

NDL8000 series

AC voltage and current data loggers

- Single or three-phase, for current or voltage
- 2 MB data memory
- Recording more than one year without the need of battery replacement (1 minute rate)
- Isolated RS232 communication port
- Easy to use
- TrueGraph included

Voltage

- Direct measurement up to 600 (750) V_{AC} L-L
- Programmable PT ratio
- For single and three-phase measurement, 3 or 4 wires
- Simultaneous measurement of L-N and L-L

Current

- Direct measurement up to 3000 A_{RMS}
- Calculation of neutral current



General description

The NDL8000 series is a battery powered unit, able to record electrical parameters. These devices replace strip chart recorders in many applications, and they offer better accuracy, they are lighter in weight, rugged and maintenance free. The recorded data can be displayed on a PC.

They are available for single and three-phase, 3 or 4 wires networks.

The 12 bit sampling and the True RMS calculation ensure accurate measuring even by distorted waveform.

The recording start/stop can be operated by 2 keys easily. The command acknowledgment, the device status and the battery level are indicated by two LEDs.

The non volatile FLASH type memory guarantee data retention even by exhausted battery. The meter configuration includes a 2 MB memory.

The isolated RS232 allows the data logger to be connected to a PC. By the TrueGraph software it is possible to see instantaneous measurements, set recordings and download recorded data.

The TrueGraph software allows the graphic and tabular analysis of recorded data. Moreover the software includes efficient statistical and data search functions.

All data can be exported to word processors for further analysis or as image files.

Benefits

- The models for voltage measurement can be connected directly up to 600 (750) V_{AC} L-L without the need for voltage transformer. If this value is exceeded it is possible to set the PT value.
- The models for current measurement can also interface directly Rogowski coils without the need for external integrators.
- Excellent memory capacity and long life battery ensure a long period recording without the need for data downloading.
- Low cost, compactness and maintenance free are some of the advantages, in comparison with the conventional strip chart recorders.
- The user programmable recording parameters make the unit suitable to a large number of applications. The sampling rate can be selected between 1 second and 24 hours and the memorization can be chosen between wraparound or fill-in mode.

Applications

- Load monitoring in electrical networks
- Power monitoring & control systems
- Individual machine load monitoring
- Strip chart recorders replacement
- Network anomalies recording and analysis

Main features

Measurement

- 1 up to 4 channels models.
- Accurate True RMS measurement even by distorted waveform.
- 12 bits high resolution A to D converter.
- 128 samples per cycle.

Voltage measuring models

- Measurement on single, two- and three-phase network, 3 or 4 wires, direct voltage included.
- Direct connection up to 600 (750) V_{AC-DC} L-L. The connection is carried out by safety connectors.
- Programmable PT Value for medium and high voltage networks
- Measurement and calculation of L- N, L- L and system values.

Current measuring models

- 1, 3 or 4 channels for single and three-phase systems, with or without neutral current measurement, or as independent channels.
- Internal calculation of neutral current when only 3 transducers are used.

Memory

- 2 MB FLASH type data memory. Data are retained even if power supply is down (exhausted or removed battery).
- Recording parameters programmable from PC by the TrueGraph software.
- Three selectable recording modes: fill-in, wraparound and wraparound with an auto-decreasing recording rate for recording time extension when memory is full.
- Built-in RTC for time reference.
- Programmable recording rate between 1 second and 24 hours.

Communication

- Optoisolated RS232 serial communication port.
- The serial port is powered directly from PC RS232.
- Programmable communication speed up to 19200 bps.

Keys and commands

- Two keys for START/STOP of recording and data logger auto-diagnosis.
- Two LEDs for data logger status indication.
- Easy to use. Few simple operations are required, the instructions are printed directly on the data logger panel (see panel picture below).

