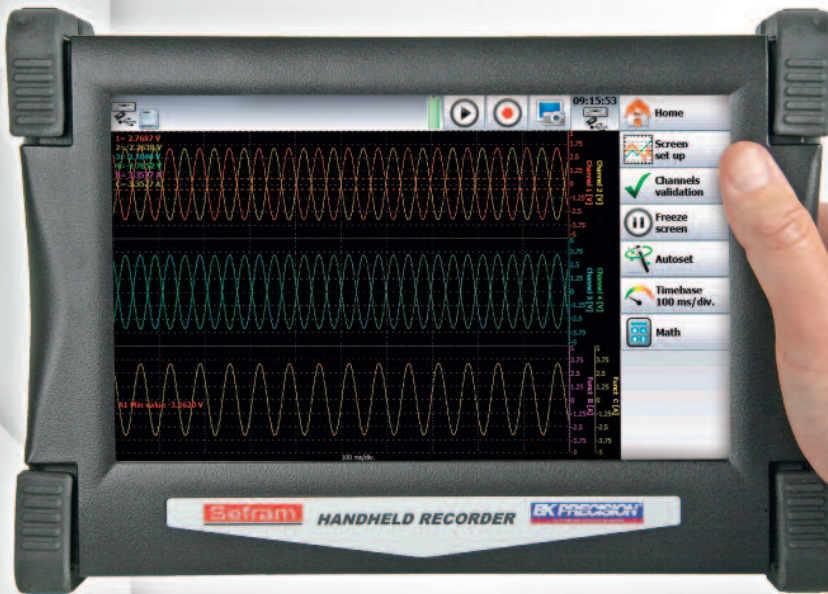
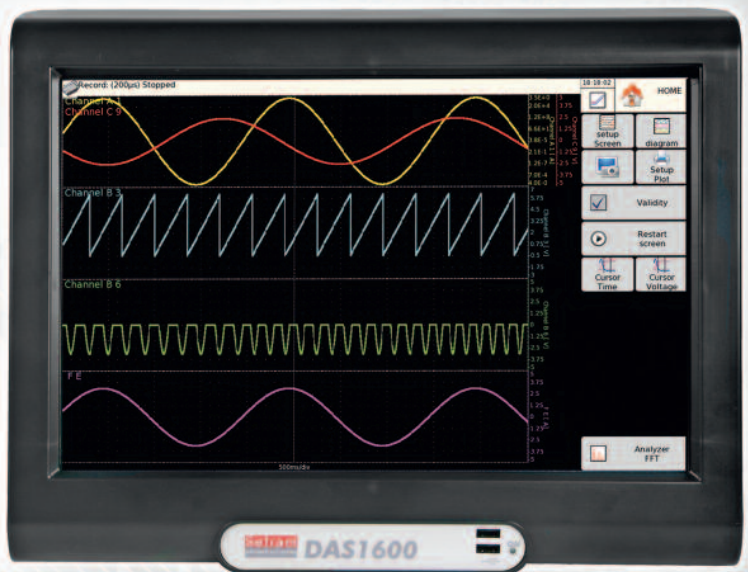


# Recorder Product Guide

SEFRAM  
POWER  
H236HW7



The best technology distilled to give unbeatable performance and support



**BK PRECISION**  
ELECTRONIC TEST INSTRUMENTS

Each SEFRAM recorder is designed and manufactured in Saint-Etienne/France

**Sefram**



## Sefram recorders : a very long history !

With this new catalog and for the first time ever, Sefram is launching its new range of recorders which are fully equipped with touch-sensitive screens.

This product is not on offer anywhere else in the world.

This innovation is the result of more than 60 years of research which has seen recorders arriving at this level of technical perfection and simplicity of use.

We are convinced that the new DAS30/50 range will meet all your industrial maintenance needs. These recorders are designed for use in all conditions, they are portable and the 10 inch screen offers unequalled user-friendliness.

For recording specialists, the paper-free ranges DAS800, 801, 1600 offer you not only more effective recordings but also data entry and processing technology as well as an interface which make the devices interconnective.

For all measurement campaigns which require paper printing, the 8460 series is available with a paper width of 270mm and a printing speed of up to 200mm/s.

For each application, we have developed adapted measurement boards:

- A board with 6 universal channels which has become Sefram's best-seller. It allows the recording of voltages, currents, frequencies and temperatures. Completely isolated and CAT III – 600V.
- A new universal high-voltage board with 6 channels which allows live measurement up to 2000 VDC. Completely isolated and CAT III – 1000V
- An isolated 6 channel strain-gauge board for all your physical measurements
- A board with 12 multiplexed channels to meet all your control and process requirements

By combining 2 universal boards, your recorders can be transformed into energy analyzers with dual-network energy analysis of up to 1000 Hz.

The entire team at Sefram is at your disposal for any questions you may have.

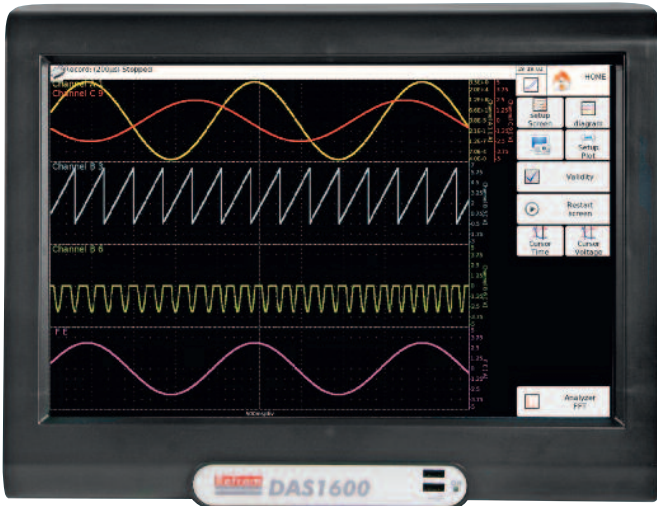
We appreciate your business and all the confidence you have placed in us.

# DAS 1600 / DAS 1600SV\*

## Paperless recorder with 72 analogue channels!



The DAS1600 is the first recorder from the new SEFRAM range and is equipped with a touch screen. The 15.4 inches colour screen allows clear and simple display of your recordings. The DAS 1600 includes a 500 Gb hard disk and both USB & Ethernet. It can record up to 72 analogue channels and 16 logical channels. New acquisition cards complete the offering to provide solutions to all industrial applications.



