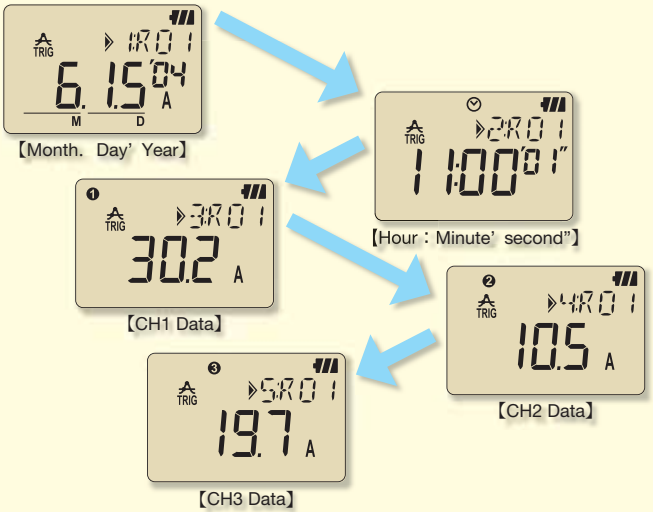
The Lowpass Filter can detect the harmonics

(Cutoff Frequency = Approx. 160Hz)

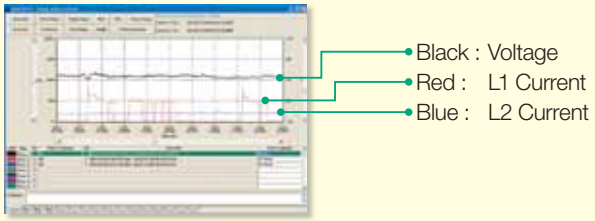


CALL : Confirmation of recorded data

- The following can be displayed: number of recorded data points, (max+ min+ peak) value for each channel complete with time/date information in the Normal recording mode. (Detected values (i.e. when values are outside preset limits) can be displayed in other recording modes)
- RECALL: The last 10 recorded data points including time/date can be recalled on the logger display.

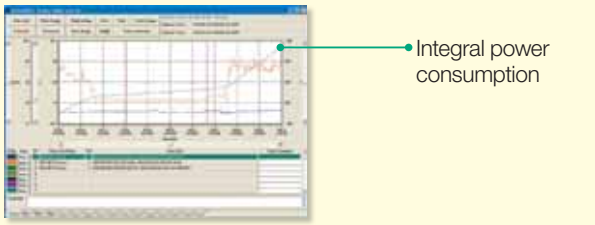


Variations of the measured voltage and current data can be displayed instantaneously on a PC display monitor (only on KEW 5020)



Simplified Power Integration

(The "KEW LOG Soft 2" uses current and voltage recorded to calculate the integral power consumption.)



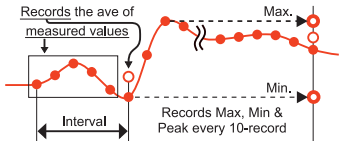
4 recording modes make various measurements possible

Normal recording mode

NORM

For monitoring power line status or an intermittent leakage.

- Records the variation of the current / voltage in a given interval (For monitoring the variation of the current / voltage against time.)



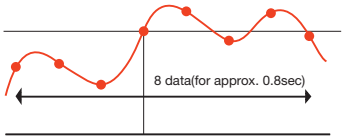
- A choice of 15 recording intervals are available: 1 sec. to 60 min. (1,2,5,10,15,20,30 sec, 1,2,5,10,15,20,30,60 min.)
- The average of the measured value in every recording interval is recorded. The Max., Min. and Peak values (sampled crest value converted to sine RMS value) are recorded every 10 readings.

Trigger recording mode

TRIG

For observing an irregular operation of an ELCB/RCD, an irregular current / voltage.

- Detects the value, time and frequency of the current / voltage when the preset value is exceeded.



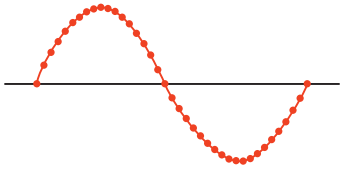
- When the detection level (i.e. preset value) is exceeded, 8 data points (True RMS values for approx. 0.8 sec) and peak value are recorded before and after the preset value is exceeded.
- Inrush current or an abnormal current / voltage can be detected by sampling the inputs at every 1.6ms.
- LED flickers when the measured values exceed the preset current / voltage value.

Capture recording mode

CAP

For observing waveforms easily.