		NDL8001-VAC	NDL8003-VAC	NDL8001-AAC	NDL8003-AAC
SINGLE PHASE VOLTAGE	V_{L-N} [V]	●			
PHASE VOLTAGE	$V_{L1-N} - V_{L2-N} - V_{L3-N}$ [V]		●		
LINE VOLTAGE	$V_{L1-L2} - V_{L2-L3} - V_{L3-L1}$ [V]		●		
SYSTEM VOLTAGE	V [V]		●		
SINGLE PHASE CURRENT	I_L [A]			●	
LINE CURRENT	$I_{L1} - I_{L2} - I_{L3} - I_N$ [A]				●
SYSTEM CURRENT	I [A]				●
REAL TIME CLOCK	Date, Hour	●	●	●	●
RECORDING TITLE (TrueGraph)	31 Characters	●	●	●	●
PLANT REFERENCE (TrueGraph)	50 Characters	●	●	●	●
SUBJECT (TrueGraph)	50 Characters	●	●	●	●



TrueGraph software

The TrueGraph software is supplied with the data logger and allows it to be connected to a PC in order to program it and to transfer its recorded data.

The TrueGraph is an user-friendly software for Windows environment; the online help support the user in every single operation.

The software connection is carried out by the PC RS232 port using the supplied cable. At software running the connection is automatically carried out; if a data logger is connected to the PC serial port, it is detected after a few seconds and its identification data are displayed in an information window.

Main features

Data viewing

All the measurements are displayed on real time basis once the connection is established. This function is also useful to check the proper connection of the data logger to a PC.

Programming

The software allows the user to program in a simple and fast way the data logger parameters like:

- date and time
- recording rate
- recording parameters
- recording mode (fill in or ring mode)
- communication port parameters
- PT ratio (voltage models)
- current full scale (current models)

During the programming phase the time for memory fill-in is displayed and its estimation is based on recording rate and number of parameters to be recorded.

Data transfer and analysis

After recorded data had been transferred to a PC, they can be analysed directly by TrueGraph software or exported to spreadsheets for further analysis.

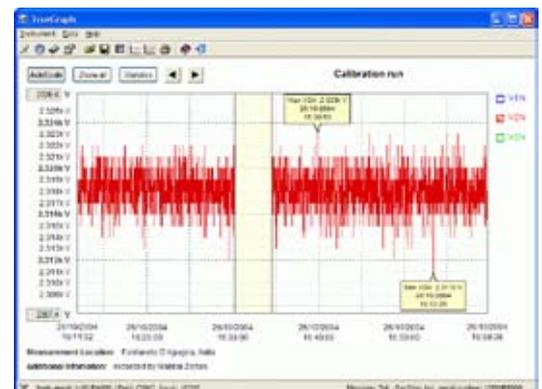
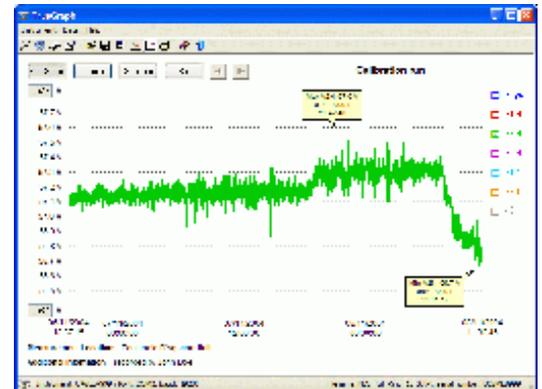
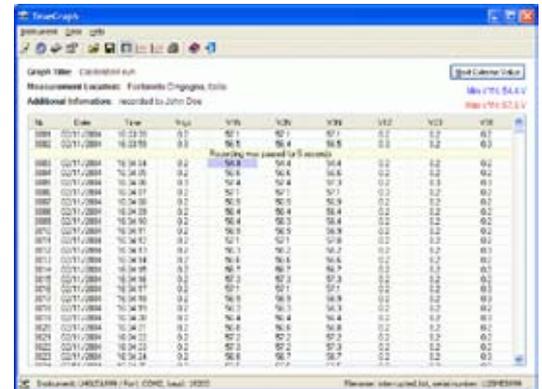
TrueGraph main functions are:

- data display in chart format
- data display in graphic format
- search for min / max values
- graphical display of floating average value
- statistical analysis
- data export
- printout

Other functions like zoom, autoscale, floating cursors, etc. make the analysis and search for values easier and user-friendly.