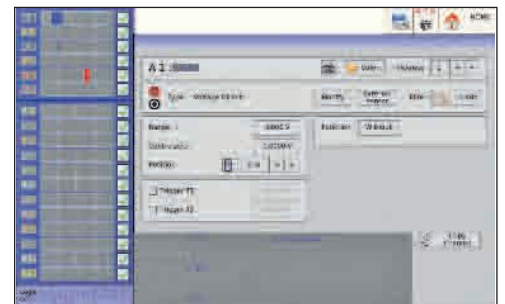
### Capabilities

- 6 to 72 analogue channels
- Universal inputs
- DC, AC+DC RMS voltage measurement
- Frequency, thermocouple, PT100
- Strain gauge measurement
- 16 logical channels
- 16 bit resolution
- 15.4 inch TFT color touch screen
- 1 Mega sample/s sampling rate
- 128Mword memory
- 500 Gb internal hard disk
- Interfaces: 6 x USB, Ethernet, XGA
- Power analysis function: 50Hz, 60Hz, 400Hz, 1KHz
- IRIG, GPS and battery options
- Wifi option
- Co-No-Go mode
- MIL-STD-810G option
- IEC 1010 CAT III 600 V

### Analogue cards for all applications, from 6 to 72 channels :

The DAS 1600 is equipped with 6 slots which allows the use of combinations and multiples of the following cards :

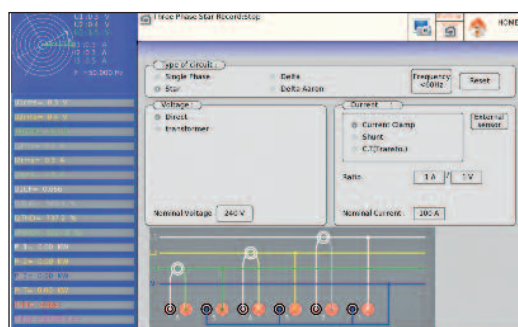
- 6 channel (isolated) universal card, DC, RMS, AC+DC, up to 500VDC/AC
- 12 channel multiplexed card, DC voltage, temperature
- 6 channel isolated strain gauge card, voltage, thermocouple, PT1000
- 6 channel universal isolated card DC, RMS, AC+DC up to 1000V AC/DC (please contact us for details)



Main menu

### Intuitive man-machine interface:

The 16/10 format, 15.4 inch touch screen allows quick access to all essential setup and analysis functions.



Setup menu



Trigger menu

To select the right recorder for your needs Please visit our website : [www.sefram.fr](http://www.sefram.fr)



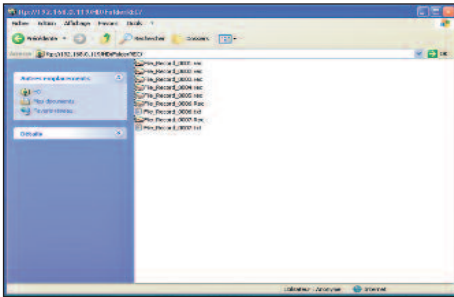
# DAS 1600 / DAS 1600SV\*

## Paperless recorder with 72 analogue channels !



Touch  
TECHNOLOGY

▶ FTP : easy transfer of records



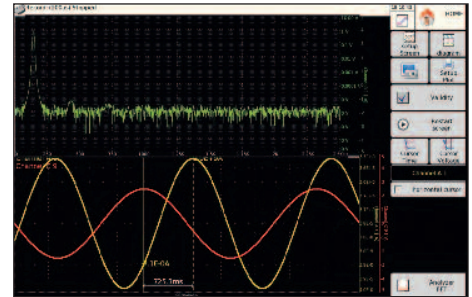
File transfer and display with FTP via TCP-IP network.

▶ WiFi



The DAS 1600 combines high performance and management simplicity thanks to WiFi. Every recorder application can be controlled remotely.

▶ FFT analysis



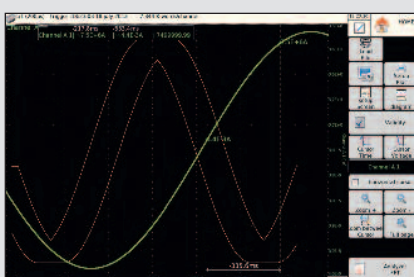
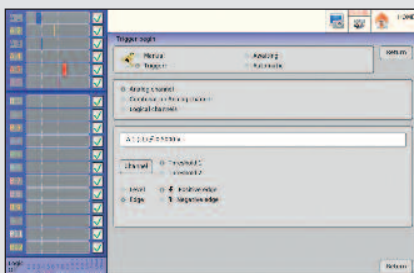
FFT analysis operates in real time. You have easy access to all functions.

5

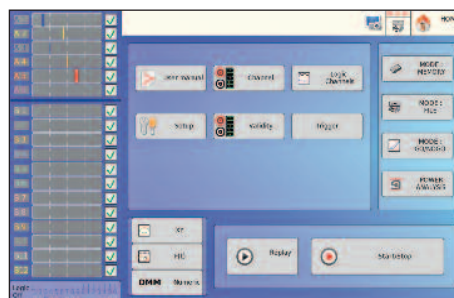
### Sophisticated trigger modes

The DAS 1600 allows all kinds of trigger :

- On rising or falling edge
- Wait and delay time
- Standard GO-No-Go mode
- On external logical signal
- Pre and post trigger

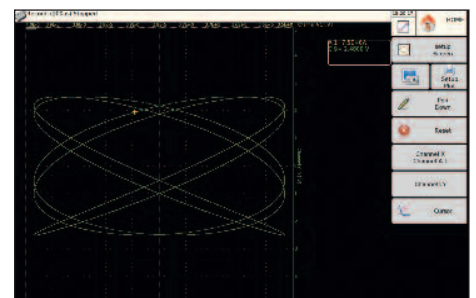


▶ Different operating modes



Expert mode: access to all setup functions. User mode: restricted access.

▶ XY mode with "pen up and down" function



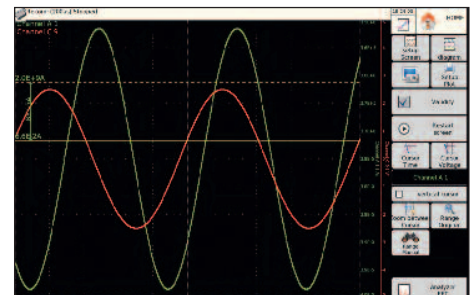
Real XY recorder: the DAS 1600 will be a good replacement for your analogue graph plotter.

▶ Digital display

Step 1 A 1 = -0.8142 V	Step 1 B 1 = 2.3586 V	Step 1 C 1 = 0.0002 V
Step 2 A 2 = 3.8585 V	Step 2 B 2 = -4.3027 V	Step 2 C 2 = 2.0828 V
Step 3 A 3 = -0.2401 V	Step 3 B 3 = 3.6224 V	Step 3 C 3 = 4.5448 V
Step 4 A 4 = -1.4781 V	Step 4 B 4 = 1.9983 V	Step 4 C 4 = <-5.0000 V
Step 5 A 5 = -1.4781 V	Step 5 B 5 = -4.2412 V	Step 5 C 5 = <-5.0000 V
Step 6 A 6 = 2.7441 V	Step 6 B 6 = 0.0000 V	Step 6 C 6 = -1.5903 V

Displays all saved parameters on a single screen for convenience.