- Waveform display via a PC by sampling the inputs every 0.55ms.



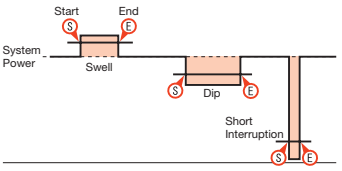
- When the preset current / voltage value is exceeded, instantaneous values are recorded for 200ms (from 10(50Hz) to 12 (60Hz) waveforms) before and after preset value is exceeded.
- LED flickers when the measured values exceed the preset current / voltage value.

Power Quality Analysis Mode

PQA

For monitoring and observing voltage fluctuations.

- Detects the reference voltage, Swell, Dip and Short Interruption. Records the values detected with the start time and end time.



- Samples the inputs every 0.55ms and detects the voltage fluctuation every 10ms.
- LED flickers when the voltage fluctuation is detected.

Application Notes and Useful Tips for KEW 5010 / 5020

Insulation Level Monitoring by checking the leakage current

- Detect an intermittent leakage current as often this is unpredictable.
- Check for nuisance tripping of an RCD/ELCB due to a leakage current. Check also if RCD is tripping at its rated tripping current.
- Check for the presence of harmonics. Use 2 clamp sensors (one per channel) on same line and use the filter function on one clamp sensor. A difference in values between the 2 channels will indicate the presence of harmonics. In this way the source generating harmonics can be traced.

Monitoring the load current

- Confirm the stability of a load (eg. motor) and the distortion it causes to the current by detecting accurately the over load caused for example by an inrush (starting) current and a surge current.
- Check for phase imbalance (in a 3 phase system)
- Rate switchgear appropriately by measuring the peak current and the inrush current.
- Analyze voltage drop due to starting current and thus compensate accordingly.

Monitoring voltage fluctuation (Power quality analysis)

- Measure/ record the reference voltage, swell, dip, short interruption.
- Locate the source of voltage drop caused by the operation of large motors in industrial applications.
  Eg. In the event of a voltage drop at the load side:
  1. If current remains stable, then the source will be upstream with respect to the load.
  2. If the current increases, then the source will be down stream with respect to the load.
- Check out on machine (eg. welding robot, heavy mechanical electric machine) downtime/stoppages caused by abnormal voltage fluctuations.

Monitoring overall electrical power of production line at factories or each floor at buildings

Analyzing and processing the recorded data with a PC

The user friendly PC software "KEW LOG Soft 2" is supplied.

【System requirements】

PC with CPU: Pentium2 500MHz or higher and with operating system of Windows® 98/Me/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 drive

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

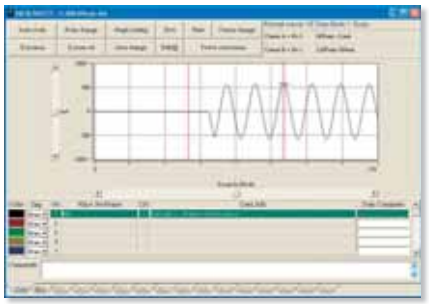
Easy to set up with a PC

(Normal and Trigger recording modes can be set up through the logger itself.)

Large data can be easily processed

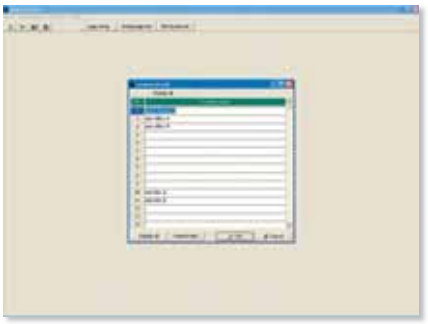
- The type of the sensor connected to the logger will be automatically recognized.
- Just click appropriate dialog boxes for set up if it is not required to input any comments.
- By using commercially available USB hub, multiple loggers can be connected to a PC and can set the synchronized time.

