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Powerfully Measured

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Q1. What is the Electrorecorder?

A. Electrorecorders are a range of voltage and current loggers. They allow users to monitor and record voltages and currents in electrical systems, the products record the average voltage or current, maximum voltage or current, & minimum voltage or current, with dates and times. The loggers store this data to internal memory for later analysis using Electrosoft, the supplied Windows (9X, NT, 2K, ME, XP, Vista, Windows 7) based software. The Electrorecorder allows users to quickly and cost effectively monitor supplies.

Q2. Why is the Electrorecorder different?

A. The Electrorecorder range use a constant sampling technique, unlike the single reading of competitors. When the loggers start to record, they sample every channel 16 times per cycle, a cycle is 16ms at 60Hz and 20ms at 50Hz. At the end of each averaging period, 3 quantities are saved for each channel, the True RMS average, the Max, which is the highest cycle value during the period and the Min, lowest cycle value. This means that it will record all the peaks and troughs which are one cycle or longer.

Q3. How does it work?

A. The Electrorecorder samples the voltage or current input 16 or 32 times per cycle (model dependent), it then averages each voltage cycle over the selected period (1 sec to 60 min). A cycle is 20ms for 50Hz or 16.6ms for 60Hz. Throughout each averaging period, it monitors and records the lowest & highest voltage (and/or current) cycle values and stores these along with date and time in memory. For example, on a single channel voltage logger (EC-1V-IP65):- You want to record voltage over a period of 1 week - you set the Electrorecorder EC-1V to have an averaging period of 2 minutes, which actually gives 10 days of logging. The Electrorecorder will sample every voltage cycle. During each 2 minute period it calculates a running total. At the end of the period the rms voltage over that preceding 2 minute period is calculated and saved. Also during the preceding 2 minute period it will have recorded the single lowest voltage cycle value and the single highest voltage value. For example, at the start of the 2 minute period the Electrorecorder will start sampling every voltage cycle. It looks at each cycle value and compares each to the lowest and highest it has seen to this point during this 2 minute period, if the value is lower (90V) than the previous lowest (101V) then it will replace the value in the 'min voltage' location. Similarly if it is higher (230V) than the previous highest (222V), it will replace the value in the 'max

The Electrorecorder will not identify the exact time of the max or min, except that it occurred during this 2 minute period, which does have a date and time! It will record and calculate the average (RMS) voltage or current over successive 2 minute periods, along with the date and time. So, for each 2 minute period, 3 values will be recorded, (1) Average Voltage (230V), the average of every cycle during the 2 minute period, (2) Minimum Voltage (209V), the lowest cycle voltage and (3) Maximum Voltage (241V), the highest cycle voltage.

Q4. Can it detect spikes?

A. YES, it will see events of 1 cycle (16/20ms, 60/50Hz) or longer. It will record a single minimum and a single maximum voltage cycle (16/20ms) during each averaging period. If the averaging period were set to 10 seconds, the Electrorecorder would sample every cycle 32 times and at the end of each 10 second period, calculate an RMS average, also during the 10 second period it would record the lowest and highest cycle value. Domestic customers do not normally see events less than one cycle!

Q5. Does it measure true RMS voltage?

A. YES, it samples every voltage cycle 32 times and calculates the RMS value at the end of each averaging period. It can be set to measure to EN 50160:1994 (10 minute rolling average).

Q6. Does it measure and conform to recording standard EN 50160:1994? ("Voltage characteristics of electricity supplied by public distribution systems")

A. YES.

Q7. What Category (CAT) is the Electrorecorder?

A. Model dependent, please see the relevant datasheet.

Q8. Can the software be run on Linux or a MAC?

A. No, only PC Windows based at present, however we are developing Electrosoft to run on these other 'platforms'.

Q9. Is the Electrorecorder available with other memory sizes?

A. Yes, the basic models have 64 kilobytes per channel of non-volatile SEEPROM, we may be able to supply double memory per channel, please contact your local distributor or Acksen Ltd.

Q10. How accurate is the Electrorecorder?

A. Within the range 90 to 260 Vac accuracy is ±1% of reading.

Q11. How do harmonics effect its accuracy?

A. The Electrocorder measures true RMS, so harmonics will have little effect on the measurement - this is true to a limit, for example, where there is severe harmonic distortion, the RMS measurement will become inaccurate.

Q12. What is the frequency response of the Electrocorder?

A. 45Hz to 65Hz. The -3dB points are at approximately 45Hz & 65Hz.

Q13. Can it measure neutral to earth instead of live to earth?

A. YES.

Q14. Does the Electrocorder work on 60 Hz?

A. YES, it is designed for both 50 and 60Hz power frequencies.

Q15. How long can the Electrocorder record for?

A. This depends on the model and averaging period you choose, the maximum sample time is several months. Set to a 1 second averaging period, it will record for 2 hrs, 12 sec for 1 day and 60 min for 300 days.

Q16. What sampling intervals are available (EC-1V)?

A. This is model dependent, the loggers can be set to have an averaging period from 1 second to 60 minutes, approximate logging times are:-
1 second average = 2 hrs recording.
12 seconds average = 1 day recording.
1 minute average = 5 days recording.
10 minutes average = 50 days recording.
60 minutes average = 300 days recording.