▶ Zoom Mode Analysis



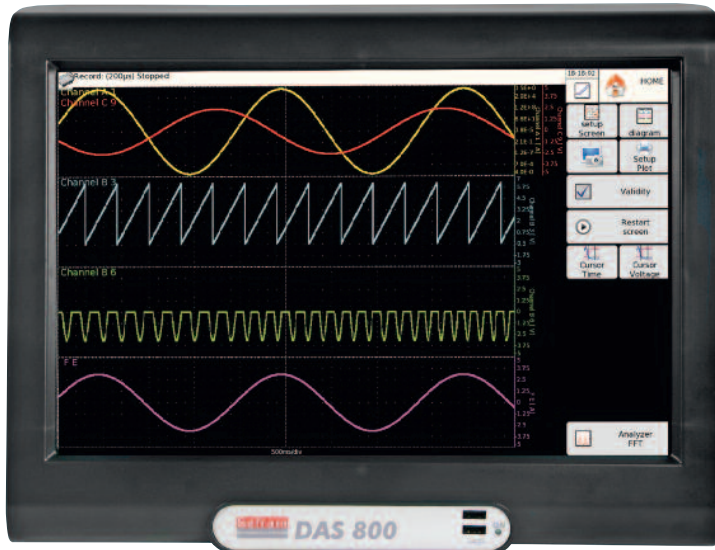
Zoom between two cursors in order to visualize the rising and falling times of specific signals.

# DAS 800 / DAS 800SV

## Paperless tactile recorder, 6 universal isolated channels

The DAS 800 and the DAS 800 SV (without fan) are equipped with a 15.4 inches colour touch screen. They allow you to visualize your recordings comfortably and easily. Including a 500 Gb hard disk, 6 universal analogue channels and both USB and Ethernet interfaces, the DAS 800 combines autonomy, power and simplicity.

6

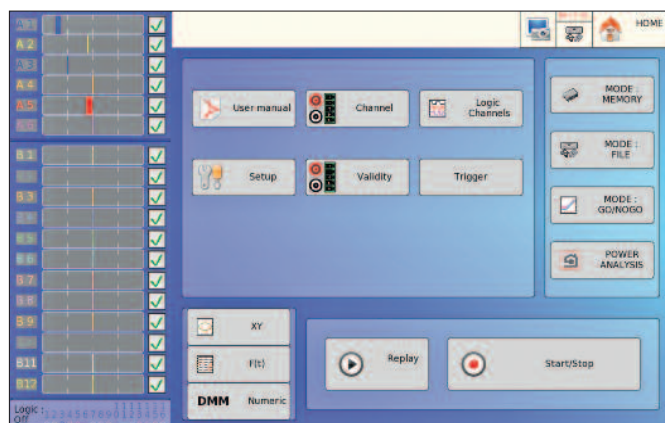


### Capabilities

- 6 analogue channels
- Universal inputs
- DC, AC+DC RMS voltage measurement
- Frequency, Thermocouple, PT100
- 14 Bit resolution
- 16 logical channels
- 15,4 inch TFT color touch screen
- 1 Mega sample/s sampling rate
- 128 Mword memory
- 500 Gb internal hard disk
- Interfaces : 6 X USB, Ethernet, XGA
- Power analysis function : 50Hz, 60Hz, 400 Hz, 1 kHz
- Battery option (except DAS 800SV)
- Wifi option
- 19" rackmount kit (option)
- Go-No-Go mode
- IEC 1010 CAT III 600 V

### ▶ Intuitive man-machine interface

All of the setup, visualization and analysis functions are logically and conveniently presented.



### ▶ Acquisition communication and processing :

The DAS 800 and the DAS 800 SV directly communicate with your computer thanks to the Virtual Network Computing software. You will be able to setup your recorder via Ethernet or WiFi connection. You can also forecast the trigger and receive an e-mail when the acquisition is complete.



**Sefram**

To select the right recorder for your needs Please visit our website : [www.sefram.fr](http://www.sefram.fr)

# DAS 801 / DAS 801SV

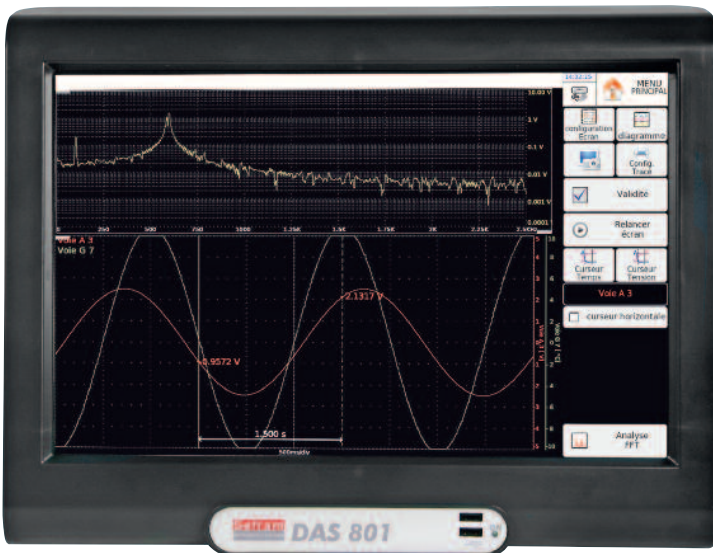
## Paperless tactile recorder, 12 multiplexed channels

Touch  
TECHNOLOGY

The DAS 801 and the DAS 801 SV (without fan) are equipped with a 15.4 inches colour touch screen. They allow you to visualize your recordings comfortably and easily. Including a 500 Go hard disk, 12 multiplexed analogue channels and both USB and Ethernet interfaces, the DAS 801 combines autonomy, power and simplicity.



7

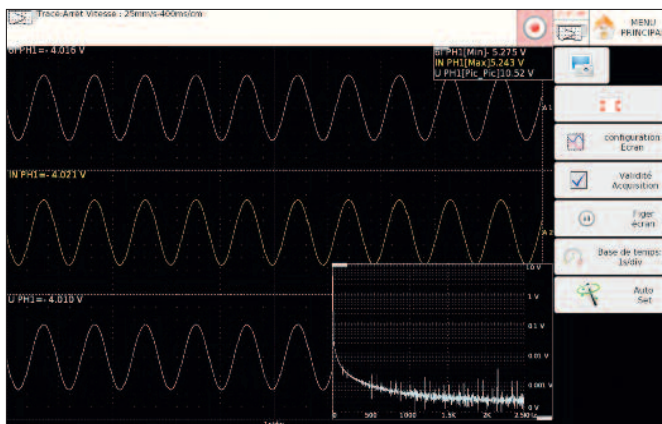


### Capabilities

- 12 analogue multiplexed channels
- Voltage: DC RMS AC+DC from 200 mV to 50 V
- Temperature: PT100 ( 2,3,4 wires) and thermocouples
- 16 Bits resolution
- 16 logical channels
- 15,4 inch TFT color touch screen
- Sampling rate : 5 kHz
- 128 Mword memory
- 500 Gb internal hard disk
- Interfaces : 6 X USB, Ethernet, XGA
- Wifi option
- Rack option
- Battery option (except DAS 801SV)
- Go-No Go mode
- Automatic measurements

### ▶ Intuitive man machine interface :

All of the setup, visualization and analysis functions are logically and conveniently presented.