Printouts

All the results from analysis (graphics, tables, statistics...) can than be seen as print preview and printed.



Specifications

Power supply

Battery: 9 V alkaline
 Battery life: see table on page 5

Voltage inputs

Maximum measurable voltage: 600 (750) V_{AC} max L-L (or L-N for single phase)
 Input impedance: >1.3 MΩ
 Load: max 0.15 VA for each phase
 Typical accuracy: ±0.3% reading ±0.05% full scale

Current inputs

Maximum measurable current: 15÷3000 A_{RMS}
 Measurements
 Sampling rate: 128 sample / period for 2 period
 Calculation: True RMS
 A/D conversion: 12 bits

Signals and operating controls

Signals: 2 LEDs for diagnosis
 Keypad: 2 keys

Memory

Type: 2 MB FLASH non-volatile
 Recording rate: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 seconds
 1, 2, 5, 10, 15, 20, 30 minutes 1, 6, 12, 24 hours
 (values selectable from PC)
 Mode: selectable among: 1) fill-in, 2) wraparound,
 3) wraparound with automatically reduced rate

Communication port

Type: optoisolated RS232, powered from PC
 Baud rate: from 2400 to 19200 bps

Real time clock

Type: hardware RTC
 Accuracy: ± 30 ppm

Environmental conditions

Operating temperature: from -10°C to +60°C
 Storage temperature: from -20°C to +75°C
 Relative humidity: 80% max. without condensation

Mechanical features

Material: self-extinguishing plastic UL-94
 Protection degree: IP50 (with battery hole closed)
 Size / weight: 110x80x40 mm / approx. 160 gr

Standards compliance

Safety: 73/23/EEC and 93/68/EEC directives, EN61010.1, EN61010-031 safety standards
 EMC: 89/366/EEC directive and following modifications 93/31/EEC and 93/68/EEC,
 EN50081-2, EN50082-2, EN61326/A1

(1) The transducers must have a double insulation according to the safety standard EN61010-1, the voltage insulation value must be suitable for the required working voltage.



Rogowski clamps

Carrying bags

Approximate battery life

RECORDING RATE	Ni-Cd 120mAh	Zn-Cl 300mAh	Alkaline 600mAh
1 second	> 5 days	> 15 days	> 30 days
6 seconds	> 25 days	> 2,5 months	> 5 months
1 minute	> 2,5 months	> 7 months	> 1 year

NOTE: the instrument is in recording mode, without communication on RS232 port. The values are referred to the NDL8003-AAC model, the instrument with highest battery consumption.

Measuring set with accessories (NDL8003-AAC)



AVAILABLE MODELS



NDL8001-VAC single-phase voltage



NDL8003-VAC three-phase voltage



NDL8001-AAC single-phase current



NDL8003-AAC three-phase current

ORDER CODE													
NDL			B	X	2	6	X	X	X	X			
<p>NDL8000</p> <p>Series A = Algodue C = Custom</p> <p>Language I = Italian U = English</p> <p>Communication protocol B = A2 ASCII</p> <p>Serial port 2 = RS232</p> <p>Memory 6 = 2 MB</p>									<p>Channels 1 = Single phase (1 channel) 3 = Three phase (3 channels)</p> <p>Type V = 0÷600 V_{AC} voltage model (provided with cables and alligator clips) A = 15÷3000 A_{RMS} current model (provided with 60 cm Rogowski coil/s)</p>				

Subject to change without notice



Innovative Electronic Systems

28010 Fontaneto d'Agogna (NO) - Italy • Via Passerina, 3/A

☎: +39 0322 89307 • 📠: +39 0322 89871

E-mail: sales@algodue.it • <http://www.algodue.com>