A graph can be made by just one click



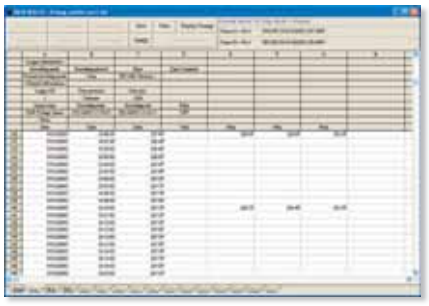
Display of Power Quality

Capable of registering the names of 1,000 sites

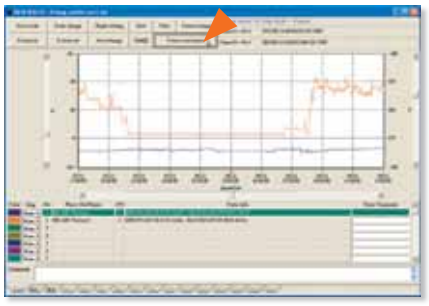


Simplified Power Integration

1. Data collection under Normal Recording mode



2. Click the "Simplified Power Integration".



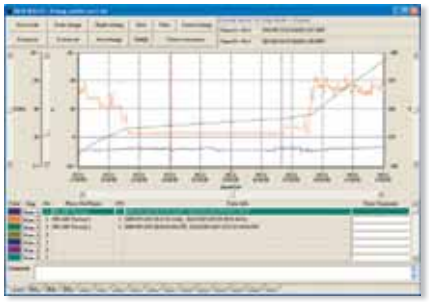
- The PC software "KEW LOG Soft 2" provides easy calculation of integral power consumption.
  (Single-phase 2-wire, Single-phase 3-wire, Three-phase 3-wire, Three-phase 4-wire)

*Simplified power integration function is available for the data recorded under Normal Recording mode.

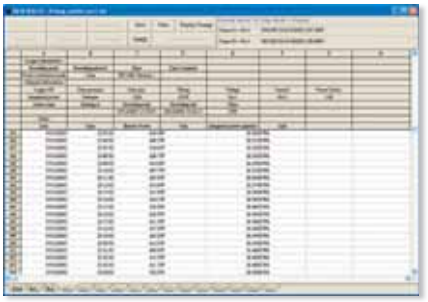
3. Check the wiring system and input the power factor

*Input any power factor. Also input any voltage value in case of KEW5010.

4. Integral power consumption will be displayed in a graph



5. The values of integral power consumption will be automatically input in the data spreadsheet



Optional Accessories

Voltage Sensor

KEW 8309

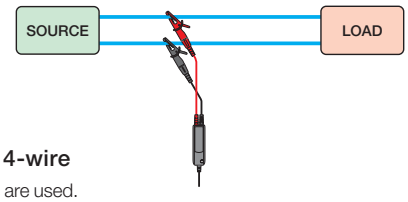
Floating voltage can be measured

*Floating voltage: phase to phase voltage not grounded

* KEW 5020-01 : KEW 5020 logger with KEW 8309 (1pce.)

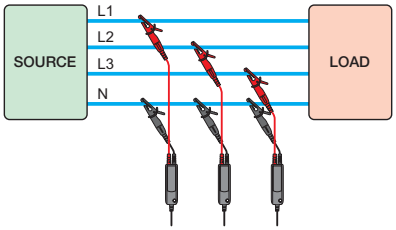
Examples of connection

Singe-phase 2-wire



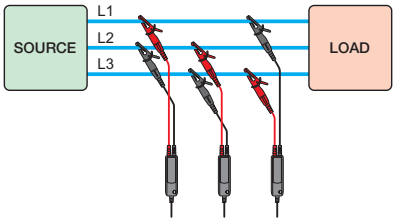
Three-phase 4-wire

3 voltage sensors are used.



Three-phase 3-wire

Measuring the floating voltage using 3 voltage sensors.



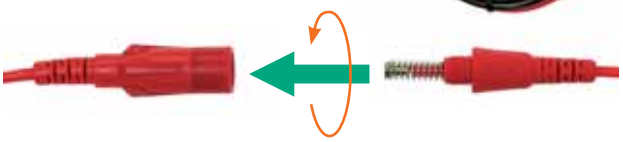
Option : Small Clips adaptor

MODEL 7197

Length : 650mm

Adaptor to convert the crocodile clips of the voltage sensor (8309) to smaller ones.

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



Max. input voltage	AC600Vrms(sin), 848.4V Peak
Input system	Differential input(can measure floating voltage)
Output voltage	AC 0~60mV(output/input : 0.1mV/V)
Measuring ranges	6~600V
Accuracy (Frequency range)	±1.0%rdg 0.1mV(50/60Hz)
Operating Temperature and Humidity Ranges	-10~50°C ,relative humidity 85% or less(no condensation)
Input impedance	Approx.3.4MΩ
Output impedance	Approx.180Ω
Location for use	Altitude up to 2000m, Indoors
Applicable standards	IEC/EN 61010- 1:2001 CAT.III 600V, pollution degree 2 IEC/EN 61010-031:2002 IEC 61326(EMC)
Withstand Voltage	5350V(rms 50/60Hz) for 5 sec., between measuring terminal and enclosure.
Dimensions	87(L)×26(W)×17(D)mm (excluding protrusions),
Weight	Approx.135g
Total length	Approx.2m
Output connector	MINI DIN 6PIN
Accessories	Instruction manual
Option	7185(Extension cord), 7197(Small safety clip)

Hard Carry Case

MODEL 9119

Dimensions :
327 (L)×310 (W)×120 (D)mm

Up to 3 sensors can be packed into the hard carry case. All the clamp sensors can fit in the case except for the KEW 8123 clamp sensor.