### ▶ Acquisition communication and processing:

The DAS 801 and the DAS 801 SV directly communicate with your computer thanks to the Virtual Network Computing software. You will be able to setup your recorder via Ethernet or WiFi connection. You can also forecast the trigger and receive an e-mail when the acquisition is complete.



To select the right recorder for your needs Please visit our website : [www.sefram.fr](http://www.sefram.fr)

**BK PRECISION**  
ELECTRONIC TEST INSTRUMENTS

# DAS 30 & DAS 50

Multifunction handheld recorders, 2 and 4 analogue channels, dedicated to maintenance.

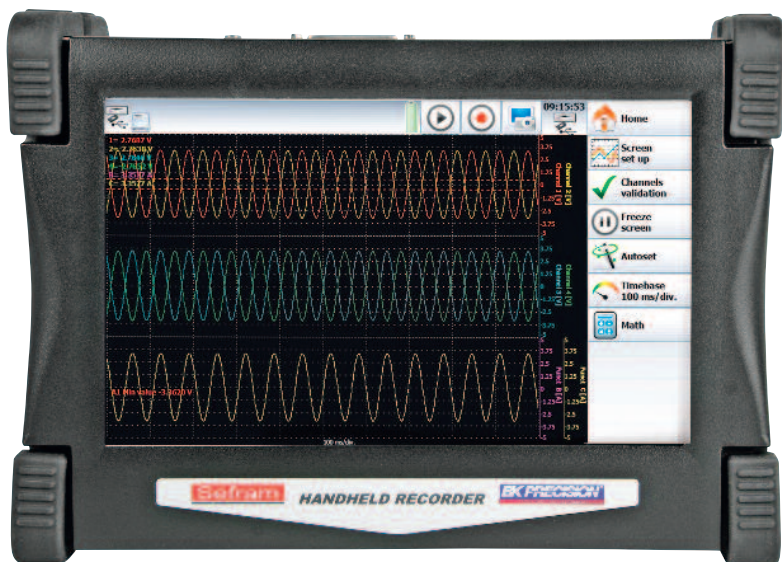
▶ Handheld solution for all your data acquisitions



**NEW**

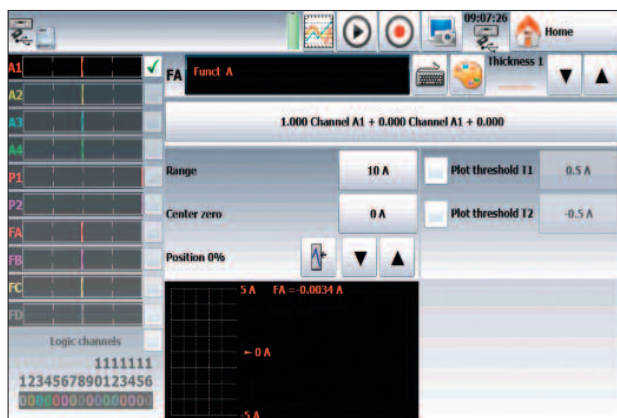
## Capabilities

- 2 or 4 analogue isolated channels
- Universal input
- DC, RMS AC+DC voltage
- Frequency, thermocouples
- PT100Pt1000 factory option
- 16 logical channels and 2 alarms output
- 14 Bit resolution
- 10 inch LCD coloured touch screen
- Sampling : 1Ms / channel
- Internal 32 Gb disk
- Math functions
- Battery operation with 9h30 mn autonomy
- Interfaces: 2 x USB, Ethernet
- Power analysis function
- 110mm thermal printer (factory option)
- CEI1010 CAT III 600 V
- 19" rack option
- Go-No Go Mode
- Automatic measurements



▶ User-friendly interface

The DAS 30 / 50 are equipped with a 10" touch screen : the user interface become absolutely interactive.



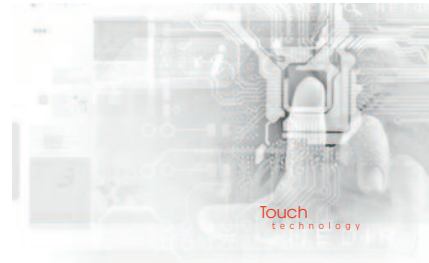
▶ A rugged carrying case

The DAS 30 & 50 recorders are delivered in a rugged waterproof carrying case : the ideal solution to protect your recorder from dust and water and to carry all accessories.



To select the right recorder for your needs Please visit our website : [www.sefram.fr](http://www.sefram.fr)

# DAS 30 & DAS 50

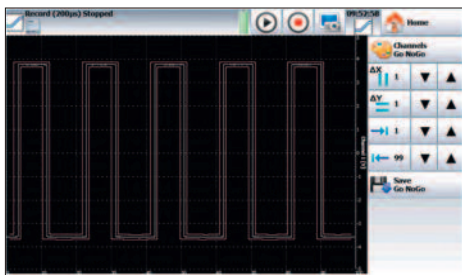


## ► 110mm thermal printer module

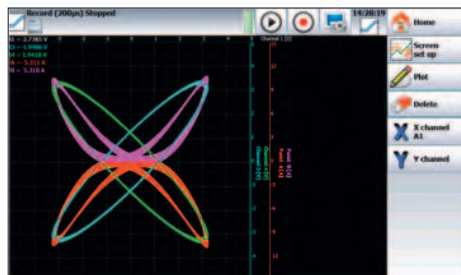
The DAS30 et 50 recorders can be equipped with the compact 110mm thermal printer module (factory option). With this module, you can print very accurately all your acquisitions on thermal paper.



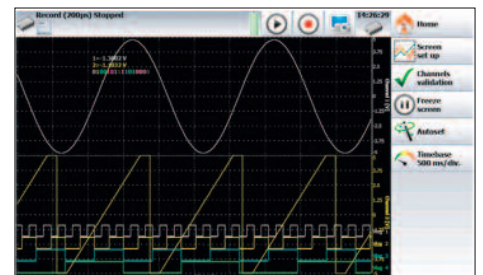
## ► Flexible records to match your needs



Go-No-Go mode: dedicated for tests on production lines. It is possible to view and record out-of-tolerance signals.



XY mode: DAS30 or DAS50 will be a good replacement for your analogue graph plotter. Hardcopy is possible with optional printer.



With the panoramic 10" LCD screen, it is very convenient and comfortable to view and analyse your signals and records.

## ► Power analysis function

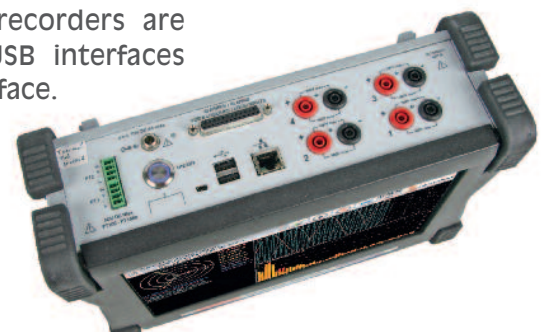
The power analysis function provides all necessary measurements to analyse a single or a 3 phases network. We provide as options several current sensors that have preset parameters in the recorders. The following parameters are calculated and displayed:

- Fresnel diagram
- Harmonics up to rank 50
- Real time oscilloscope
- Active, reactive, apparent power with power factor and DF
- Current, voltage (RMS, mean and peak values), frequency



## ► Interfaces

The DAS 30 & 50 recorders are equipped with 2 USB interfaces and 1 Ethernet interface.