Q17. To which standards does the Electrocorder conform?

A. General: IEC61010 (CAT II, 300V), Low Voltage Directive – LVD, Measurement EN 50160 : 1994, "Voltage characteristics of electricity supplied by public distribution systems." CE marked, 3V/m, Emissions EN 55022 : 1994B, (EN 50081-1 : 1992), Immunity EN 50082-1 : 1992, following the provisions of EMC Directive 89/336/EEC.

Q18. What is the delivery time for the Electrocorder?

A. For small orders next day or two days for large orders (greater than 200) typically 2 - 6 weeks.

Q19. What is the battery life of the Electrocorder?

A. The internal (changeable) battery will last approximately 12 to 24 months model dependent, please see the relevant datasheet - there is a low battery warning.

Q20. When I use a USB to serial converter the logger does not download data properly?

A. Many, many USB converters do not conform to the RS-232 standard, we can supply you with one that does work properly with the Electrocorder range! It may well be that the converter you use does work consistently with other equipment, this of course does not mean that the converter itself works properly and conform to "Radio Standard No.232, or RS-232 for short.

Q21. Sometimes when I attempt to download data, I get a message saying there is no data?

A. If the battery gets temporarily knocked out during transport, or it has 'died', the processor can get a reset. The battery is used to keep the clock running. To extract the data you will need to use the Data Recovery option in the Tools Menu. If the battery appears good (when you connect the logger), then ignore the step which refers to replacing the batteries. When you registered Electrosoft free online, you were given a Registration Key, this number also acts as the password.

Q22. How is the Electrocorder calibrated?

A. The unit is calibrated from within Electrosoft, simply choose the menu option and follow the instructions, which tell to connect it into a known regulated and calibrated voltage and current supply (clean 50Hz or 60Hz), then follow the instructions.

Q23. What is the password needed for calibration?

A. When you registered Electrosoft free online, you were given a Registration Key, this number also acts as the password.

Q24. Can the Electrocorder be re-calibrated without returning to Acksen?

A. YES, this can be done by anyone (with a calibrated AC voltage supply).

Q25. Does the Electrocorder conform to LVD (Low Voltage Directive)?

A. YES.

Q26. What are the dimensions of the Electrocorder?

A. This depends on the model, please refer to the relevant datasheet.

Q27. Will the Electrocorder work at 110v and 60 Hz?

A. YES.

Q28 How accurate is the Electrocorder at 110V and 60 Hz?

A. Normally 1% of reading for voltage and around 5% for current, please refer to the relevant datasheet.

Q29. Is there a 3 phase version of the Electrocorder?

A. Yes, the EC-3, EC-7 ranges are 3 phase.

Q30. The Electrocorder seems not to record dips and spikes, explain?

A. It will not see voltage spikes or dips of less than 1 cycle (20/16ms) in duration. The Electrocorder is a voltage recorder, it is designed to allow the power company to determine whether or not voltage in a customers premises is generally low or high and whether or not further investigation is needed; it will record events of one cycle duration.

Q31. Can the Electrocorder measure 415 or 430 Vac?

A. Yes, some models are 500V, while some are 300V, please check the relevant datasheets.

Q32. Can the Electrocorder measure and record 600V and 3 phase?

A. Yes.

Q33. Can the Electrocorder measure power factor?

A. Yes, the EC-7VAR records Power Factor.

Q34. Can the Electrocorder measure reactive power?

A. Yes, the EC-7VAR records Reactive Power.

Q35. Can the Electrocorder measure frequency?

A. The present models do not.

Q36. Why use a Plug-in Electrocorder?

A. The Electrocorder is designed to allow Power Companies to very quickly react to customer voltage complaints and establish if there is a problem – they can then use more sophisticated equipment to fully diagnose the problem.

- 1) Increase Customer Care and Quality of Service by reacting instantly to complaints!
- 2) Free-up key staff time, allowing them to concentrate on priorities!
- 3) Free-up high cost inventory for priority work, e.g. why use a Dranetz in domestic situations!

Q37. Which mains plug standards are available?

A. Europe - CEE 7/16 ('19mm Europlug')
-/EU, UK & Ireland - BS1363 (13A square pin) -/UKI, North America - NEMA 5-15 -/NA, Australia - AS 3112 -/ANZ, New Zealand - NZ SS 198-1967 -/ANZ, Waterproof – IP65 -/IP65 NEMA 12/4, Other standards can be supplied, for example BS932 (15A round pin).

Q38. I'm not happy about mailing an EC-1V to customers, I like to visit the premises!

A. Let's look at some of the alternatives:-
•You don't have to mail it if you do not want, deliver as you would any voltage recorder, this will free up high cost sophisticated equipment for other applications.

•As the Electrocorder can be installed by anyone, use other staff to deliver and install, for example on their way home they may pass the customers

house. You can use non technical staff, keeping the customer contact

•Many Power Companies feel the same at the start – when we consider that the Electrocorder is a normal plug, we realise that there is no problem with a customer plugging it in!

Q39. What happens if I mail it, the customer could install it anywhere – I like to install it near the incoming circuit (meter-board)?

A. There is always a risk of this, in a small percentage of cases the customer will install in a 'garden shed'. We have to accept this risk. We would have to visit this customer anyway if we did not have the Electrocorder.