Combinations available

	The Available Numbers					
Logger	1					
Clamp Sensor(φ68)	1			-		
Clamp Sensor(φ40)	2	1	-	3	2	1
Clamp Sensor(φ24)	-	1	2	-	1	2

* Any clamp sensor (1 pc.) can be exchanged with the voltage sensor (1 pc.).

AC Adaptor (External Power Supply)

MODEL 8320

- Appropriate for a longer period of recording.
- Complies to 90~264V(45~66Hz).

Carry Bag

MODEL 9135

Dimensions : 250 (L)×270 (W)×216 (D)mm

Clamp Sensor Series

Leakage current & Load current detection types

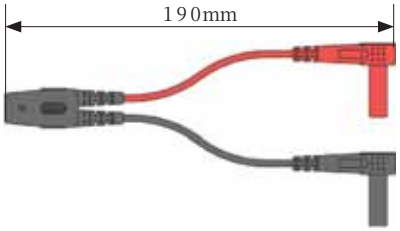
	KEW 8146	KEW 8147	KEW 8148
			
	AC 30A φ24 IEC61010	AC 70A φ40 IEC61010	AC 100A φ68 IEC61010
Conductor size	φ24	φ40	φ68
Rated current	AC 30A	AC 70A	AC 100A
Output voltage	AC 1500mV/30A(AC 50mV/A)	AC 3500mV/70A(AC 50mV/A)	AC 5000mV/100A(AC 50mV/A)
Accuracy	0~15A ±1.0%rdg±0.1mV(50/60Hz) ±2.0%rdg±0.2mV(40Hz~1kHz) 15~30A ±5.0%rdg(50/60Hz) ±10.0%rdg(45Hz~1kHz)	0~40A ±1.0%rdg±0.1mV(50/60Hz) ±2.0%rdg±0.2mV(40Hz~1kHz) 40~70A ±5.0%rdg(50/60Hz) ±10.0%rdg(45Hz~1kHz)	0~80A ±1.0%rdg±0.1mV(50/60Hz) ±2.0%rdg±0.2mV(40Hz~1kHz) 80~100A ±5.0%rdg(50/60Hz) ±10.0%rdg(45Hz~1kHz)
Withstand voltage	AC3540V for 5 sec.		
Cable length : Output connector	Approx. 2m : MINI DIN 6pin		
Operating temperature ranges	-0~50℃, less than 85% RH(without condensation)		
Output impedance	Approx. 90Ω	Approx. 100Ω	Approx. 60Ω
Applicable standards	IEC 61010-1 : 2001, IEC 61010-2-032 : 2002 CAT.III 300V pollution degree 2		
Dimensions	100(L)×60(W)×26(D)mm	128(L)×81(W)×36(D)mm	186(L)×129(W)×53(D)mm
Weight	Approx. 150g	Approx. 240g	Approx. 510g
Accessories	9095(Portable case) Instruction manual Cable marker		9094(Portable case) Instruction manual Cable marker
Options	7146(Banana φ4 adjuster plug) 7185(Extension cable)		