# SEFRAM 8460

Sefram 8460 series: thermal recorders with 270mm paper width, up to 36 channels and panoramic touch screen



SEFRAM 8460



**NEW**

## Capabilities

- 6 to 36 analogue channels
- DC, RMS AC+DC voltage measurements
- Frequency, Thermocouples, PT100, counter
- Strain gauge board (option)
- 16 logical channels
- 16 bit resolution boards
- Panoramic 15" TFT touch screen
- 270 mm thermal printer
- Fréquence d'échantillonnage maxi : 1Mec /sec par voie
- 100 kHz bandwidth
- Power analysis function
- Memory : 32 Mwords
- Path functions
- Go-No-Go mode
- Automatic measurements
- 500 Gb hard disk
- Interfaces: 4 x USB, XGA, Ethernet
- Optional rack mount kit
- CEI 1010 CAT III 600 V

## Highly flexible printing

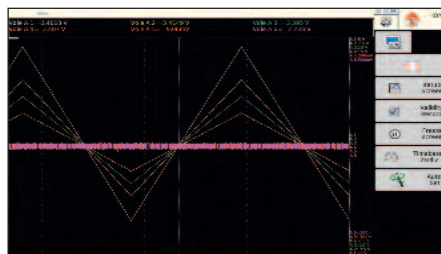
To suit your specific and various applications, you can configure and select all printing parameters, including plotting mode (f(t) or text), paper speed (1 mm/h to 200 mm/s), number of traces or grid pattern. For all channels, you can add annotations, specifying the date, the time, the paper speed and the channel names.

## A panoramic touch screen

The 8460 recorders are equipped with a 15,4" touch screen : you can view your signals and your records with full details. Display setup and page setup give very flexible view and print to match your requests for all your applications

## Data analysis and usage

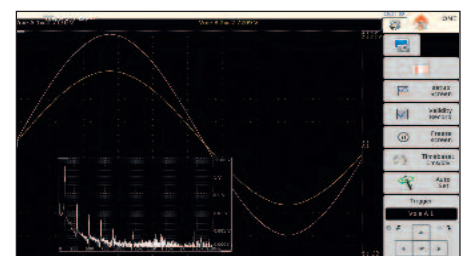
The 8460 provides 20 automatic measurements that can be fully customized. The measurement file processing can be directly operated on to the recorder. Thanks to cursors and various zoom functions - in order to interpret your recordings with the best possible accuracy.



A 1 = -2.7242 V	B 1 = -1.1446 V
A 2 = -0.7066 V	B 2 = -1.7085 V
A 3 = 1.0419 V	B 3 = -0.2687 V
A 4 = 2.9593 V	B 4 = -1.9884 V
A 5 = 2.9593 V	B 5 = -3.9719 V
A 6 = -2.9785 V	B 6 = -3.0466 V

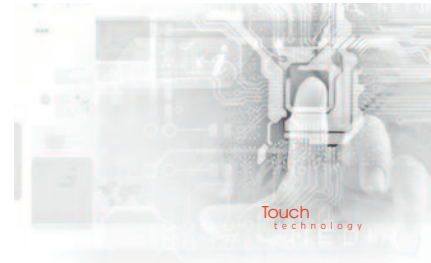
## Data saving and access :

Record onto the internal hard disk at up 1 Ms/s for 6 channels simultaneously. Multiple USB ports are provided to external memory devices (USB memory...). Very fast and easy transfer of your records via the standard Ethernet interface.



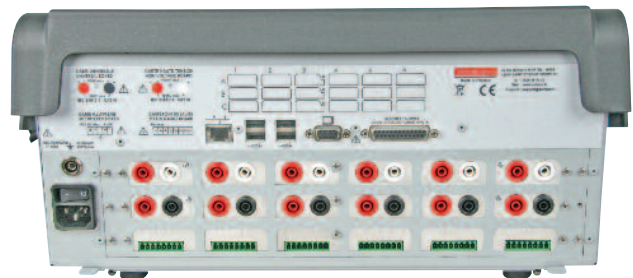
# SEFRAM 8460

## Sefram 8460 series



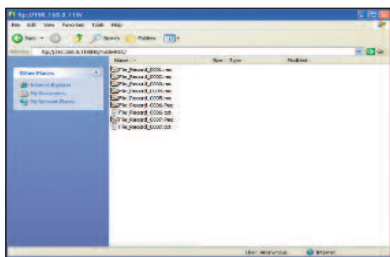
- ▶ A modular recorder to match all your applications

The Sefram 8460 provides 3 slots and can be equipped with measurement boards to be selected in the 4 types available.



11

- ▶ FTP : easy transfer of records.



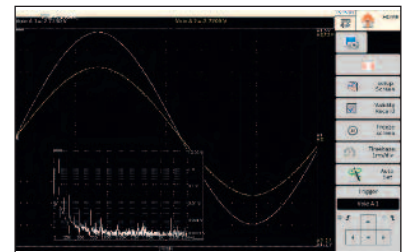
File transfer and display with FTP via TCP-IP network

- ▶ WiFi



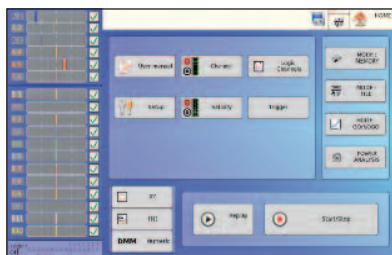
The 8460 combines high performance and management simplicity. Thanks to WiFi: every recorder application can be controlled remotely.

- ▶ FFT analysis

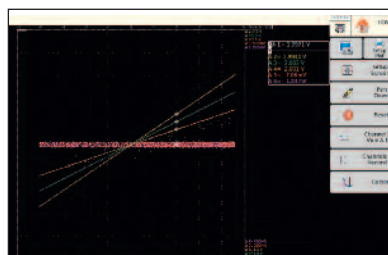


FFT analysis operates in real time. You have easy access to all functions.

- ▶ Different operating modes



- ▶ XY Mode with “pen up and down” function

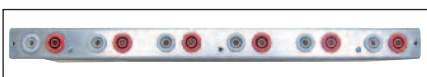


Real XY recorder : the 8460 will be a good replacement for your analogue graph plotter.

Expert mode: access to all setup functions.  
User mode: restricted access.

- ▶ Choice of 4 input boards :

4 types of input boards are available for your 8460 recorder:



Universal high voltage board: 6 universal isolated analogue channels.



Universal board: 6 universal isolated analogue channels.



Strain gauge board : 6 isolated channels



Multiplexed channels board  
12 analogue multiplexed channels

# NETWORK ANALYSIS

## for DAS1600 and 8460 (up to 1000 Hz)

Control your electrical power consumption (networks, motor, ...)  
Manage your energy spending, monitor your network

The standard network analysis mode on the SEFRAM recorder solutions allows you to visualize and record power, energy and harmonic measurements easily.  
Accurate and advanced, this tool allows a quick visualization and a simplified exploitation of the measured values : energy and time gain!

12

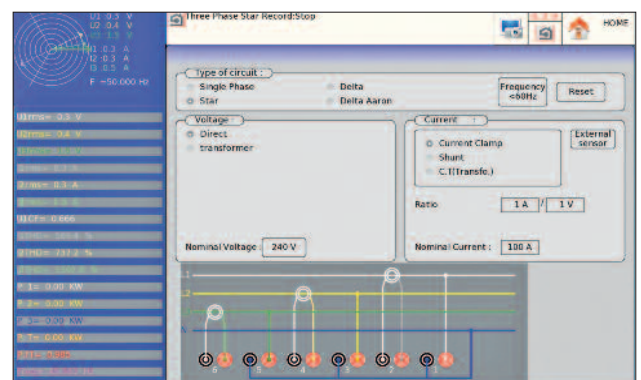
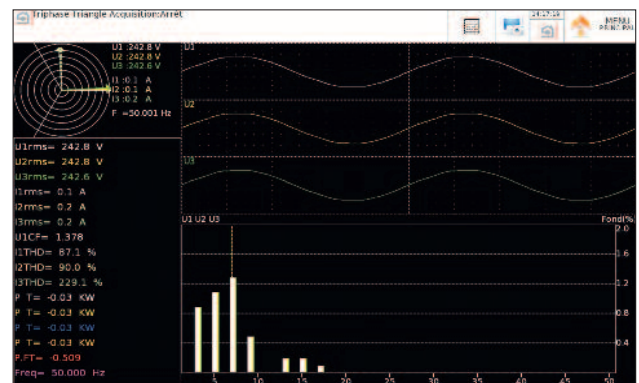
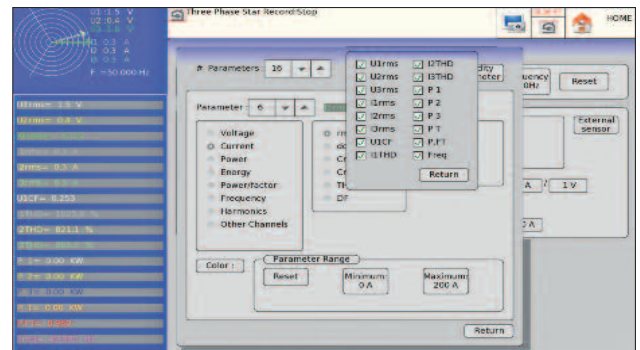
**Applications :** Real time follow-up and historical analysis, comparison of the power consumptions, Preventive and corrective maintenance, Measurement and verification of gains from economy improvement schemes

Record and set your various measurements precisely to suit your measurement task.

### Capabilities

- Single phase, dual phases, three phases networks
- Dual network analysis
- Recording capacity up to 24 parameters (U, I, W, Wh, ...)
- Customizable frequency 50Hz, 60Hz, 400Hz and 1000Hz.
- Fresnel diagram
- Oscilloscope mode
- Calculation and Memorization of harmonics
- 16 x measured values : average, true RMS, peak, peak factor, THD, DF, active/apparent/reactive power, power factor and consumed energy values.
- Real time visualization of the measured values on Word® file.

The measurements are operated via current sensors (flexible clamps from 0 to 3000 AAC, or current clamps, or external shunts) and direct voltage inputs (maximum voltage depends on the board used).



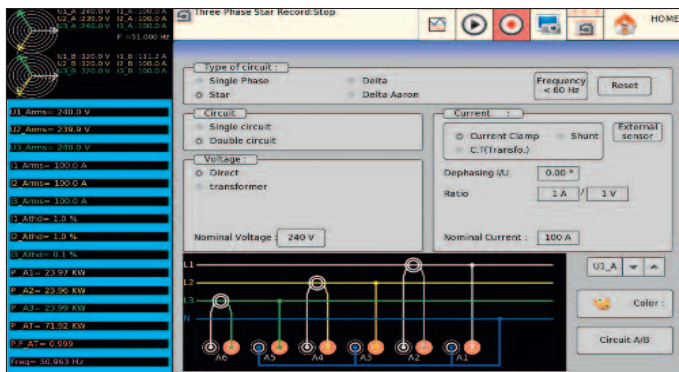
# DUAL NETWORK ANALYSIS

## for DAS1600 and 8460

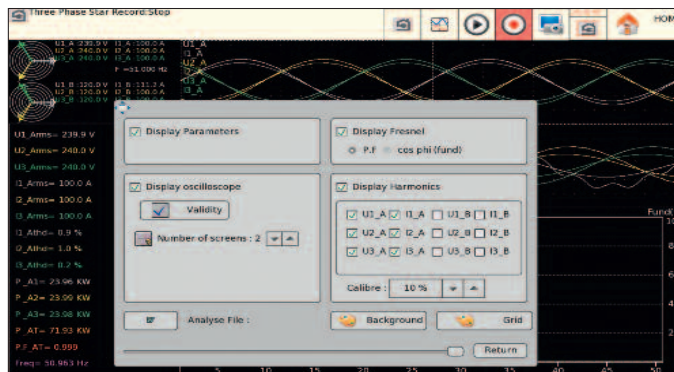


Technologie  
TACTILE

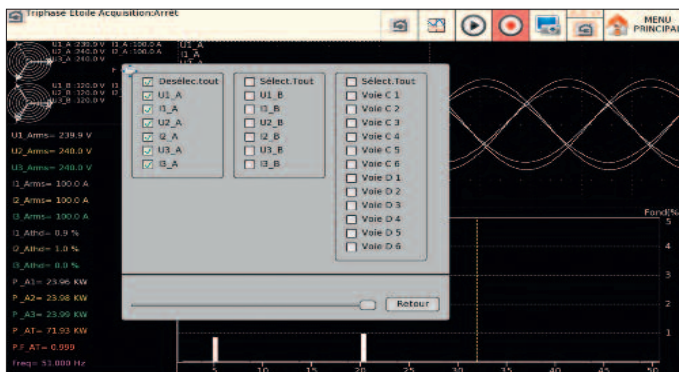
Sefram includes this new feature in both paper and paperless recorders. You can analyse and monitor two independant three phases networks by using our universal input board or the high voltage board, with excellent safety conditions for the user.



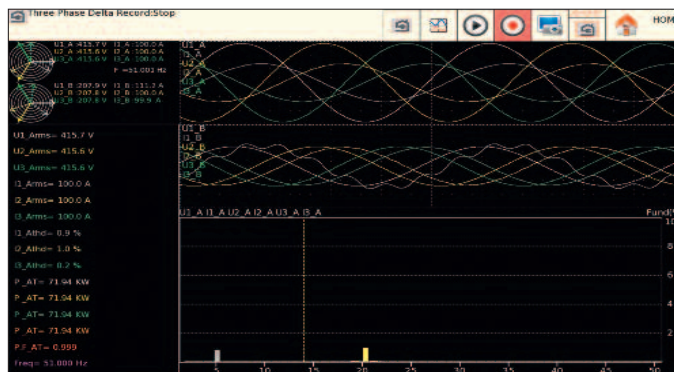
View on a single screen all parameters and mesurements for both networks, with two Fresnel diagrams. You can use current clamps selected in the recorder library: all measurements will be calculated and displayed with clamp parameters (transformer ratio).