Load current detection types

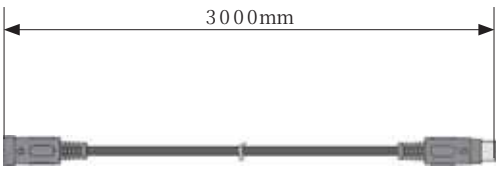
	KEW 8121	KEW 8122	KEW 8123
			
	AC 100A φ24 IEC61010	AC 500A φ40 IEC61010	AC1000A φ55 IEC61010
Conductor size	φ24	φ40	φ55
Rated current	AC 100A	AC 500A	AC 1000A
Output voltage	AC 500mV/100A(AC 5mV/A)	AC 500mV/500A(AC 1mV/A)	AC 500mV/1000A(AC 0.5mV/A)
Accuracy	±2.0%rdg±0.3mV(50/60Hz) ±3.0%rdg±0.5mV(40Hz~1kHz)		
Withstand voltage	AC3540V for 5 sec.	AC5350V for 5 sec.	
Cable length : Output connector	Approx. 2m : MINI DIN 6pin		
Operating temperature ranges	-0~40℃, less than 85% RH(without condensation)		
Output impedance	Approx. 9.5Ω	Approx. 1.9Ω	Approx. 1.5Ω
Applicable standards	IEC 61010-1 : 2001, IEC 61010-2-032 : 2002 CAT.III 300V pollution degree 2	IEC 61010-1 : 2001, IEC 61010-2-032 : 2002 CAT.III 600V pollution degree 2	
Dimensions	97(L)×59(W)×26(D)mm	128(L)×81(W)×36(D)mm	170(L)×105(W)×48(D)mm
Weight	Approx. 150g	Approx. 260g	Approx. 360g
Accessories	9095(Portable case) Instruction manual Cable marker		9094(Portable case) Instruction manual Cable marker
Options	7146(Banana φ4 adjuster plug) 7185(Extension cable)		

Options

MODEL 7146 Banana 4 mm adjustor plug



MODEL 7185 Extension cable



Specifications

Normal Recording Mode (AC 50/60Hz, Sine wave, Input: 10% or more of the range at CH1)

Range	RMS Accuracy
100.0mA	±2.0%rdg±0.9%f.s. + Accuracy of Sensor
Other ranges	±1.5%rdg±0.7%f.s. + Accuracy of Sensor
Crest Factor	2.5 or less :RMS accuracy(sine)+ 2%rdg+1%f.s.

*Max, Min and Instant Peak values in Normal Recording mode are just reference values; their accuracies aren't guaranteed.

Trigger Recording Mode (AC 50/60Hz sine wave)

Range	Accuracy
100.0mA	±3.5%rdg±2.2%f.s. + Accuracy of Sensor
Other ranges	±3.0%rdg±2.0%f.s. + Accuracy of Sensor

Capture/ Power Quality Analysis Recording Mode

Range	Accuracy
100.0mA	±3.0%rdg±1.7%f.s. + Accuracy of Sensor
Other ranges	±2.5%rdg±1.5%f.s. + Accuracy of Sensor

		KEW 5010	KEW 5020
Recording Mode		Normal, Triger, Capture	Normal, Triger, Capture, Power Quality Analysis
Operating system		Successive Approximation(CH1 single synchronized sampling)	
Rated max. working voltage		AC9.9Vrms, 14V peak value	
Number of input channel		3ch	
Measuring method		True RMS	
RMS measuring interval		approx. 100ms.	
Sampling interval	Normal / Trigger mode	approx. 1.65ms/CH	
	Capture mode	approx. 0.55ms (waveform: at every 1.1ms)	
	P.Q.A mode	—	approx. 0.55ms
Low battery warning		Battery mark display (in 4 levels)	
Over-range indication		"OL" mark is displayed when exceeding the measuring range	
Auto power off		Power-off function operates automatically after a switch remains for 3min. (when recording is stopped)	
Location for use		Indoor use, Altitude up to 2000m	
Operating temperature & humidity range		-10°C~50°C / Relative humidity 85% or less (no condensation)	
Battery		DC6V : Alkaline battery(LR6)×4pcs / External supply DC9V(Special AC Adapter)	
Possible measurement time		Approx.10days (with alkaline LR6 batteries)	
Applicable standards		IEC 61010-1:2001 CAT.III 300V Pollution degree2 IEC 61326 (EMC standard)	
Withstand voltage		AC3540V(RMS 50/60Hz)/ for 5sec.	
Dimension		111(L)×60(W)×42(D)mm	
Weight		Approx.265g	
Accessories		Alkaline battery LR6×4pcs 9118(Carrying case) PC software "KEW LOG Soft 2" 7148(USB cable) Instruction manual Quick manual Install manual USB Notice sheet	
Option		8146/8147/8148(Leakage & Load current Clamp Sensor) 8121/8122/8123(Load current Sensor) 8309(Voltage Sensor : only KEW5020) 8320(AC Adapter) 9135(Carrying Bag) 9119(Hard Case) 7185(Extension cord for sensor)	

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.
No.5-20,Nakane 2-chome, Meguro-ku,
Tokyo, 152-0031 Japan
Phone:81-3-3723-0131
Fax:81-3-3723-0152
E-mail:info@kew-ltd.co.jp
Factories:Uwajima & Ehime
http://www.kew-ltd.co.jp