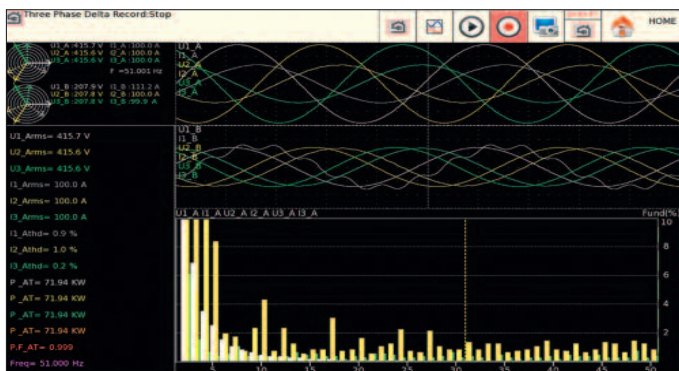
With the setup menu, you can select the parameters you want to measure, display and record.



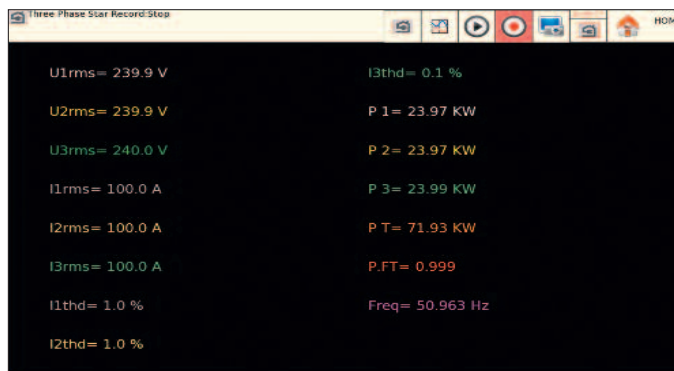
You can select currents and voltages for the oscilloscope mode and the harmonics calculation.



Complete view of recorded parameters. Real time measurement of power, current and voltage. Harmonics are calculated and displayed up to rank 50.



A single screen for all measurements and graphs: voltage, current, power, fresnel diagrams, harmonics and real time oscilloscope.



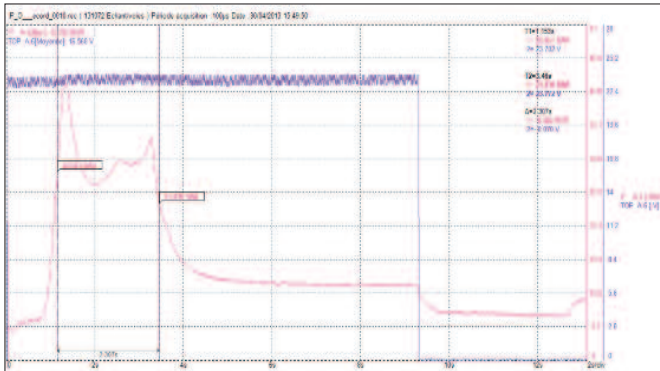
Digital display: all measurements are displayed in text mode.

# SEFRAM VIEWER and SEFRAM PILOT

## ▶ SEFRAM Viewer

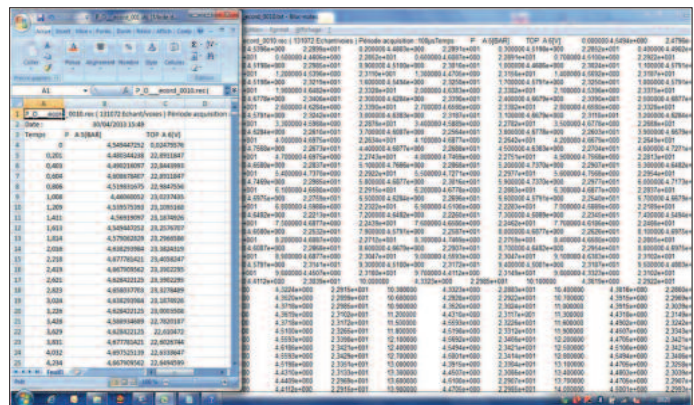
This license free software is supplied with each recorder. It allows the visualization of the recordings and the data transfer to other applications. SEFRAM Viewer makes the acquired signal analysis easier.

14



### Capabilities

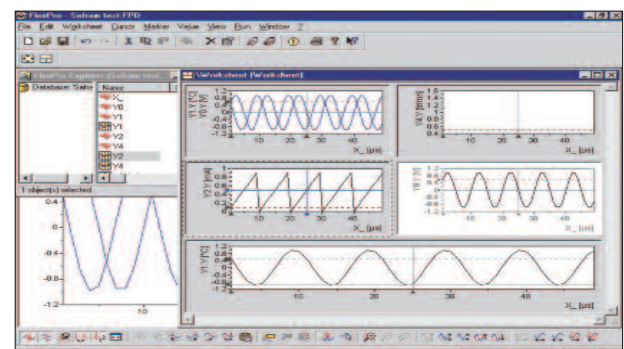
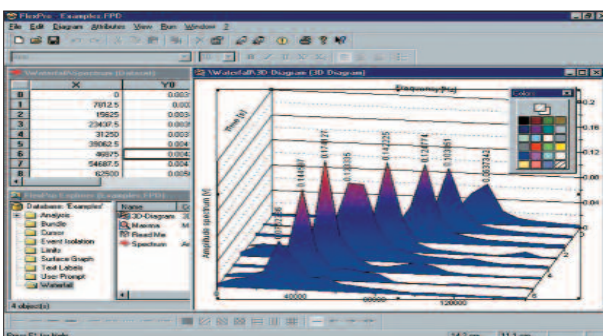
- Curve printing
- Value display
- Cursors and zoom
- File concatenation
- 8 math calculations
- Up to 120 character annotations
- Bitmap, Excel®, txt, csv exportation
- Configuration of the display



## ▶ FLEXPRO™: a powerful software for your data analysis.

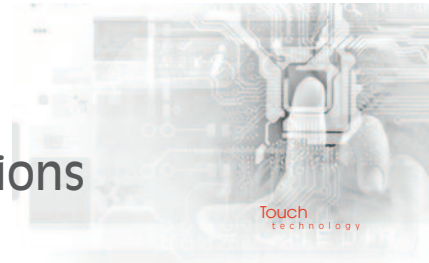
With Flexpro™ :

- More than 100 functions of statistical and math analysis
- Graphical representation
- Measurement report editing



# SEFRAM 8210 / 8211

Recorders equipped with all the vital functions to make your universal measurements.



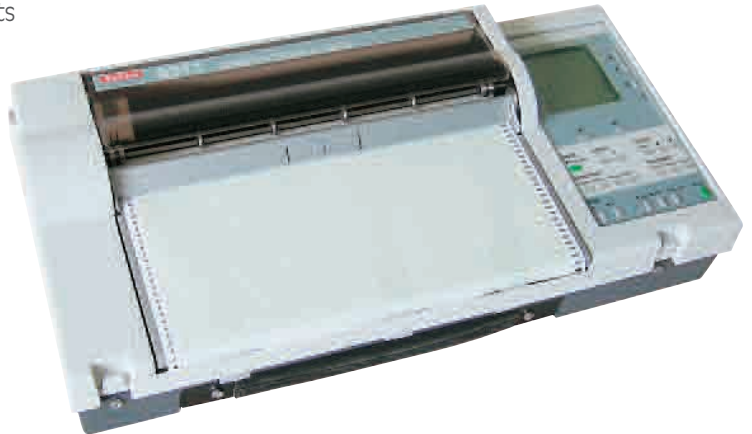
Convenience and ease of use characterize the SEFRAM 8210 & 8211 graphical recorders with two channels: one function per key, quick acquisition and visualization on graphical screen (SEFRAM 8211), recall of zero location... both models are equipped with a carrying handle and a protection cover for outdoor use. They are also rackable, for test bench integration.

## Capabilities

- 2 synchronized channel recorder with universal inputs
- Feather trace on 250 mm paper, with a roll speed programmable internally or with an external clock.
- $\pm 2$  caliber original offset
- Programmable filters to clear the noise of some measurements
- RS-232 interface
- Handheld or rackable

### SEFRAM 8211 characteristics :

- Capture of transient signals
- Parameter writing
- Alarms (2 available relays)
- Backlight display

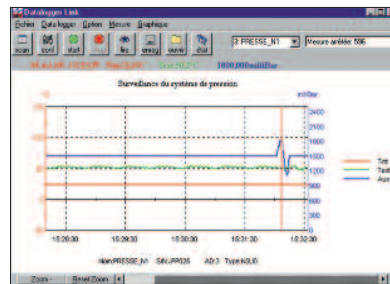


► The solution for all your recording issues  
Mini recorders for monitoring temperature, humidity, voltage and current



## Capabilities

- Ease of use
- Maximum recording : 2years
- Maximum memory : 60 000 measurements
- Infrared interface for data transfer to a PC.
- Programmable alarms
- Maximum vertical resolution : 12 bits



## SI693

- Kit including software, infrared interface and USB cable.

Technical	SEFRAM LOG 1501P1	SEFRAM LOG 1520-K	SEFRAM LOG 1522-K	SEFRAM LOG 1525-1	SEFRAM LOG 1530-K	SEFRAM LOG 1530-K1	SEFRAM LOG 1555
Ti with internal sensor	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C
Text per type "K" probe	-	-50 to +150°C	-	-	-50 to +150°C	-100 to +1200°C	-
Text per "K" probe 2 inputs	-	-	-50 to +150°C	-	-	-	-
Humidity	-	5% to 95%	-	-	-	-	-
Text per PT100 probe	-	-	-	-	-	-	-
Voltage input 0-25V	-	-	-	•	•	•	•
Current input 4-20mA*	-	-	-	•	•	•	•

4 input



## Technical support

Our technical support team are ready to help you get the most out of all of our Sefram products.  
Contact us :

## Sefram Service

Our service department provides the best possible support of your products : Periodic maintenance and calibration, product upgrades and repair.

## Products update

Software updates can be downloaded free of charge from our website : [www.sefram.fr](http://www.sefram.fr)

16

Tél. +33 (0) 4.77.59.36.97

# ACCESSORIES FOR RECORDERS

## Differential probes kits

**ELD.1052** - 700 V Kit, 3 phases

Contains 3 probes (GE.8100) ; 3 BNC/Ban. adapters; 3 test leads; 3 power supplies and a carrying pouch

**ELD.1053** - 1500 V Kit, 3 phases

Contains 3 probes (GE.8115) ; 3 BNC/Ban. adapters; 3 test leads ; 3 power supplies and a carrying pouch.

**ELD.1054** - 700 V Kit, 1 phase

Contains 1 probe (GE.8100) ; 1 BNC/Ban. adapter; 1 test lead ; 1 power supply and a carrying pouch.

**ELD.1055** - 1500 V Kit, 1 phase

Contains 1 probe (GE.8115) ; BNC/Ban. adapter; 1 test lead ; 1 power supply and a carrying pouch.

## Current clamps

**SP 201** - Current clamp (200 AAC, 10mV/1A, Ø15mm)

**SP 221** - Current clamp (100 AAC, 100mV/1A, Ø15mm)

**SP 230** - Current clamp (1200 AAC, 10mV/1A, Ø50mm)

**SP 261** - Current clamp (1200 AAC+DC, 1mV/1A, Ø70mm)

**SP 270** - Current clamp (2000 AAC, 1mV/1A, Ø70mm)

**A1257** - Flexible current clamp (30A/300A/3000A) three-phase

**A1287** - Flexible current clamp (30A/300A/3000A) single-phase

## Carrying cases

**916008000** - carrying case for DAS 800/801/1600/8460

**916008500** - carrying case for DAS 1600 with extended slot

**984605000** - carrying case for 8460

**982105000** - carrying case for 8210 / 8211

## Connection kits

**ELD.1060** - 6 channel connection Kit

Contains 12 Test leads/stack. ban. plugs with retractable sleeve (2mm), 12 mini-clip leads and a carrying pouch

**ELD.1061** - Universal 6 channels connection Kit

Contains 12 Test leads/stack. ban. plugs with retractable sleeve (2mm), 12 mini-clip leads, 12 flexible grabbers and a carrying pouch

**ELD.1062** - 12 channels low voltage connection Kit

Contains 12 mini-clip leads (one end open 1m) and a carrying pouch

**ELD.1063** - 6 channels coaxial Kit

Contains 6 cables BNC/ 2 x ban. (50 ohms, 2m) and a carrying pouch

**ELD.1057** - Connection Kit for Power & Energy Analysis

Contains 10 test leads/stack. ban. plug (3m); 1 test lead/stack. ban. plug (25cm) ; 5 Alligator clips; 4 Maxigrabbers; 2 test tips and a carrying pouch

## Shunts

**910007100** - 0.01Ω, 1%, 10A max, safety banana plugs

**910007200** - 0.01Ω, 1%, 3A max, safety banana plugs

**989006000** - 1Ω, 0.5%, 0.5A max, safety banana plugs

**912008000** - 10Ω, 0.1%, 0.1A max, safety banana plugs

**989007000** - 50Ω, 0.5%, 0.5A max, safety banana plugs

**207030301** - 0.01Ω, 0.5%, 30A max, leads and cable lug

**207030500** - 0.01Ω, 0.5%, 50A max, leads and cable lug

## Logical channels accessories

**984405000** - Patch cord for logical channels

**984405500** - 16 channels isolated interface



FT CAT ENREGIS/2015A

Specifications subject to change without notice.

For assistance and ordering

# Sefram



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